P01

What is an Alcohol Related Death? A Review of Post-mortem Reports in Plymouth

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Poster Round 1 - 18 June, 1pm - 2pm

Background
In the UK, almost half of all adults drink alcohol at least once a week, as per Change UK. In excess, ethanol is a toxin which causes damage to multiple organs, primarily the liver. Alcohol related death is a growing problem, with the most recent data from the ONS confirming the alcohol related mortality rate as 14.8 per 100000 people in the UK.
Purpose
The ONS defines an alcohol related death as 'Deaths from conditions which are wholly or partially caused by alcohol.' The purpose of this project was to understand what this means in terms of a cause of death, and to consider how these conclusions were reached.
Methods
All the post-mortem reports in the UK city of Plymouth over a ten-month period spanning from 2021-2022 were analysed. All the post-mortem reports with a cause of death related to alcohol were included, revealing a total of 77 deaths which were related to alcohol. The causes of deaths were recorded and further analysed to understand themes within them to consider exactly what an 'alcohol related death' is.
Results
Of the 77 deaths, 56 (73%) were supported by toxicology results. The data also revealed alternative causes of death not directly attributed to alcohol, but still related (e.g. polydrug toxicity (31%)). Chronic alcohol-related liver disease is the most common cause of death related to alcohol nationally, though only made up 23% of deaths in this data set.
Conclusions
Alcohol misuse is a growing threat to health in the UK. Most alcohol related deaths are attributed to chronic liver disease. However, this overlooks the acute consequences of alcohol misuse.
Some cases which have evidence to suggest alcohol was a factor (e.g. positive toxicology) may not meet the ONS definition of an alcohol related death, and therefore not be included in the statistics.

References

1. Alcohol Change UK [Internet]. [cited 2024 Feb 14]. Alcohol statistics. Available from: https://alcoholchange.org.uk/alcohol-facts/fact-sheets/alcohol-statistics
2. Alcohol-specific deaths in the UK - Office for National Statistics [Internet]. [cited 2024 Feb 14].

P03

Purulent Pericarditis: A Blast from the Past

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Poster Round 1 - 18 June, 1pm - 2pm

Background
Coronial autopsies frequently unearth unexpected pathology (around 50% in one meta-analysis). This is a case of a 65 year old male who was found deceased at home. He was last seen by a colleague who commented that he looked unwell and unsteady on his feet. His past medical history included alcohol misuse and type 2 diabetes mellitus with diabetic retinopathy. A Coronial autopsy was undertaken as the cause of death was unknown.

Results/Findings
Autopsy revealed purulent exudate overlying the lungs and associated with a small volume of empyema-like material. The pericardial sac was distended, and when opened a large volume of purulent fluid was present with fibrinoid material adherent to the surface of the heart. Microbiological swabs were taken from the airways, empyema, and pericardial fluid. Histology was also taken from the lungs which showed bronchopneumonia.
The cause of death was given as purulent pericarditis, with an underlying cause of staphylococcus aureus and kelbsiella aeorgenes bronchopneumonia on a background of immunosuppression. The indirect contributors to death included type 2 diabetes mellitus and ischaemic heart disease.

Conclusion
Purulent pericarditis is rare and predominantly a secondary phenomenon which was much more common in the era before widespread and easy access to effective antibiotics. In this case there was an underlying pneumonia which led to either contiguous or haematogenous spread of bacteria. The presence of type 2 diabetes is associated with immunosuppression and likely contributed to this rare presentation.

References

Roulson, J., Benbow, E.W. and Hasleton, P.S. (2005). Discrepancies between clinical and autopsy diagnosis and the value of post mortem histology; a meta-analysis and review. Histopathology, 47(6), pp.551–559. doi:https://doi.org/10.1111/j.1365-2559.2005.02243.x.

P05

The Value of Sharp-force Trauma Analysis: Evolution From the 19th Century Onwards

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Sharp-force trauma (SFT) analysis has assisted our understanding of violent death since the assassination of Julius Caesar. Despite this, there is a lack of historical research focused on the evolution of SFT analysis.

Purpose: To explore the history of SFT analysis since the 19th century and to exemplify the value of SFT analysis using historical texts and postmortem records from the St George's, University of London (SGUL) Archives and Special Collections.

Methods: A general timeline was created using information from 13 published journal articles, 7 online websites, and 5 books. Texts used were dated between the 19th century and the 21st century. Two 19th-century postmortem reports were obtained from the SGUL Archives and Special Collections. These reports described SFT wounds.

Results: In the 19th century, SFT analysis was focused on determining the fatality of wounds. Postmortem reports from the SGUL Archives and Special Collections detailed the location, size, and depth of SFT wounds. The 20th century marked the birth of forensic pathology in the UK and an increase in texts which focused on the pattern of injury associated with SFT. This included one of the earliest published texts to discuss defence wounds. SFT analysis in the 21st century has involved the use of microscopic analysis, biomechanical studies, and 3D imaging techniques to determine specific weapon types and remove the need for photographs in the courtroom.

Conclusion: Since the 19th century, SFT analysis has evolved, enhancing our ability to determine the fatality of wounds, the circumstances surrounding death, and weapons used. Ongoing advances in SFT analysis will be crucial in helping forensic pathologists interrogate the intricacies of crime involving sharp weapons, enabling a fairer delivery of justice.

References

1. Wyatt JP, Payne-James J, Norfolk G, Squires T. Oxford Handbook of Forensic Medicine. Oxford: Oxford University Press; 2011.
2. Harley D. Political Post-mortems and morbid anatomy in seventeenth-century England. Social History of Medicine. 1994;7(1):1–28. doi:10.1093/shm/7.1.1.
3. Male GE. An epitome of juridical or forensic medicine; for the use of medical men, coroners, and barristers. London: T. and G. Underwood; 1816.
4. Davis BT. George Edward Male MD--the father of English medical jurisprudence. Proceedings of the Royal Society of Medicine. 1974;67(2):117-120. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1645272/
5. Burke MP, Baber Y, Cheung Z, Fitzgerald M. Single stab injuries. Forensic Science, Medicine and Pathology. 2018;14(3):295–300. doi:10.1007/s12024-018-9982-x
6. van den Tweel JG, Taylor CR. The rise and fall of the autopsy. Virchows Archiv. 2013;462(4):371–380. doi:10.1007/s00428-013-1387-3
7. Gulczyński J, Iżycka-Świeszewska E, Grzybiak M. Short history of the autopsy: Part II From the second half of the 16th century to contemporary times. Polish Journal of Pathology. 2010;61(3):169–175. https://www.termedia.pl/Short-history-of-the-autopsy-Part-II-From-the-second-half-of-the-16th-century-to-contemporary-times,55,16035,1,1.html

8. Virchow R. A description and explanation of the method of performing post-mortem examinations in the dead-house of the Berlin Charité Hospital with especial reference to Medico-Legal Practice. London: J. and A. Churchill; 1880. https://wellcomecollection.org/works/c9xdhp8e/items?canvas=7
9. Archives and Special Collection, St George's, University of London. Item 361 – George Durrant, 3, [No occupation stated]. https://archives.sgul.ac.uk/2fbg-fdm2-myq5 [Accessed 20th February 2024].
10. Rob Dale True Crime. Louisa Durrant. https://www.robdaletruecrime.com/louisa-durrant.html [Accessed: 20th February 2024].
11. Herbst J, Haffner H-T. Tentative injuries to exposed skin in a homicide case. Forensic Science International. 1999;102(2–3):193–196. doi:10.1016/s0379-0738(99)00057-2.
12. Forensic Capability Network. New forensic retention guidance published for forces and private providers. https://www.fcn.police.uk/news/2021-08/new-forensic-retention-guidance-published-forces-and-private-providers [Accessed 21st February 2024].
13. Giorgetti A, Pascali JP, Pelletti G, Silvestri A, Giovannini E, Pelotti S, Fais P. Routine photography of injuries. American Journal of Forensic Medicine and Pathology. 2023;44(2):83–89. doi:10.1097/paf.0000000000000825
14. Archives and Special Collection, St George's, University of London. Item 354 – Louisa Humphrey, 46, [No occupation stated]. https://archives.sgul.ac.uk/6bhc-6z8p-b7kz [Accessed 21st February 2024].
15. Surgeons' Hall Museums. Horse Hair Ligatures. https://museum.rcsed.ac.uk/the-collection/key-collections/key-object-page?objID=4333&page=4 [Accessed 23rd February 2024].
16. Karakasi M, Nastoulis E, Kapetanakis S, Vasilikos E, Kyropoulos G, Pavlidis P. Hesitation wounds and sharp force injuries in Forensic Pathology and Psychiatry: Multidisciplinary Review of the literature and study of two cases. Journal of Forensic Sciences. 2016;61(6):1515–1523. doi:10.1111/1556-4029.13146.
17. Rolleston HD, Kanthack AA. Manual of Practical Morbid Anatomy: Being a handbook for the post-mortem room. Cambridge: University Press; 1894. https://wellcomecollection.org/works/u3pp8ys3.
18. Royal College of Physicians. Sir Bernard Henry Spilsbury. https://history.rcplondon.ac.uk/inspiring-physicians/sir-bernard-henry-spilsbury [Accessed 23rd February 2024].
19. Edith Jessie Thompson. Autopsy and post-mortem reports. 2022. https://edithjessiethompson.co.uk/primary-source-texts/autopsy-post-mortem-reports-percy-thompson [Accessed 24th February 2024]. S.
20. Spitz WU, Risher RS. Medicolegal investigation of death: Guidelines for the application of pathology to crime investigation. Springfield: Charles C Thomas; 1972.
21. Tucker B, Hutchinson D, Gilliland M, Charles T, Daniel H, Wolfe L. Microscopic characteristics of hacking trauma. Journal of Forensic Sciences. 2001;46(2):234–240. doi:10.1520/jfs14955j.
22. Knight B. The dynamics of Stab wounds. Forensic Science. 1975;6(3):249–255. doi:10.1016/0300-9432(75)90017-5.
23. Love JC. Sharp force trauma analysis in bone and cartilage: A literature review. Forensic Science International. 2019;299:119–127. doi:10.1016/j.forsciint.2019.03.035.
24. Zhang M. Forensic imaging: A powerful tool in modern forensic investigation. Forensic Sciences Research. 2022;7(3):385–392. doi:10.1080/20961790.2021.2008705.
25. Fukumoto W, Kitera N, Mitani H, Sueoka T, Kondo S, Kawashita I, Nakamura Y, Nagao M, Awai K. Global illumination rendering versus volume rendering for the forensic evaluation of stab wounds using computed tomography. Scientific Reports. 2022;12(1). doi:10.1038/s41598-022-06541-9.

P06

Case Report: Fatal Sepsis Following a Spider Bite

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Spider bites are likely to be underreported; patients usually have mild symptoms so do not seek medical attention and there are no pathognomonic symptoms or signs. Death by spider bites is exceptionally rare.

Case report: A 19-year-old male died from sepsis following a bite from a native house spider (Tegenaria domestica). He attended hospital four days prior to his death with chest pain and an infected, painful wound on his back. His NEWS was 3. His CRP was 54mg/L, and the full blood count was clotted. Two venous blood gases demonstrated marginally raised lactate (1.7 and 1.9mmol/L). He self-discharged prior to receiving treatment.

At autopsy, there was a 2x2cm large and 1cm deep open wound, which was erythematous and exudative, on the posterior right shoulder. There were two small puncture marks located 1cm from the wound. A culture of this wound revealed S. aureus and histopathology showed multiple abscesses with necrosis. There were widespread petechiae on the skin, indicating systemic coagulopathy. Internal examination revealed a haemorrhagic pneumonia with abscess formation and purulent pleural effusions. There was evidence of splenomegaly and septic emboli in the kidneys. The brain showed severe hypoxic change. There were no significant toxicological findings.

Conclusions: Sepsis may have been caused by secondary infection of the wound with S. aureus, which then spread haematogenously to the lungs. It is not commonly known for spiders to carry S. aureus. The wound was also painful, possibly leading to altered breathing mechanics and reduced clearance of pulmonary secretions, predisposing him to pneumonia. The NEWS and lactate were not raised to the level that Sepsis Six would usually be triggered, and CRP would not be used alone. This demonstrates how reliance on single markers to identify sepsis is challenging, and healthy people can maintain normal parameters until sepsis is advanced.

References

1.Fusto G, Bennardo L, Del Duca E, Mazzuca D, Tamburi F, Patruno C, Nistico SP. Spider bites of medical significance in the Mediterranean area: misdiagnosis, clinical features, and management. J Venom Anim Toxins Incl Trop Dis. 2020;26.
2. Farver CF. Bacterial Diseases. Chapter 10. Pulmonary Pathology (Second Edition). Editor(s): Dani S. Zander, Carol F. Farver,In Foundations in Diagnostic Pathology,Elsevier,2018,
3. Clark SB, Hicks MA. Staphylococcal Pneumonia. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022.
4. Vetter RS, Swanson DL, Weinstein SA, White J. Do spiders vector bacteria during bites? The evidence indicates otherwise. Toxicon. 2015;93:171-174.
5. Baxtrom C, Mongkolpradit T, Kasimos JN, Braune LM, Wise RD, Sierwald P, Ramsey KH. Common house spiders are not likely vectors of community-acquired methicillin-resistant Staphylococcus aureus infections. J Med Entomol. 2006;43(5):962-965.
6. May L, Hillermann C, Patil S. Rib fracture management. BJA Education. 2016;16(1):26-32.
7. Bernard GR, Vincent JL, Laterre PF, LaRosa SP, Dhainaut JF, Lopez-Rodriguez A, Steingrub JS, Garber GE, Helterbrand JD, Ely EW, Fisher Jr CJ. Efficacy and safety of recombinant human activated protein C for severe sepsis. N Engl J Med. 2001;344(10):699-709.

P07

A case of pulmonary amyloid diagnosed through minimally invasive autopsy

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Poster Round 1 - 18 June, 1pm - 2pm

Background:
An 83-year old male was admitted to hospital with a cough and acute kidney injury. He was initially treated for sepsis and admitted to intensive care. He continued to deteriorate and died two weeks after admission on the ward. The cause of death given by the clinical team was: 1a Acute Kidney Injury 1b Sepsis.

Purpose:
A consented, minimally invasive post-mortem examination was requested by the clinical team and next of kin, in order to investigate whether there were any contributory factors to death and/or to improve the accuracy of the cause of death.

Methods:
A minimally invasive, needle biopsy post-mortem was performed, with ultrasound-guided biopsy sampling of the lungs, heart, liver, kidneys, spleen and bone marrow.

Results:
Biopsies from both lungs demonstrated deposits of amyloid within vessel walls and within lung parenchyma, which was an unexpected finding. The amyloid was confirmed as transthyretin type (ATTR) by the National Amyloidosis Centre. Genetic studies confirmed that there were no mutations commonly associated with familial ATTR. The biopsies from the kidneys, spleen, liver and bone marrow did not demonstrate any amyloid. Despite ultrasound-guidance, very little myocardium was sampled, and so the presence or lack of cardiac amyloid could not be commented on.

Conclusions:
This case highlights that autopsy can bring to light unexpected clinical diagnoses, even if they are not necessarily relevant to the ultimate cause of death. These types of findings can be of interest to family members and the clinical team, and they cement the use of autopsy as the ultimate tool of clinical audit and quality control. In this case, minimally invasive autopsy techniques were employed, and demonstrate the viable use of these techniques as part of a hospital / consented autopsy process.

P08

Are consented post-mortems still relevant in the 21st century?

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Poster Round 1 - 18 June, 1pm - 2pm

Background:
The rate of consented post-mortems has declined over the last 20 years. This is multifactorial. Do consented post-mortems still have any value given current modern practices and pre-mortem diagnostics.

Purpose:
To review the previous 20 years of consented post-mortem data, ascertain if there is a decline in requests and if so who still requests them and why? Are findings clinically relevant?

Methods:
The departmental post-mortem database was searched retrospectively for consented post-mortem cases. Once identified, the requesting team/speciality was noted and the clinical query identified (all requests require a clinical question). Reports were reviewed to ascertain if the question was answered, and also if any additional findings were made.
Analysis of reports was made to identify and findings resulting in significant changes/enhancement to clinical practice.

Results:
The rate of consented post-mortems has declined over the last 20 years. Of note, there has been a significant decrease since 2019 which will be addressed in the discussion.
Consent post-mortems have resulted in positive findings which have subsequently impacted on clinical practice.

Conclusions:
The decline in consent post-mortems is multifactorial and in recent years may in part be due to the post-COVID operating pressures of the NHS. Additionally the medical examiner system has been implemented, and no pathologists are involved decreasing the chance of picking up potentially suitable cases. Anecdotally there are an increase in Coronial cases which may better have been dealt with as consented post-mortems.
When undertaken consent post-mortems have answered the clinical question in a majority of cases. In addition there have been findings which have contributed to changes in clinical practice, showing that there is value in the practice of autopsy pathology even in a world where improved pre-mortem diagnosis, imaging and molecular technologies exist.

References

Turnbull A, Osborn M, Nicholas N. Hospital autopsy: Endangered or extinct? J Clin Pathol. 2015 Aug;68(8):601-4. doi: 10.1136/jclinpath-2014-202700. Epub 2015 Jun 15. PMID: 26076965; PMCID: PMC4518760.

P09

Enhancing Post Mortem Computed Tomography (PMCT) Reporting: A Comprehensive Audit and Recommendations for Improved Clinical Practice

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Poster Round 1 - 18 June, 1pm - 2pm

Background
Post mortem computed tomography (PMCT) is an imaging modality used in the assistance of determining a cause of death. Its usefulness is in part determined by the detail included in the report, mentioning both positive and negative findings.

Purpose
The main objectives were to review a series of PMCT reports for their content and highlight areas with recurring report omissions. These areas may be of particular use when interpreting the findings by the pathologist and concluding a cause of death. The radiological summary was also reviewed including whether a cause of death was provided.

Method
We performed a retrospective analysis of 100 sequential cases over a two-month period. From these reports we extracted core data items that were pre-determined to be of use when interpreting a PMCT report. Whilst no definitive reporting proforma exists, using previous research and expert opinion, we proposed a proforma with 27 variables which we used to extract data from the reports.

Results
A wide range of variability was present in the reporting of the data items of the PMCT reports. Areas consistently well reported included comments on the brain, skull, heart, coronary arteries, lungs and bones. Poorly reported items included the thoracic spine, cardiac valves, the retroperitoneum and the internal genital tract. A summary was provided in 94% of cases and a cause of death in 74% of cases.

Conclusions
Whilst some area of PMCT reports were consistently reported well, others were highly variable. Although guidelines exist, a structure for the reporting of PMCT does not. Based on the previous literature and expert opinion, we proposed a standardised proforma which can assist in ensuring that all areas are reported, however this may not suit all reporting styles. Ultimately, this can allow the pathologist to make an informed decision on the cause of death.

P10

Exploring the perceptions and experiences of hospital post-mortems amongst the junior doctor population.

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Poster Round 1 - 18 June, 1pm - 2pm

Background:
Hospital post-mortems (HPM) are an examination that can be a useful clinical learning tool and provide comfort for families. The number of HPM requests is on the decline1. Junior doctors are a key figure in patient/family relationships but their perceptions about HPMs have not been explored in detail. Understanding this demographic could help to provide explanations and solutions to declining request rates.

Purpose:
To qualitatively analyse the experiences and perceptions of HPM in the junior doctor population and to explore possible barriers explaining the declining request numbers.

Methods:
Four junior doctors were purposively sampled for semi-structured interviews. Interviews were conducted virtually using a literature guided topic arc, and transcripts created. Theoretical thematic analysis was undertaken via transcript coding with core themes extracted. Findings were used to generate a survey questionnaire, including closed and Likert scale questions, and distributed in an NHS board, to explore key themes across a greater breadth.

Results:
Seven core themes were identified: discussions with families; understanding of HPM processes; the value of HPM; education and training in HPM; junior doctors' empowerment within the process; emerging technologies; and medico-legal aspects. 22 responses were received from the survey. 68% of the junior doctors had never seen a post-mortem. 64% stated their work schedule does not allow them to fully explore causes of death on the wards. 77% and 82% believed HPMs are useful for patient families and for clinical education respectively. 50% do not feel comfortable speaking to patient families about HPMs. 68% were not confident about what consent is needed for a HPM.

Conclusions: Junior doctors' views and experiences of HPM are varied. Common themes were identified which may indicate possible barriers to HPM requests and include obtaining consent, insufficient training, discomfort in discussing HPMs with families and work schedule constraints.

References

1. Turnbull A, Osborn M, Nicholas N. Hospital autopsy: Endangered or extinct? J Clin Pathol. 2015 Aug;68(8):601–4.

P10a

Experimental modelling of unicortical internal surface laryngeal fracturing, identified by histological processing, in a fatal case of applied neck pressure.

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Poster Round 1 - 18 June, 1pm - 2pm

Pathological findings can often be subtle or limited in cases of fatal neck compression at autopsy. We previously presented the value of using a more detailed approach to examination of the larynx involving decalcification, transverse sectioning and complete histological processing using mega block cassettes in a case which aided to reveal five internal laryngeal fractures providing sufficient evidence that the most likely mechanism of death was by strangulation. Considering this, this we have since explored the nature of and mechanism of these poorly recognised “buckling” type internal fractures which can easily be missed using a standard forensic autopsy approach.

We undertook simple experiments using 3D printed pliable models of the thyroid and cricoid cartilages coated internally with hardened and cooled Isomalt (a sugar baking product) subjecting them to various types of compression (anterior, bi-lateral and combined anterior-bilateral compression) and documenting any resulting surface material stress cracking produced. Compression in all three forms was confirmed to cause internal surface material cracking to both the thyroid and cricoid cartilage models, including in the locations found in our previously presented case. Certain patterns of surface material cracking were found to be more commonly associated with particular forms of compression. Over 90% of all the surface material cracking were obliquely or vertically orientated on the models, supporting a transverse (rather than longitudinal) sectioning approach of a decalcified larynx in relevant forensic autopsy cases.

P11

Employing Semi-quantitative Methods to Classify Breast Cancer Samples Using the RT-qPCR Based APIS Breast Cancer Subtyping Kit.

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Poster Round 1 - 18 June, 1pm - 2pm

Background:
Accurate determination of breast cancer (BC) biomarkers status is crucial for guiding patient management decisions. Histopathologists commonly use semi-quantitative scoring systems to convert subjective observations of immunohistochemistry (IHC) marker expression into quantitative data, allowing a more detailed categorization of marker status.

The APIS Breast Cancer Subtyping Kit (BCSK) is an RT-qPCR based, in vitro diagnostic test, detecting the relative expression of seven mRNA target genes (ESR1, PGR, ERBB2, MKI67, CCNA2, PCNA, and KIF23) from invasive BC tissue. The APIS BCSK reports a positive/negative result for each biomarker alongside a molecular classification.

Purpose:
Here, we demonstrate that by implementing additional RNA expression cut-off values, it is possible to generate a semi-quantitative result by further stratifying target expression using the APIS BCSK.

Methods:
368 formalin-fixed paraffin-embedded (FFPE) BC specimens were used, obtained by core needle biopsy or resection. IHC scores were correlated with copy numbers as determined by an independently validated digital PCR (dPCR) assay and were used to set copy number cut-off values corresponding to IHC classification. Generated dPCR cut-off values were used to evaluate the corresponding ΔCt values (RNA expression results derived from the APIS BCSK). For each target, three ΔCt cut-offs were established, facilitating classification into negative, low, medium, and high expression.

Results:
The semi-quantitative approach successfully classified target expression levels (ESR1, PGR, ERBB2, MKI67). Overlap in ΔCt values was observed in central IHC categories for all targets, likely due to tumor heterogeneity and differing measurement methods for IHC and RT-qPCR. Despite these discrepancies, the derived cut-off values define a semi-quantitative scale for each target.

Conclusions:
This study has established a methodology that utilises target copy number values and IHC quantification to establish ΔCt cut-off points. With this approach, we have defined four distinct classifications, providing a semi-quantitative scale for evaluating targets with the APIS BCSK.

P12

Design and Development of the APIS ESR1 Mutations Kit to Detect Eleven Mutations Relevant to Acquired Endocrine Therapy Resistance

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Poster Round 1 - 18 June, 1pm - 2pm

Background:
Oestrogen receptor (ER/ESR1) mutations are crucial biomarkers for endocrine therapy resistance in ER+ breast cancer (BC) patients. Detecting these mutations is key for understanding acquired resistance during treatment. Ongoing clinical trials, exploring ESR1 mutation prevalence during treatments, often use next-generation sequencing (NGS)-based or digital PCR (dPCR) assays that can be costly, have long turnaround times and require specialist equipment.

Purpose:
Here, we demonstrate the APIS ESR1 Mutations Kit, a cost-effective, rapid, and highly sensitive qPCR assay detecting eleven ESR1 mutations across exons 5,7 and 8. The assay is designed to assess circulating-free DNA (cfDNA), minimising the need for invasive procedures, and providing flexibility for researchers in decentralised laboratories to explore ESR1 mutations with precision.

Methods:
The kit provides all components and controls required to assess samples. Mutation-specific DNA fragments were spiked into wildtype background DNA (cfDNA extracted from pooled healthy donor plasma, human genomic DNA, or DNA fragments); Limit of Blank (LoB) and Limit of Detection (LoD) were determined using these samples. To determine linearity, a dilution series of DNA fragments ranging from 5 to 10,000 copies per reaction was assessed. All PCR runs were performed using a QuantStudio™5 Dx (ThermoFisher).

Results:
Performance studies showed the most prevalent mutations, D538G and Y537S, detected at 0.4% and 0.1% mutant allele frequency (MAF), respectively. All other mutations were detected at ≤ 1.0% MAF. By using clamp and blocking technologies, each design is mutation specific. Additionally, the assays can perform in high wild-type backgrounds, enabling lower LoBs with ≥95% confidence and threshold cut-offs to enhance assay sensitivity. For each target, linearity is within 90-110% from 50 to 10,000 copies per reaction.

Conclusions:
The APIS ESR1 Mutations Kit demonstrated high sensitivity and specificity as a qualitative qPCR assay detecting eleven ESR1 mutations.

References

P13

Enhancing HER2 Evaluation: Correlation between APIS Breast Cancer Subtyping Kit and IHC/ISH for Accurate HER2 Quantification

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Poster Round 1 - 18 June, 1pm - 2pm

Background:
HER2 status is a crucial prognostic and predictive biomarker in invasive breast cancer (BC). The advent of novel anti-HER2 therapies (e.g. Trastuzumab Deruxtecan (T-DXd)) has cast doubt upon traditional HER2 detection methods, as emerging data indicates T-DXd effectiveness in individuals categorized as HER2 immunohistochemistry (IHC) 1+ or zero scores. More sensitive methods detecting HER2-low expression are key to identify patients who could benefit from treatment with novel anti-HER2 therapeutics. As IHC methods were developed for identifying HER2 overexpression, rather than distinguishing between HER2-low and expression absence, the ability of IHC to detect HER2-low cases remains uncertain.

Purpose:
APIS Breast Cancer Subtyping Kit (APIS BCSK) was developed to detect mRNA expression BC biomarkers; HER2/ERBB2, ER/ESR1, PR/PGR, and Ki67/MKI67. Here, we report ERBB2 mRNA expression levels detected by APIS BCSK, in correlation with IHC HER2 scoring.

Methods:
Formalin-fixed paraffin-embedded (FFPE) BC sections (n=642), from core needle biopsy or resection, underwent histological assessment observing guidelines for IHC. HER2 status of specimens with a HER2 2+ IHC score was resolved via in situ hybridization (ISH) amplification. All specimens were tested with APIS BCSK. To evaluate diagnostic accuracy, IHC and ISH and APIS BCSK mRNA expression level concordance was reported as overall, positive, and negative percent agreement.

Results:
Strong correlation between IHC/ISH results and ERBB2 expression was observed (OPA 94.2%, PPA 89.2%, NPA 94.9%). ERBB2 mRNA expression was detected by APIS BCSK in a subset of patients with 0 and 1+ IHC HER2 score, highlighting the continuous nature of ERBB2 expression and higher sensitivity of RT-qPCR-based detection approaches.

Conclusions:
APIS BCSK accurately detects ERBB2 expression. Results confirm IHC stratification may not be an adequate method for predicting response to novel anti-HER2 therapies. Implementation of additional cut-offs could allow further stratification of ERBB2 mRNA expression; however, additional studies are required to validate this approach.

P14

High Progesterone Receptor (PR/PGR) Expression Determined by APIS Breast Cancer Subtyping Kit Correlates with Oncotype Dx Recurrence Score

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Poster Round 1 - 18 June, 1pm - 2pm

Background:
Expression of ER, PR, HER2, and Ki67 serve as valuable prognostic and predictive markers, with PR/PGR expression believed to predict favourable outcomes in ER+ HER2- breast cancer (BC). Traditionally, the expression of these markers is determined by immunohistochemistry, which for Ki-67 faces challenges in standardization. Quantitative gene expression tests aiming to overcome these challenges exist, however are often limited by their costs.

Purpose:
The APIS Breast Cancer Subtyping Kit (BCSK) offers accurate and cost-efficient determination of ER, PR, HER2, and Ki67 expression. This study assesses the relationship between Oncotype Dx recurrence score (RS) and PGR expression, determined by APIS BCSK.

Methods:
Tissue from a cohort (N=153) of ER+/HER- BC patients diagnosed between 2020-2022 at Cantonal Hospital Basel-Land and Basel University Hospital was included. Each patient had valid Oncotype DX RS scores on file and received at least one line of adjuvant therapy. PGR expression was determined using APIS BCSK, following instructions for use. Spearman correlation tests were applied to the data to examine the association between tests. The model classification explorer (JMP v16.0) was used to predict PGR expression cut-offs for RS and plot a receiver operator curve (ROC) for the data.

Results:
Moderate Spearman's correlation coefficient of ρ=-0.4876 between BCSK and Oncotype Dx RS was observed. ROC curve for PGR prediction of oncotype score was 0.782 (95% CI 0.717-0.847). When stratifying RS scores by low (<26) and high risk (>26) a PGR ΔCt of >3.06 was calculated to identify the low-risk group. Specificity for low-risk RS was 93.5% (95% CI 79.3-98.2%), with a positive predictive value of 0.949.

Conclusions:
This study demonstrates that PGR expression, as assessed by APIS BCSK, could predict low-risk tumours identified by Oncotype Dx reliably, offering a cost-effective pre-screening tool. Additional validation is necessary to affirm diagnostic accuracy.

P15

A Diagnostic and Management Dilemma: Multifocal Invasive Ductal Carcinoma and DCIS Arising Within a Borderline Phyllodes Tumour of the Breast

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Phyllodes tumours (PT) of the breast are rare fibroepithelial lesions (<1% of all breast tumours).[1] The coexistence of invasive ductal carcinoma (IDC) within PT is exceedingly rare (6 cases reported globally [2] [3] [4]) posing diagnostic difficulties and management dilemmas.[2] [3]

Purpose: To present a case report and perform an institutional review for similar cases in order to ascertain imaging and histological characteristics, clinical outcomes and management.

Methods: A database search at Barts Health NHS Trust between 2010-2023 identifying 12,951 fibroepithelial lesions (FEL) (218 PTs). We reviewed histopathology reports to identify phyllodes tumours with concurrent epithelial malignancy. Positive cases were reviewed by two specialist breast pathologists (PM, MW)

Results: Index case: 27 year old (y.o.) female with an enlarging breast lump, diagnosed on core biopsy as a B3 fibroepithelial lesion. Therapeutic mammoplasty revealed a 77mm borderline phyllodes tumour with multifocal grade 1 IDC (16mm ER7/PR6/HER2 2+/non-amplified; 5mm ER8/PR8/HER2 0) with 40mm low/intermediate grade DCIS, plus LCIS and florid benign breast changes. Only two other IDC associated phyllodes tumours were identified (incidence 0.00036 cases/pp/pa), both occurring as separate lesions in patients with concurrent recurrent borderline/malignant phyllodes tumours (case 2: 42 y.o. female, 186mm malignant phyllodes with 4.9mm grade 2 IDC in ipsilateral axilla; case 3: 46 y.o. female, grade 3 IDC and contralateral 190mm borderline phyllodes). In all 3 cases the IDC was not identified on imaging or core biopsy.

Conclusions: This case is the first report of multifocal IDC in a borderline phyllodes tumour and emphasises the need for careful pathological examination of large fibroepithelial lesions. The two entities differ in terms of overall management requiring dual review and coordination between sarcoma and breast surgical/oncology teams, to ensure wide margins to prevent local recurrence (PT) and nodal sampling/excision and endocrine treatment to prevent distant metastases long-term (IDC)[5] [6]

References

1. WHO Classification of Tumours. Breast tumours, 5th edition. Lyon: IARC Publications, 2019

2. Co M et al. Clinical Breast Cancer. 2018;18(3):e421–5

3. Widya RL et al. Cureus. 2017;9(11):e1815

4. Sin et al. J Clin Pathol. 2016 Apr;69(4):364-9

5. Tan PH. Mod Pathol. 2021;34:15–37

6. NICE guideline [NG101]: https://www.nice.org.uk/guidance/ng101

P16

Lymphohistiocytoid malignant mesothelioma (LHM) of the pleura, a diagnostically challenging rare variant of mesothelioma: a case report and institutional review.

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Malignant mesothelioma (MM) is rare, representing 1% of thoracic malignancies(1). The lymphohistiocytoid variant first described in 1988(2) represents <1% of MM and often poses diagnostic difficulties(3-7), mimicking lymphoma, poorly differentiated carcinoma, sarcoma, thymoma or ganglioneuroma. LHM is currently classified under both epithelioid and sarcomatoid variants of MM1. Little information exists on specific diagnostic biomarkers, optimal treatment or long term prognosis.

Purpose: To identify common clinical, radiological, histological and molecular features of potential diagnostic and predictive relevance.

Methods: We performed an institutional computer database review of LHM cases between 2010 and 2023. The slides of LHM cases were reviewed by two specialist thoracic pathologists (MS and MW) and clinical, radiological, immunohistochemical and NGS data reviewed to identify common features and potential diagnostic and predictive biomarkers.

Results: Between 2010 and 2023, we identified 982 cases of MM; 4 of which were diagnosed and confirmed on re-review to be LHM (0.4%). All 4 patients were male, mean age 70.8 years, with previous asbestos exposure common (75%). Presenting symptoms were vague including lethargy, weight loss, night sweats, shortness of breath. All patients had pleural thickening on imaging (cT3 (25%) or cT4 (75%) at diagnosis) and pleural effusion. Histological features in all cases consisted of a single cell discohesive population of malignant cells with dense lymphoid and histiocytic inflammatory cell infiltrate obscuring the malignant population. All cases were biphasic with high grade nuclear features, with necrosis (75%). The most useful markers were AE1/3 (75%), GATA-3 (30-75%), Cam 5.2 (15-90%). BAP1 nuclear staining was lost in 100% of cases. Positive staining for PD-L1 (>50% of cells) was seen in all cases. Mean survival was 12.3 months.

Conclusions: A broad cytokeratin panel and BAP1 are essential for diagnosis. Uniform PD-L1 positivity of > 50% may have treatment implications in the era of immunotherapy.

References

1. WHO classification of Tumours. Thoracic tumours, 5th edition. Lyon: IARC Publications, 2019.
2. Henderson DW et al (1988) Ultrastructural Pathology 12: 367-384.
3. Kawai T et al. (2010) Pathology International 60: 566-574.
4. Khalidi HS et al. (2000) Am J Clin Pathol 113: 694-654.
5. Galateau-Salle F et al (2007) Am J Surg Pathol 31: 711-716.
6. Yao DX et al. (2009) Ultrastructural Pathology 28(4): 213-288.
7. Matsubara T et al. (2017) Anticancer Research 37: 6937-6941.

P17

Retrospective Audit of Compliance to Royal College of Pathology Datasets in Lung Resection Specimen: A Three Year Audit.

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Full and accurate provision of pathology data in resection specimens is of vital importance in optimal patient care and management.
Purpose:This study aimed to assess the adherence of in-house reports to core data items in Royal College of Pathology (RCPath) cancer datasets, evaluate reporting timelines of lung resection specimens, and explore the prevalence of neoplasia and related parameters in patients undergoing lung resections at James Cook university hospital, Middlesbrough.
Method: A total of 638 lung resection cases over three years (January 2020-December 2022) were audited retrospectively. Data from each report was extracted, collated, and analysed using Microsoft Excel.
Results: Demographic information was recorded in all cases (100% compliance). Macroscopic core data items generally met or exceeded RCPath standards, except for the documentation of surgical access, which was reported in only 21% of cases. Microscopic core data items showed near-standard compliance, with a slightly lower performance in nodal metastasis record (77.9%). Reporting timelines were a concern, with only 21% of cases reported within the standardized timeframe. 18% of the resections had benign diagnosis. 5% were completion lobectomies and 8% were metastatic malignancies. 69% primary lung neoplasia included 42% adenocarcinomas,13% squamous cell carcinomas, 8% neuroendocrine neoplasm,1% lymphomas and 5% other diagnosis. The highest proportion of cases were in stage pT1b, and 14% had nodal metastasis at the time of resection. Only 7 cases had neoadjuvant treatment. Ancillary investigations were conducted in 166 cases, with 38 being squamous cell carcinoma and 128 adenocarcinoma.
Conclusion: The audit revealed that in-house reports are largely in compliance with RCPath datasets. Emphasizing the use of reporting proforma in cancer resection specimens is crucial. Adenocarcinoma emerged as the most common primary lung carcinoma in patients undergoing lung resection. This study underscores the importance of stringent adherence to reporting standards for comprehensive patient care.

References

Microsoft Word - G048 Dataset for histopathological reporting of lung cancer For Publication.docx (rcpath.org)

P18

The Diagnostic Yield of Ultrasound Guided Pleural Biopsy

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Pleural disease requires multi-disciplinary team input for accurate diagnosis. Ultra-sound guided pleural biopsy is relatively safe, with a diagnostic yield of 86% described in the literature[1].

Purpose
To determine the diagnostic yield of ultrasound guided pleural biopsy in Barnsley District General Hospital (BDGH). To establish the proportion of malignant biopsies with sufficient material for molecular testing. To document the number of cases requiring immunohistochemistry.

Method
All pleural biopsies referred from BDGH to the Sheffield Thoracic Pathology team were included. The cases were identified using histology SNOMED codes, with relevant histopathology reports analysed retrospectively. The biopsies were deemed 'diagnostic' when they led to disease identification; chronic inflammation, neoplasia, granuloma, asbestos-related pathology. The pathologist's commentary was taken into account.

Results
There were 80 pleural biopsies referred from BDGH to Sheffield from 2021 onwards. Of these, 56 had radiologically determined pleural lesions. 44 cases (79%) were diagnostic, with metastatic adenocarcinoma (17 cases) and mesothelioma (15 cases) the most frequent diagnoses. Immunohistochemistry was performed in 65%. Non-small cell lung carcinoma biopsies had sufficient material for molecular testing in 83% of cases. The average % tumour nuclei was 37%. Of those diagnosed as malignant mesothelioma, 14 cases were tested for BAP1 and 7 underwent CDNK2A FISH analysis.

Conclusions
The diagnostic yield of ultrasound guided pleural biopsy locally is on par with that of the literature. Most malignant cases contained sufficient material for further-work including immunohistochemistry and molecular testing. Ultrasound guided pleural biopsy remains an effective diagnostic tool in the work-up of pleural based disease.

References

1. Zhang Q, Deng MM, Li XL, Lu Y, Hou G. Thoracic ultrasound-guided real-time pleural biopsy in the diagnosis of pleural diseases: a systematic review and meta-analysis. Expert Rev Respir Med. 2023 Jul-Dec;17(9):805-813. doi: 10.1080/17476348.2023.2266377. Epub 2023 Oct 27. PMID: 37787485.

P19

Benign Metastasizing Leiomyoma in Lungs, Bronchus, and Lymph Nodes: a Case Report and Institutional Review

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Benign metastasizing leiomyoma (BML) is a rare disease, occuring in women with uterine leiomyomata, from which it is thought to arise via haematogenous spread, clonal derivation or hormonal influence(1,2). Differential diagnoses in the appropriate setting may include lymphangioleiomyomatosis, cystic pulmonary hamartoma, solitary fibrous tumour, schwannoma, leiomyoma, metastatic low grade leiomyosarcoma or GIST.

Purpose: The aim was to review our institutional database to identify cases of BML and to review clinical, radiological and pathological findings to identify disease characteristic, prognosis and outcome.

Results: Between 2010 and 2023, 8 cases of BML were identified, all in female patients, mean age 51.3 years (95% CI 45.0-57.7 years). Sites of involvement included lungs (5/8; 62.5%), bronchus (1/8; 12.5%) and extrathoracic lymph nodes (2/8; 25%). BML was identified incidentally in imaging in 6/8 (75%) and history of uterine leiomyoma was known in only 4/8 (50%) patients. Radiologically, BML appeared as non PET-avid in the lungs. Histologically, the BMLs were characterized as well-circumscribed lesions composed of bland spindle cell lesions with smooth muscle morphology, and lacking nuclear atypia or necrosis, showing positive staining for desmin, SMA, h-caldesmon, ER and PR. They were all negative for HMB-45, CD34, S100, CD117, DOG1, TTF1 and cytokeratins where tested. Ki67 proliferation index was low (1-5%) in all cases.

All cases were conservatively managed by radiological follow up or hormonal treatment. On clinical follow up (mean interval 77 months) only 1/8 (12.5%) developed a recurrence, which was surgically excised without further recurrence.

Conclusion: BML, although usually asymptomatic, can pose a diagnostic challenge especially when a previous history of uterine leiomyoma is not apparent. A wide immunohistochemical panel is essential to exclude differential diagnoses. Multidisciplinary management is required with treatment options including radiological surveillance, endocrine treatment (anti-oestrogens or aromatase inhibitors) or surgical resection for symptomatic patients(3,4).

References

1. WHO Classification of Tumours. Female genital tumours, 5th edition. Lyon: IARC Publications, 2019

2. Miller J et al. Ann Thorac Surg. 2016 Jan;101(1):253-8

3. Rivera JA et al. J Clin Endocrinol Metab. 2004 Jul;89(7):3183-8.

4. Lewis E et al. Fertil Steril 2013;99:2017–24

P20

Increased epithelial thickness and luminal narrowing in the small airways of smokers with Preserved Ratio Impaired Spirometry (PRISm)

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Poster Round 2 - 19 June, 1pm - 2pm

Background: PRISm is defined as a percent predicted forced expiratory volume in 1 second (FEV1%) <90% with a FEV1/ Forced Vital Capacity (FEV1/FVC) of >0.7. Studies have shown increased risk of chronic obstructive pulmonary disease (COPD) and mortality in patients with PRISm (1-3). COPD is characterised by poorly reversible airflow obstruction and small airways (SA) are the primary site of pathophysiology in COPD (4). However, SA have yet to be investigated in PRISm.

Purpose: This study will evaluate the presence of SA histology in PRISm patients as compared to matched smoking controls (age, sex, smoking status).

Methods: Analysis of SA histology was performed using H&E-stained sections of peripheral lung tissue from smokers without airflow obstruction (FEV1/FVC >0.7) separated into two groups: >100 FEV1% predicted (controls n=41) and <90 FEV1% predicted (PRISm n=48). In airways <2mm diameter (SA) we measured epithelial thickness, luminal narrowing, airway wall thickness and alveolar attachment numbers (AA).

Results: In all airways, epithelial thickness was significantly greater in the PRISm group compared to controls (p=0.0361). When airways were separated into tertiles based on airway diameters (<337mm, 337-756mm, >756mm) epithelial thickness (p=0.0023) and luminal narrowing (p=0.0377) were greater in PRISm compared to controls in the smallest airways; in <337mm tertile only. There were no significant differences in wall thickness and AA between groups.

Conclusions: Luminal narrowing and epithelial thickness are increased in airways with the smallest diameters in smokers with PRISm, despite no airflow obstruction. These changes indicate the early stages of SA disease in PRISm

References

1) Kanetake R, Takamatsu K, Park K, Yokoyama A. Prevalence and risk factors for COPD in subjects with preserved ratio impaired spirometry. BMJ Open Respir Res. 2022;9(1).
2) Higbee DH, Granell R, Davey Smith G, Dodd JW. Prevalence, risk factors, and clinical implications of preserved ratio impaired spirometry: a UK Biobank cohort analysis. Lancet Respir Med. 2022;10(2):149-57.
3) Wijnant SRA, De Roos E, Kavousi M, Stricker BH, Terzikhan N, Lahousse L, et al. Trajectory and mortality of preserved ratio impaired spirometry: the Rotterdam Study. Eur Respir J. 2020;55(1).
4) Koo HK, Vasilescu DM, Booth S, Hsieh A, Katsamenis OL, Fishbane N, et al. Small airways disease in mild and moderate chronic obstructive pulmonary disease: a cross-sectional study. Lancet Respir Med. 2018;6(8):591-602.

Cutaneous Leishmaniasis: diagnostic considerations in an interconnected world!

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Leishmaniasis, although endemic to most continents, is rarely encountered in the UK. Cutaneous leishmaniasis (CL) is caused by the bite of sandfly carrying the Leishmania sp. parasites. Early detection, diagnosis and species subtyping is essential in the management of patients, to ensure effective treatment and avoid complications such as mucocutaneous disease transformation.
Purpose & Methods
A 17-year-old was referred by his GP to an emergency skin clinic for a 4-month history of non-healing back and arm skin lesions, including several papules with focal ulceration and crusting. A punch biopsy was performed and sent for microbiological and histopathological analysis. After initial local laboratory assessment, the case was forwarded to the regional HCDP service to investigate possible haematolymphoid neoplasia.
Results
The ulcerated skin biopsy showed florid mixed acute and chronic inflammatory infiltrate at the ulcer-site, with patchy extension into the dermis. Immunostains confirmed the lymphoid component to be an admixture of predominantly reactive B-lymphocytes, plasma cells and large numbers of foamy histiocytes with interspersed unremarkable T-cells. Special stains were all negative for fungal organisms or bacteria.
Within the superficial ulcer slough and underlying histiocytes, there were large numbers of small to intermediate sized (2 to 4 micron) unicellular non-budding organisms (protozoa), with identifiable nuclei and possible kinetoplasts and no apparent flagella. These organisms appeared weakly positive for Gram and Giemsa. An H&E stained slide and material for PCR were sent to the Liverpool School of Tropical Medicine, whom confirmed Leishmania major.
Further exploration of the patients travel history, elicited travel to the Middle East 3-months prior to presentation.
Conclusions
This case highlights the need for a high index of suspicion for infectious pathology, particularly during H&E assessment. Utilisation of specialist infectious disease diagnostic services and PCR is invaluable in confirming and subtyping Leishmania, ultimately directly affecting clinical management of patients.

P24a

A Case of Cutaneous Malakoplakia

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Malakoplakia is an uncommon condition that is usually described among immunocompromised patients. The most common site affected is the bladder and there are very few cases reported involving the skin and subcutaneous tissue.
Common sites of cutaneous malakoplakia include the perianal, inguinal and scrotal regions, axilla, forehead, scalp, an injection site, eyelid, neck, hands, and wrists.

Purpose
We present a rare case of cutaneous malakoplakia in an elderly immunocompetent patient.

Methods
An 87-year-old man with a three-year history of intertrigo and pruritis of the groin and molluscum to inner thighs attended his GP for an itchy nodular lesion in the left groin. The patient did not have any risk factors to contribute to immune suppression. A skin swab from the affected area showed moderate growth of Coliform of doubtful significance; Herpes simplex PCR and syphilis PCR were not detected. A skin excision was performed to exclude basal cell carcinoma.

Results
Histology showed a predominantly histiocytic inflammatory cell infiltrate and the presence of Michaelis-Gutmann bodies, which was confirmed with immunohistochemistry and von Kossa stain. The infiltrate was confined within the superficial dermis. No microorganisms were identified using a Gram or Giemsa stain. The findings were consistent with cutaneous malakoplakia.

Conclusion
Though cutaneous manifestation of malakoplakia is rare, it should be considered in the differential diagnosis of skin lesions, especially in elderly and immunocompromised patients.

References

1. Elkeeb D. et al. A case of primary cutaneous malakoplakia in a cardiac transplant recipient. Journal of the American Academy of Dermatology, 2018;4-982.
2. Flann S., Norton J., Pembroke A.C. Cutaneous malakoplakia in an abdominal skin fold. Journal of the American Academy of Dermatology, 2010; 62(5)-896.
3. Po-Chao Chiu F., Haikowicz K., Taheri T., McCrystal D., Rodins K. CPC08: A case of malakoplakia: a pain in the neck. British Journal of Dermatology, 2021;185(1)-19.

P25

Quantifying Normality of Colorectal Mucosa; An automated assessment of lymphocyte density and lamina propria cellularity

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Poster Round 2 - 19 June, 1pm - 2pm

Background and Purpose
In the assessment of normal colorectal mucosa, there is a large variation in what is considered within normal limits with regards to lamina propria cellularity. Clinical assessments are made by subjectively quantifying the lamina propria. The digestive system is largest sites of immune interactions, and this may have implications for the development of disease. Therefore, it is valuable to be able to automatically quantify lamina propria cellularity to be able to define “normality” and gain new insights into the development of disease from normal colorectal mucosa.

Methods
This study utilised 2 digital image cohorts and 2 automated methods to assess the lamina propria. Firstly, a cohort of 78 scanned haematoxylin and eosin images from 6 patients underwent lymphocyte detection from a supervised deep learning algorithm with Medical Image Manager (MIM) software. The second cohort utilised 146 images from 10 patients that had undergone immunohistochemistry for MAOA to identify positive epithelial cells and negative lamina propria cells. Qupath was used to implement a pixel assessment based on blue and brown colouring to quantify the lamina propria cells.

Results
MIM was able to effectively identify lymphocytes in the H&E images, but further training of the model is ongoing. Qupath determined the median cell density of the lamina propria to be 3643 cells per mm2 (range 2808 to 4580 per mm2).

Conclusions
The lamina propria cell density of normal mucosa can be quantified through automated methods including deep learning or pixel classification for immunohistochemistry images. Deep learning methods may provide a higher quality detection but are more resource heavy for time and computing power. The Qupath analysis has shown a wide variation in what could be histologically normal. Further assessment of these cases is ongoing to determine factors that may be contributing to the variation observed.

Funded by PathSoc Grant

P26

Integrating digital histopathology slides of colorectal cancer biopsies into UK Biobank: a pilot study

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Poster Round 2 - 19 June, 1pm - 2pm

Background:
The UK Biobank is a prospective study of 0.5 million UK adults, aged 40-69 at recruitment between 2006 and 2010. The cohort includes questionnaire data, anthropometric measurements, and stored biological samples (blood, urine, and saliva) from which genomic and other 'omic' data have been derived. Follow-up for health outcomes is via linkage to routine national health records. After 10 years of follow-up, over 52,000 incident cancers have accrued, including over 5200 incident colorectal cancers.

Purpose:
To enhance the utility of the UK Biobank as a resource for cancer research, we conducted a pilot project to integrate more detailed histopathology information and digital slides for colorectal cancers.

Methods:
UK Biobank participants diagnosed or treated for colorectal cancer in a single hospital centre (Oxford) were identified and their original histopathology reports reviewed. Information was extracted regarding tumour characteristics from the original biopsy and/or excision (resection) specimen, including tumour histological type, grade, stage, and molecular testing. Where available, the original glass slides from the diagnostic biopsy were retrieved and scanned to create digital whole-slide images.

Results:
From an initial list of 199 UK Biobank participants with a pathology record of possible colorectal cancer in Oxford, 157 cases were identified with a relevant biopsy showing primary colorectal adenocarcinoma. Among them, 150 (96%) had slides that could be retrieved and scanned to make digital whole-slide images.

Conclusions:
This pilot study demonstrates the feasibility of retrieving and integrating more detailed information on tumour characteristics, and digital histopathology slides, for UK Biobank participants diagnosed with cancer. We aim to expand this work to include other cancer types and hospital sites. This will form an invaluable resource for researchers aiming to investigate factors associated with incidence and survival of specific morpho-molecular cancer histological types and develop clinically applicable AI algorithms to facilitate diagnosis and stratification for treatment.

P27

Validating a deep learning model for germinal centres through point counting data and immunohistochemical staining

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Poster Round 2 - 19 June, 1pm - 2pm

Background. Accumulating evidence suggests that the microarchitecture of metastasis-free tumour draining lymph nodes (LNs) may be a valuable indicator of the host anti-tumour response in oesophageal cancer (OeC). The presence of many germinal centres (GC) is one of key features of immunologically stimulated LNs. Recent deep learning (DL) methods were able to automatically detect GC in breast cancer (BC) LNs. It is unknown whether the BC LN-based model can also be used reliably in OeC LNs.
Purpose. Assess the automatic GC detection using a DL model against point counting and immunohistochemical staining as ground truths. Validate the DL model transferability from BC to OeC LNs.
Methods. The previously developed BC LN multi-scale U-Net model (MSA-U-Net) was used to obtain OeC GC predictions. The model performance was first tested using existing point counting data from 265 Haematoxylin and eosin (H&E)-stained metastasis-free LNs from the OE02 trial as ground truth. Secondly, the MSA-U-Net model was used to analyse 23 gastric cancer LNs using Ki67 staining of GCs as ground truth.
Results. Using OeC LN GC point counting data as ground truth, the MSA-U-Net model achieved 97.0% accuracy, 70.9% specificity and 81.3% sensitivity. False positive and false negative predictions were most commonly related to points located at the transition between GC and mantle zone. The mean±STD GC count per LN was 16±21 and 12±14 for ground truth and DL model, respectively. The GC count was highly correlated between MSA-U-Net model and Ki67-stained GCs (ground truth) with a correlation coefficient of 0.859, ($P<0.001$).
Conclusion. High evaluation scores for GC detection when comparing the DL model results with two different ground truths suggests that a DL model trained on breast cancer LNs is transferable to oesophageal cancer LNs.

P28

Deep-learning enabled combined measurement of tumour cell density and tumour infiltrating lymphocyte density as prognostic marker in colorectal cancer patients.

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Poster Round 2 - 19 June, 1pm - 2pm

Background:
Colorectal cancer (CRC) is common with high mortality despite improvements in management. The tumour microenvironment plays a crucial role in tumour progression. Tumour cell density (TCD) and tumour infiltrating lymphocytes (TILs) are independent prognostic markers in CRC. Measuring TCD and/or TILs using deep-learning on haematoxylin/eosin (H&E) whole slide images (WSIs) could save time and aid prognostication for patients.

Purpose:
We aimed to measure TCD and TILs using deep-learning (DL) on H&E WSIs and evaluate their prognostic value, both individually and in combination.

Methods:
CRC from 127 patients with available cancer-specific survival data were included in the study. TILs were quantified at the invasive margin using DL-based cell detection (Heterogenius-MIM software); TCD was quantified in a 9mm2 box at the luminal surface using a DL -based segmentation model. The relationship between TILs, TCD, and survival was analysed using TCD and TILs scores individually or in combination.

Results:
On univariate analysis, low-TILs (HR 3.83, 95%CI 1.47 to 9.98; p=0.006) and low-TCD (HR 2.66, 95%CI 1.30 to 5.42; p=0.007) were both associated with poorer prognosis. When included in a multivariate cox regression model adjusting the model for known prognostic clinicopathological factors (pT-stage, pN-stage, EMVI, and age), TCD and TILs were independently prognostic (HR 2.65, 95%CI 1.08-6.47, p=0.032; HR 2.97, 95%CI 1.03-8.61, p=0.044, respectively). Patients with a combined score of TCDlowTILslow (n=15) had the poorest survival in univariate analysis (HR 13.2 95%CI 3.67-47.77, p<0.001). TCDlowTILslow remained significant (HR 7.65 95%CI 1.73-33.82, p=0.007) when compared to TCDhighTILshigh in the multivariate cox regression model.

Conclusion:
Luminal surface TCD and invasive margin TILs measured on H&E using DL-based methods are both independently prognostic in CRC and patients with TCDlowTILslow are at highest risk of death. DL-based methodology for both biomarkers is objective and reproducible and could be used as an adjunct alongside routine clinical practice.

P29

Predicting Genetic Ancestry from Histopathology Slides in the TCGA Cohort: A Transformer-Based Approach

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Several studies have previously investigated the potential role of patients' ancestry in cancer risk and development. Most of the studies however solely rely on self-disclosed ancestry which can be biased due to social norms and subjective perceptions. To mitigate this bias, Carrot-Zhang et al. [1] systematically determined genetic ancestry from the genomic ancestry calls of patients in the cancer genome atlas (TCGA) cohorts, which we incorporated into our study.

Purpose
We aim to predict genetic ancestry of patients (provided by Carrot-Zhang et al.) from histological slides with the help of deep learning (DL). Our objective is to investigate potential differences in cellular composition across different genetic ancestries within three cancer types (BRCA, COADREAD, and KIRC). Leveraging this knowledge could lead to improvements in the predictive capabilities of our existing DL models for clinical feature prognosis.

Methods
We employed a transformer-based DL end-to-end pipeline using our open-source model (STAMP: https://github.com/KatherLab/STAMP) to predict the ancestry of patients (EUR/AFR ancestry) from their histological whole slide images (WSI). Further, to mitigate site-specific bias inherent in the TCGA cohorts, we implemented a quadratic programming method of crossfold validation (3-fold) proposed by Howard et al. [2].

Results
For the BRCA cohorts (n=823) European ancestry was classified with a mean area under the receiver operating curve (AUROC) of 0.74. For COADREAD (n=398) and KIRC (n=443) cohorts, the model performed moderately with mean AUROC for European ancestry at 0.67 and 0.65 respectively. Moreover, our approach effectively addresses site-specific bias seen in TCGA cohorts, enhancing the future generalizability of our findings.

Conclusions
This study represents a novel approach in predicting genetic ancestry directly from histopathology slides using deep-learning models. Preliminary results indicate moderate performance across the three cancer types studied. Further validation is required on other test datasets to better ascertain generalizability and robustness of results.

References

C. N. D. J. e. a. Carrot-Zhang J, "Comprehensive Analysis of Genetic Ancestry and Its Molecular Correlates in Cancer.," Cancer Cell, vol. 37(5), pp. 639-654, 2020.
D. J. K. S. e. a. Howard FM, "The impact of site-specific digital histology signatures on deep learning model accuracy and bias.," Nature Communications, vol. 12, no. 1, p. 4423, 2021.

P30

Optimising the cellular pathology laboratory workflow during the digital pathology transition: film vs. glass

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Poster Round 2 - 19 June, 1pm - 2pm

Introduction. Digital pathology is rapidly being introduced within cellular pathology departments UK-wide. The laboratory workflow is being critically analysed to ensure that whole slide image (WSI) production is to a diagnostic standard and not impacting turnaround times. Resin-coated plastic film coverslipping has been proposed to save time and reduce the file size of WSI at a minimally increased cost compared to glass.

Aim. This study tested the feasibility of Sakura Tissue-Tek® Coverslipping film in our laboratory and evaluated the quality of the WSI produced compared to our standard workflow.

Methods. Two sections from 26 representative formalin-fixed paraffin-embedded tissue blocks were cut. One was processed using the film coverslip and the other with glass. The digital WSI were blindly analysed by three consultant histopathologists and nine scientists.

Results. The film coverslip workflow was feasible in our laboratory. The workflow was quicker and had fewer steps. Both methods produced 100% diagnostic quality WSI. Film coverslipping produced higher quality WSI compared to glass in 61.5% and 57.7% of cases analysed by scientists and pathologists respectively. Air bubbles were more common with glass coverslips compared to film - 11.5% vs. 0%.

Conclusions. Film coverslipping is feasible in our laboratory and produces diagnostic-quality WSI. These results suggest that the image quality may be improved when using film coverslips compared to glass consistent with emerging data from other centres. The realised time savings, estimated at 9 days per year for our laboratory, and reduction in data storage requirements will be the scope of future analysis.

References

Ferreira D, Vale J, Curado M, Polónia A, Eloy C. The impact of different coverslipping methods in the quality of the whole slide images used for diagnosis in pathology. J Pathol Inform. 2022;13:100098.

P31

Self-Supervised Learning Reveals High-Risk Morphologies in Mesothelioma

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Mesothelioma continues to carry a dismal prognosis, with a median overall survival of 12 months. Recently, more detailed morphological classifications have been published, recognising diversity in the disease and its effect on prognosis in an attempt to improve patient stratification. Self-supervised learning can be flexibly applied to histological images to answer such questions. Our pipeline, histomorphological phenotype learning (HPL), is able to summarise histological features from whole slide images (WSIs) into quantitative vectors. Histological features are encoded into clusters of recurrent appearances, termed histomorphological phenotype clusters (HPCs). Each WSI can then be expressed as a compositional vector of HPCs.

Purpose: We aim to profile the morphological spectrum of mesothelioma using HPL in order to improve risk stratification.

Methods: We trained HPL using 2100 WSIs of surgical mesothelioma resections from 389 patients. We examined the ability of HPCs to predict morphological subtype (epithelioid or biphasic/sarcomatoid) using logistic regression. We generated risk scores for overall survival using Cox proportional hazards. We subsequently repeated this exercise on an external validation dataset from the Cancer Genome Atlas (TCGA), which is comprised of a further 74 patients.

Results: The model yielded 41 HPCs. These clusters were able to predict histological subtype with an AUC of 0.87-0.9 in internal test sets. Furthermore, certain HPCs were strongly associated with survival. Prognostication using HPCs achieves a C-index of 0.61-0.65 in internal test sets and 0.62-0.64 in TCGA. HPCs with appearances dominated by sarcomatoid morphology, fibroblast-dense stroma and areas of brisk lymphocyte infiltration were associated with poor prognosis.

Conclusions: Self-supervised learning can give us insight into the breadth of morphologies seen in mesothelioma and their implications on survival. We demonstrate that rather than just histological pattern, stromal appearances have a strong impact on prognosis.

P33

A Rare Case of Primary Anorectal Melanoma

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Poster Round 2 - 19 June, 1pm - 2pm

Background:
Primary mucosal melanomas are rare, comprising approximately 1.4% of all melanoma cases. They carry a worse prognosis than cutaneous melanomas. A precursor lesion for anorectal melanomas is yet to be identified, but human immunodeficiency virus (HIV) infection has been associated with it.[1]

This case study is of a 73 year old female who presented with an anorectal lesion. A biopsy was undertaken with the clinical query of suspected malignancy, with clinical differential diagnoses including adenocarcinoma and squamous cell carcinoma. She had a past medical history of a basal cell carcinoma, but no documented history of melanoma or other malignancy.

Results/Findings:
The biopsy showed abundant ulcer slough with fragments of ulcerated mucosa which was infiltrated by sheets of polygonal cells - these had pleomorphic, hyperchromatic nuclei and eosinophilic cytoplasm. The morphology raised the possibility of a poorly differentiated squamous cell carcinoma.

A wide differential was considered including squamous cell carcinoma, adenocarcinoma, lymphoma, and melanoma. Immunohistochemistry was undertaken. The tumour cells were positive for SOX10, MelanA, HMB45, and negative for CD45, p40, and CD45. The immunophenotype was in keeping with melanoma. There was no history of a cutaneous lesion to suggest metastasis.

Conclusions:
This case highlights the importance of recognising slightly atypical morphologies and the judicious use of immunohistochemistry to confirm and refute differential diagnoses, and consider melanoma mimics. Primary mucosal anorectal melanoma is rare and could have been missed, had the pathologists not considered this differential diagnosis.

References

[1]https://www.pathologyoutlines.com/topic/skintumormelanocyticmucosalmelanoma.html

P34

Disseminated spread of a well-differentiated neuroendocrine tumor in the small bowel

potentially associated with a HOXB13 G84E mutation

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Neuroendocrine tumors (NET) of the small bowel are known to sometimes occur as multifocal tumors but do not typically occur as part of a tumor predisposition syndrome. There is only a limited number of cases with extensive primary NET reported in the literature and none as extensive as presented here.
Purpose
We present a rare case of a patient with more than 40 tumor nodules in the small bowel. These are potentially associated with an HOXB13 G84E mutation, which is known to be linked with an elevated risk for prostate cancer and might be associated with other types of cancer in male individuals.
Methods
Routine work-up of a right hemicolectomy specimen including immunohistochemical staining (Chromogranin A, Synaptophysin, Ki-67, Serotonin, CDX2, SSTR2) and NGS-550 gene-panel analysis.
Results
CASE DESCRIPTION: A male patient in his 60s presented for right hemicolectomy due to an endoscopically non-resectable adenoma of the ascending colon. Multiple smaller masses in the ileum as well as conspicuous mesenterial nodules were noticed intraoperatively and a 50-cm segment of the small bowel was resected.
Pathologic examination revealed more than 40 tumor nodules of a well-differentiated NET in the terminal ileum, measuring 0.5 to 2.5 cm each, as well as multiple lymph node metastases. Immunohistochemistry showed positivity for Chromogranin A, Synaptophysin, CDX2, Serotonin, SSTR2 and a proliferation index of 2%. Next generation sequencing revealed the potentially pathogenic HOXB13 mutation (G84E) in a suggestive allele frequency of 46%. Follow-up staging with DOTA-PETCT suggests an even more extensive disseminated tumor spread throughout the remaining small bowel.
Conclusion
This is a very rare case of a multifocal neuroendocrine tumor of the small bowel with disseminated spread.
The detection of a HOXB13 could be causally related. Further examinations of the next of kin could provide additional information after appropriate human genetic counseling.

P35

Lymph Node Yield In Colorectal Cancer Resection Specimens

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Poster Round 2 - 19 June, 1pm - 2pm

Abstract for Lymph Node Count in Colorectal Cancer

The Royal College of Pathologists publishes guidance on histopathological reporting of colorectal cancer to ensure quality standards. The guidance includes the recommendation for the median of examined lymph nodes in a case to be at least 15 (updated in April 2023 from the previous 12). Data was gathered regarding lymph node count in colorectal cancer cases in the Pathology Department at Aberdeen Royal Infirmary from 30/05/2023 to 20/12/2023, for a total of 118 cases. The overall median number of lymph nodes was 23, mean was 25.08, and mode was 21. The median of lymph nodes adjusted for neoadjuvant therapy was 23, mean was 25.54, and mode was 21. This audit showed that during the specified time period the Pathology Department at ARI adhered to the RCP guidance on colorectal cancer. This is a success for patients with colorectal cancer in terms of ensuring quality of care. Continued discussion and audits on this subject will help propagate guidance adherence and good standards of practice.

P36

Nicorandil Induced Gastrointestinal Ulceration and Perforation: An Important Clinical and Histopathological Consideration

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Nicorandil is a long-acting nitrate that is widely prescribed as an alternative regime for stable angina management in UK[1], however its severe side effects are not well recognised despite being well documented.

Purpose
This is a case of a patient who was on long term treatment with Nicorandil and despite several presentations to hospital with bleeding per rectum (PR) and melaena, the potential link between the two was not made during these repeated encounters. Ultimately, the patient presented with peritonitis secondary to multiple bowel perforations from which they subsequently died.

Method
We examined the historical events of this unusual case, and explored the histopathological features of the gastrointestinal ulceration. We looked at the clinical presentation, the macroscopic findings seen on a bowel resection and the microscopic features seen in this condition.

Results
Clinically, this patient presented with recurrent episodes of PR bleeding and melaena. Despite some initial investigations, no cause could be found. This continued until a right hemicolectomy was required due to multiple bowel perforations. On macroscopy, this showed multiple perforation sites located in the terminal ileum with associated mucosal ulceration and stricturing. Of note, the ulceration had a sharp well demarcated linear appearance. On microscopy, the areas of ulceration shows a loss of mucosa with associated mixed inflammation and focal perforation. The adjacent mucosa showed mild reactive changes only. The intervening mucosa was unremarkable and there were no features of alternative pathology including inflammatory bowel disease, ischaemia, vasculitis or infective causes.

Conclusions
Whilst some causes of gastrointestinal bleeding were considered, some medications are easily overlooked as potential causes. Whilst their side effects may be rare, when a patient has recurrent presentation with PR bleeding or melaena then always consider unusual causes. Histopathologically, this is a diagnosis of exclusion given the lack of definitive pathological findings.

References

1. National institute for Health and Care Excellence. Stable angina: management. https://www.nice.org.uk/guidance/cg126 [Accessed 25th January 2024]

P37

Characterisation of antigen sampling Microfold (M) cells in the gastrointestinal tract: A role for M cells in Crohn's disease?

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Microfold (M) cells are a rare subset of specialised enterocytes found overlying gut-associated lymphoid tissue (GALT) that facilitate the transcytosis of microorganisms across the intestinal barrier.[1] This critical process generates protective IgA immune responses in lymphoid tissues.[2],[3] Recent murine data shows that a loss of M cells results in an increase in the severity of colitis.[4] Recent single cell sequencing data suggests M cells may be similarly reduced in Crohn's disease (CD).[5]

Aim: To characterise the role of M cells in CD pathogenesis. We hypothesise that a loss of M cell function contributes to the initiation of inflammation in early CD.

Methods: We formed a large tissue cohort of 75 CD patients and 100 controls with biopsies from the ileum and colon. We established methods to quantify M cell density, manually and using QuPath bioimage analysis software, to analyse dual IHC. We have developed a human ileal organoid platform to study functional interaction with CD-associated pathobionts.

Results: We show that M cells express the key bacterial FimH receptor, GP2, throughout the gastrointestinal tract in humans, including within the tonsil, GI tract and appendix. The ubiquity indicates an essential role in host-bacterial engagement across mucosal surfaces. Our pilot data (n=21 lymphoid follicles per group) shows a reduction in mature M cells in inflamed ileal CD tissue compared to control tissue, averaged over 0.01mm² of lymphoid tissue (3.35 versus 7.20 GP2+ M cells, p= 0.02). We successfully show in-vitro M cell differentiation in ileal organoids from CD and controls via RANK-L exposure, providing an important platform on which to study transcytosis in this rare cell type.

Summary: We present our work characterising M cells in the crucial gut microbiome-host immune system axis in Crohn's disease for the first time. This project is funded by a Jean Shanks/Pathological Society Clinical PhD Fellowship.

References

[1] Hase K, Kawano K, Nochi T, Pontes GS, Fukuda S, Ebisawa M, et al. Uptake through glycoprotein 2 of FimH+ bacteria by M cells initiates mucosal immune response. Nature. 2009 Nov;462(7270):226–30.

[2] Donaldson DS, Pollock J, Vohra P, Stevens MP, Mabbott NA. Microbial Stimulation Reverses the Age-Related Decline in M Cells in Aged Mice. iScience. 2020 Jun 26;23(6):101147.

[3] Mörbe UM, Jørgensen PB, Fenton TM, von Burg N, Riis LB, Spencer J, et al. Human gut-associated lymphoid tissues (GALT); diversity, structure, and function. Mucosal Immunol. 2021 Jul;14(4):793–802.

[4] Kimura S, Nakamura Y, Kobayashi N, Shiroguchi K, Kawakami E, Mutoh M, et al. Osteoprotegerin-dependent M cell self-regulation balances gut infection and immunity. Nat Commun. 2020 Jan 13;11(1):234.

[5] Maddipatla SC, Kolachala VL, Venkateswaran S, Dodd AF, Pelia RS, Geem D, et al. Assessing Cellular and Transcriptional Diversity of Ileal Mucosa Among Treatment-Naïve and Treated Crohn's Disease. Inflamm Bowel Dis. 2023 Feb 1;29(2):274–85.

P38

Genomic Pattern Analysis for Accurate MSI Prediction

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Microsatellite instability (MSI) is a prevalent genomic aberration in gastrointestinal (GI) cancers. Importantly, it has implications for patient therapy, in particular, the efficacy of immunotherapy. While MSI detection traditionally relies on immunohistochemical (IHC) staining, PCR, or computational analyses of next-generation sequencing data, deep learning (DL) offers a novel approach by identifying complex genomic patterns indicative of MSI.

Purpose: Given that up to ten percent of GI cancer patients may be inaccurately diagnosed regarding their MSI status, employing DL could be a possibility to enhance diagnosis accuracy. Furthermore, DL could refine our understanding of the biological underpinnings, surpassing traditional methods that rely on manually selected features.

Methods: We employed an attention-based multiple instance learning framework to predict the MSI status of patients from small somatic variants extracted from whole exome sequencing data. For this we used 1300 patients of the Cancer Genome Atlas (TCGA), with consensus MSI statuses of PCR, MSIsensor, and MANTIS scores. Focusing initially on consensus cases allowed the model to identify mutation patterns and sequence contexts associated with MSI, which informed subsequent analysis of borderline cases.

Results: The model demonstrated high predictive accuracy for MSI, highlighting tumor mutational burden as a known yet non-exclusive indicator. Notably, it unveiled specific sequence context patterns linked to MSI and reclassified non-consensus cases for in-depth case study analysis.

Discussion: This DL methodology shows promise in enhancing the accuracy of MSI classification in GI cancers, potentially improving patient management and shedding light on mutation mechanisms driven by mismatch repair deficiencies. Future studies incorporating whole genome and IHC data could further validate and expand our findings.

References

Title: Genomic Pattern Analysis for Accurate MSI Prediction

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P39

Gastric angiomyolipoma - a case report

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Gastric angiomyolipomas are very rare with only four case reports in the literature (1-4). These four cases have all occurred sporadically and arisen in the gastric submucosa. Here we present a case of a subserosal gastric angiomyolipoma (G-AML) that has arisen in a patient with tuberous sclerosis complex.

Case report: A 39 year old man was found to have a gastric lesion at MRI. He had no abdominal symptoms and this was an incidental finding on an MRI was performed as follow up for a renal cyst and multiple renal angiomyolipomata. The patient has a known history of tuberous sclerosis complex with a proven TSC1 mutation. A gastric wedge resection was performed which contained a 14.5x10.5x6mm subserosal lesion that on sectioning was multinodular and predominantly solid with focal cystic and haemorrhagic areas. Microscopy showed a lesion comprising admixed mature fat, thick walled poorly organised vessels which lacked normal elastic fibres, and smooth muscle fibres. There were groups of epithelioid and spindled cells with myoid morphology which lack any significant nuclear atypia. Immunohistochemistry was positive with SMA, Caldesmin (focal), HMB45 (focal), Desmin (very focal), and ER (weak and focal). S100 and Melan A only stained very occasional cells. The Ki67 proliferation fraction is very low (<1%).

Conclusion: While there was only focal staining with HMB45, S100, and Melan A, this case had the typical morphology of an angiomyolipoma and occurred in a patient with known tuberous sclerosis with multiple renal angiomyolipomata. At 14.5cm in size, this is the largest G-AML reported to date in the literature as largest previously reported was 9cm (1). This is also the only reported case to arise in the gastric subserosa.

References

1. Achutha Ail D, Rachel Paulose R, Kalitha A, Jojo A, G U. Gastric Angiomyolipoma Masquerading as Gastric Malignancy. ACG Case Rep J. 2018 Dec 19;5:e96. doi: 10.14309/crj.2018.96. PMID: 30643840; PMCID: PMC6317839.

2. Aggarwal S, Gupta P, Sharma S. Laparoscopic management of gastric angiomyolipoma: case report and review of literature. Surg Laparosc Endosc Percutan Tech. 2012 Feb;22(1):e21-4. doi: 10.1097/SLE.0b013e31823cd1f5. PMID: 22318071.

3. Helwig K, Talabiska D, Cera P, Komar M. Gastric angiomyolipoma: a previously undescribed cause of upper GI hemorrhage. Am J Gastroenterol. 1998 Jun;93(6):1004-5. doi: 10.1111/j.1572-0241.1998.300_s.x. PMID: 9647039.

4. Veera RR, Bemalgi SR. Gastric Angiomyolipoma, a Very Rare Cause of Upper Gastrointestinal Bleeding: A Case Report and a Brief Review of Literature. Gastroenterology Res. 2012 Oct;5(5):200-204. doi: 10.4021/gr486e. Epub 2012 Sep 20. PMID: 27785206; PMCID: PMC5051102.

P40

The T-cell Receptor Gamma Germline Vγ4-HV4 Region Is Not Significantly Associated With Coeliac Disease in a Study of 374 Samples

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Coeliac disease (CeD) is an autoimmune disorder triggered by dietary gluten. It is characterised by T-cell mediated inflammation and destruction of the small intestinal lining, leading to malabsorption and malnutrition. γδ T-cells are implicated in CeD pathogenesis. These cells have an affinity for binding butyrophilin family molecules, which are hypothesised to maintain the γδ T-cell compartment. Vγ4+/Vδ1+ intraepithelial lymphocytes have been shown to bind BTNL3/BTNL8 heterodimers in the small intestine, via the the Vγ4 HV4 region. During active CeD, BTNL3/BTNL8 heterodimer expression is temporarily lost, leading to a permanent shift in the small intestinal γδ T-cell population.
Purpose
To investigate whether the loss of the interaction between Vγ4+ T-cells and BTNL3/BTNL8 heterodimers during active CeD could be due to Vγ4 HV4 region germline polymorphism in CeD patients.
Methods
Genomic DNA of 221 control and 153 CeD samples was collected and the Vγ4 HV4 region was sequenced and analysed using MiXCR. The resulting Vγ4 HV4 region amino acid (AA) sequences were compared between CeD and controls using a Fisher's exact test.
Results
76% (116/153) of CeD patients and 91% (202/221) of controls were homozygous for the Vγ4 wild type (WT) HV4 sequence (KYDTYGSTRKNLRMIL), with only 3 CeD (2%) and 10 control (4.5%) subjects lacking any WT HV4 sequences. There were no significant differences in the proportion of germline HV4 AA sequences found in CeD patients when compared to controls (Fisher's test, p value=0.2648).
Conclusions
Variation in the germline Vγ4-HV4 region does not confer significant CeD risk. Other risk factors remain to be identified that predispose to the shift in the γδ T-cell repertoire during chronic inflammation in the small intestine of CeD patients.

P42

The Effects of Neural Cell Adhesion Molecule 1 (NCAM1) on the Development of Gastrointestinal Adenocarcinoma

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Poster Round 2 - 19 June, 1pm - 2pm

Background: The neural cell adhesion molecule-1 gene (NCAM1) encodes the cell adhesion glycoprotein NCAM. It is expressed in the nervous system & regulates homophillic interactions between neurons, resulting in neuronal development via outgrowth of neurites. NCAM1 is a known oncogenic marker for acute myeloid leukaemia & has also been identified as a susceptibility gene for the development of irritable bowel syndrome, as well as mood & anxiety disorders, via a suggested shared pathogenic pathway within the brain-gut axis. The purpose of this study is to assess how wild-type NCAM1 affects the development of stomach adenocarcinoma (STAD) via its immunogenic functions & investigate its role as a potential molecular link between IBS & adenocarcinoma development, via the brain-gut axis. Methods: A bioinformatics approach was taken via the use of tools including KM Plotter, TISIDB & Human Protein Atlas to collect survivability data relating to NCAM1 expression in STAD development.
Results: NCAM1 is evenly expressed at each stage of STAD & reduces overall survivability, particularly when mutation burden is high & at stage 3 of cancer development. Low mutation burden, produced negative prognostic effects, dependent on enriched CD4+ & regulatory T cells. A positive prognostic effect was dependent on decreased NK & T2 T-helper cells. In contrast, at high mutation burden & stage 3 of cancer development, negative prognostic effects were not affected by immune cell enrichment or depletion.
Conclusion: NCAM1 has an overall negative prognostic effect on STAD, however these effects appear to be regulated independent of the immune system. Further research is recommended to investigate a possible neurological component that may be promoting this effect.

References

1) Genome-wide analysis of 53,400 people with irritable bowel syndrome highlights shared genetic pathways with mood and anxiety disorders, PMID: 34741163 [Accessed Jan 2024]
2) KM Plotter https://kmplot.com/analysis/ [Accessed Jan 2024]
3) The Human Protein Atlas https://www.proteinatlas.org/ [Accessed Jan 2024]
4) TISIDB http://cis.hku.hk/TISIDB/browse.php [Accessed Jan 2024]

P43

Histological Growth Patterns in Mucinous and Non-Mucinous Colorectal Cancer Liver Metastasis

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Poster Round 2 - 19 June, 1pm - 2pm

Introduction
Colorectal cancer liver metastases (CRCLM) show distinct histological growth patterns (HGPs) characterised by the distinct interface between cancer cells and adjacent normal liver parenchyma. These include desmoplastic pattern, pushing pattern, replacement pattern and two rarer patterns (sinusoidal and portal). It has been shown that patients with a replacement growth pattern have a poorer prognosis, in comparison to an improved prognosis in desmoplastic growth pattern. While traditionally mucinous adenocarcinomas were associated with a poorer prognosis than non-mucinous adenocarcinomas, more recent studies suggest that this may not be the case. We aim to assess histological parameters including HGPs comparing mucinous and non-mucinous adenocarcinoma CRCLM.
Methods
Patients with mucinous CRCLM undergoing liver resection were identified and matched 1:3 to patients with adenocarcinoma NOS CRCLM over a 12 year period.
HGPs were allocated based on the "International consensus guidelines for scoring the histological growth patterns of liver metastasis". Clinicopathologcal parameters were compared in both the metastatic lesion and the primary resection in mucinous and in non-mucinous tumours.
Results
A total of 25 patients with mucinous CRCLM underwent surgery over the 12-year period and were matched to 75 patients with adenocarcinoma NOS.
Desmoplastic, pushing, replacement and mixed growth patterns were seen in a similar rates across both mucinous and non-mucinous adenocarcinomas.
Mucinous carcinomas were associated with a higher rate of PDCs within the tumour ($p = <0.0001$) and a lower rate of budding and PDCs at the invasive front ($p=0.019$) when compared with non-mucinous tumours.
Conclusion
Mucinous CRCLM show distinct histological characteristics when compared with adenocarcinoma NOS. Some favourable histological characteristics were found in the mucinous group (lower rates of budding and PDCs at invasive front). There is a high rate of intratumoural PDCs within mucinous tumours (92%) but this is not reflected at the invasive front. Further studies are required to assess this.

References

1. van Dam PJ, van der Stok EP, Teuwen LA, Van den Eynden GG, Illemann M, Frentzas S, Majeed AW, Eefsen RL, Coebergh van den Braak RRJ, Lazaris A, Fernandez MC, Galjart B, Laerum OD, Rayes R, Grünhagen DJ, Van de Paer M, Sucaet Y, Mudhar HS, Schvimer M, Nyström H, Kockx M, Bird NC, Vidal-Vanaclocha F, Metrakos P, Simoneau E, Verhoef C, Dirix LY, Van Laere S, Gao ZH, Brodt P, Reynolds AR, Vermeulen PB. International consensus guidelines for scoring the histopathological growth patterns of liver metastasis. Br J Cancer. 2017 Nov 7;117(10):1427-1441. doi: 10.1038/bjc.2017.334. Epub 2017 Oct 5. PMID: 28982110; PMCID: PMC5680474.
2. Nielsen, K., Rolff, H., Eefsen, R. et al. The morphological growth patterns of colorectal liver metastases are prognostic for overall survival. Mod Pathol 27, 1641–1648 (2014). https://doi.org/10.1038/modpathol.2014.4
3. Ian paper.

4. Kang H, O'Connell JB, Maggard MA, Sack J, Ko CY. A 10-year outcomes evaluation of mucinous and signet-ring cell carcinoma of the colon and rectum. Dis Colon Rectum. 2005 Jun;48(6):1161-8. doi: 10.1007/s10350-004-0932-1. PMID: 15868237.
5. Scheele J, Stang R, Altendorf-Hofmann A, Paul M. Resection of colorectal liver metastases. World J Surg. 1995 Jan-Feb;19(1):59-71. doi: 10.1007/BF00316981. PMID: 7740812.
6. Fernandez FG, Drebin JA, Linehan DC, Dehdashti F, Siegel BA, Strasberg SM. Five-year survival after resection of hepatic metastases from colorectal cancer in patients screened by positron emission tomography with F-18 fluorodeoxyglucose (FDG-PET). Ann Surg. 2004 Sep;240(3):438-47; discussion 447-50. doi: 10.1097/01.sla.0000138076.72547.b1. PMID: 15319715; PMCID: PMC1356434.
7. Adson MA, van Heerden JA, Adson MH, Wagner JS, Ilstrup DM. Resection of hepatic metastases from colorectal cancer. Arch Surg. 1984 Jun;119(6):647-51. doi: 10.1001/archsurg.1984.01390180015003. PMID: 6732473.
8. Lupinacci RM, Mello ES, Coelho FF, Kruger JA, Perini MV, Pinheiro RS, Fonseca GM, Cecconello I, Herman P. Prognostic implication of mucinous histology in resected colorectal cancer liver metastases. Surgery. 2014 Jun;155(6):1062-8. doi: 10.1016/j.surg.2014.01.011. Epub 2014 Feb 5. PMID: 24856126.
9. Hugen, Niek Velde, Cornelis Bosch, Steven Fütterer, Jurgen Elferink, Marloes Marijnen, Corrie Rutten, Harm Wilt, Johannes Nagtegaal, Iris
2015/01/07 Modern Treatment of Rectal Cancer Closes the Gap Between Common Adenocarcinoma and Mucinous Carcinoma 25 10.1245/s10434-014-4339-5 Annals of Surgical Oncology

P44

Rectal squamous cell carcinoma arising in an ulcerative colitis patient – a case report

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Rectal squamous cell carcinoma (SCC) is extremely rare, and represents <0.1% of malignant colorectal (CRC) cases. This case illustrates a rare SCC developing on the background of ulcerative colitis.

Purpose: To illustrate the challenges in diagnosing and staging primary rectal SCC and appreciating therapeutic implications.

Methodology: Following a biopsy report of suspicious of SCC, a panproctocolectomy from a 50 -year old man with known ulcerative colitis of 17 years, was examined. Histopathology was reported as per protocol at a tertiary institution. Previous clinical, pathological, radiological and follow-up data was interrogated from online hospital records.

Results: Macroscopically the rectum showed multiple small white coloured nodules (largest measuring 2mm), 35mm and 45mm from anal verge and distal anal resection margin respectively. Microscopy showed extensive squamous metaplasia, squamous dysplasia and early pT1 SCC (either by rectal or anal carcinoma staging systems) in the rectum with no AIN. The background colon showed no active colitis. Tracking the evolution of the lesion, three years post diagnosis of UC, squamous dysplasia was seen in a rectal biopsy (interpreted as possible AIN; no anal biopsy sampled). The patient opted for surveillance only. Guided on endoscopic suspicion, interim biopsies re-reported squamous dysplasia, 8 years later and final operative sample revealed SCC, 3 years since. Given the history of ulcerative colitis, radiotherapy was contraindicated. The patient is currently well.

Conclusion
Primary SCC of the rectum may arise on the background of chronic inflammatory diseases, like UC, literature suggesting that ~50% of such cases, occur in the rectum. An anal biopsy alongside rectal samples would ensure that the rectal site is identified early. TNM staging guidelines are not clear; hence the worst of the T stage for rectal/anal cancers could be used, but other prognostic parameters are preferably adjudged per CRC protocols.

References

Yasuyuki Yokoyama,Ryuichi Wada,Takeshi Yamada, Eiji Uchida and Zenya Naito et at. A case of ulcerative colitis with squamous cell carcinomas and multiple foci of squamous dysplasia: Pathology International 2017; 67: 414–418

P45

A Close-Up on Sickle Cell Nephropathy through Electron Microscopy: A Case Report

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Sickle Cell Nephropathy (SCN) is a well-recognised complication of sickle cell disease (SCD) which encompasses a spectrum of clinical and histopathological renal manifestations. Diagnosing SCN through renal biopsies can be challenging due to variable and sometimes overlapping pathological changes. In such cases, a holistic approach integrating the clinical history is pivotal to the assessment.

Purpose: This study aims to showcase the histopathological features of SCN at an ultrastructural level through a detailed exploration of electron microscopy (EM) findings in a renal biopsy of a 45-year-old male with known SCD. Information from light microscopy (LM) and direct immunofluorescence (DIF) studies will also be discussed for a comprehensive view.

Methods: An examination of the patient's clinical history and histopathological findings took place. In addition to the various SCD-related organopathies, the patient was known to have chronic kidney disease and proteinuria. A significant increase in the nephrotic range of proteinuria prompted an elective renal biopsy to investigate possible causes.

Results: Histopathological examination of the glomeruli revealed focal segmental glomerular sclerosis (FSGS), glomerular basement membrane (GBM) thickening and wrinkling, and severe podocyte foot process effacement. Capillaries appeared congested and some contained small aggregates of sickled erythrocytes. Tubular injury and atrophy, interstitial fibrosis, in addition to the deposition of hemosiderin in both tubules and the interstitium was present. No electron dense deposits on EM and no immune reactants on DIF were identified, further affirming the diagnosis of SCN.

Conclusions: The integration of microscopic findings from LM, EM and DIF strongly confirmed the diagnosis of SCN. Notably, the presence of FSGS in this case prompted further considerations, including the possibility of secondary FSGS. This study emphasises the importance for a comprehensive integration of clinical and histopathological findings for accurate diagnosis and highlights the importance of ultrastructural findings for diagnostic purposes and overall understanding of disease.

P46

A Retrospective Analysis of the Spectrum of Renal Diseases at a Regional Tertiary Centre for Renal Pathology

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Poster Round 1 - 18 June, 1pm - 2pm

Background: The incidence of renal disease varies both regionally within the UK and globally. The pathological analysis of renal specimens is complex and employs a comprehensive approach which typically entails integrating light microscopy, special stains, immunohistochemistry, direct immunofluorescence studies, and electron microscopy (EM), along with clinical input, to enhance diagnostic precision.

Purpose: This study aims to examine and categorise the spectrum of renal disorders observed in South Yorkshire, UK, originating from two different locations. These cases were collectively diagnosed at the tertiary centre, Royal Hallamshire Hospital in Sheffield, over a four-year period. Additionally, it seeks to highlight the importance of EM in differentiating specific diseases.

Methods: A retrospective analysis of histopathology reports of predominantly renal biopsies, in addition to a smaller number of nephrectomies, spanning 2018 to 2021 was conducted. This encompassed 692 cases which included native, transplant and donor kidney specimens. Data was categorized into age distribution, gender, diagnosis, and overall type of renal pathology.

Results: The gender distribution revealed 306 females and 386 males, with ages ranging from 16 to 96 years. Of the 692 cases, 491 were native kidney specimens, which exhibited a range of pathologies including glomerular, tubulointerstitial, vascular and infective disorders. Notably, IgA nephropathy was the most frequently encountered disease, with a total of 84 cases. The diagnosis of 21 cases (including Fibrillary Glomerulopathy, Monoclonal Immunoglobulin Deposition Disease, Immunotactoid Glomerulopathy and various genetic diseases of collagen) was reliant on EM. The majority of transplant and donor kidney specimens showed tubulointerstitial disorders.

Conclusions: This study explores the spectrum of renal diseases observed locally in South Yorkshire, in native, transplant and donor kidney specimens. These findings offer valuable insights for clinicians and pathologists, underscoring the imperative for precision in diagnosing renal diseases. It also highlights the crucial role of EM in diagnosing certain challenging renal disorders.

P47

Case Report – Benign Capillary Haemangioma of the Testicle, a Mimicker of Germinal Cell Tumours

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Capillary haemangioma of the testis is a very rare primary intratesticular vascular tumour with less than 100 cases in the literature. A benign entity, with most cases reported in patients younger than 20 years of age, presenting with unilateral testicular enlargement, a palpable mass or pain. Demographic, clinical and imaging characteristics resemble those of malignant germinal cell tumours and the distinction is extremely difficult preoperatively. The importance of intraoperative recognition via frozen section is highlighted in the literature, as it can lead to a less radical treatment with tumour enucleation and preservation of the testis.

Purpose: We present the case of a 22 year old male with a capillary haemangioma of the testis, to bring attention to this rare entity and primary intratesticular vascular tumours.

Methods: A 22 year old male presented with a palpable testicular lump. On imaging, a 10 mm nodule was noted with a hypoechoic outer rim, demonstrating internal vascularity. Serum tumour markers were normal. A radical orchidectomy was performed.

Results: A 12 mm well defined nodule was noted on dissection with a focally haemorrhagic cut surface. This corresponded to a well-defined lesion composed of densely packed, thin walled capillaries lined by endothelial cells lacking cytological atypia, positive for vascular markers (CD31, CD34). A possible regressed germ cell tumour was excluded by extensive sampling and appropriate immunohistochemistry. The case was referred to the regional tertiary urology centre where our diagnosis of a capillary haemangioma was confirmed.

Conclusion: Capillary haemangioma of the testis is a benign, rare entity mostly presenting in young adults and should form part of the differential of a unilateral testicular tumour. Though on imaging it demonstrates similar features to a germ cell tumour, this is a benign entity, and a potentially less radical operative approach could be employed with appropriate preoperative diagnosis.

P48

Outcomes in Patients with MRI-Guided Prostate Adenocarcinoma Biopsies, Gleason Score 3+4 and ≤10% Pattern 4 Tissue

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Poster Round 1 - 18 June, 1pm - 2pm

Background

The Gleason Score (GS) remains the most reliable prognostic parameter for prostate cancer (PCa). Recent studies have shown that GS7 biopsies with an increased percentage of Gleason Pattern 4 (%GP4) confer worse prognoses, with more adverse pathological findings in GS7 radical prostatectomy (RP) specimens.

Purpose

Since the recommendations from ISUP's Consensus calling for the reporting of %GP4 in both needle biopsy and RP specimens, there has been an upshift in biopsies graded GS7. Few studies have assessed the clinical significance of minimal quantities GP4. We aimed to evaluate the outcomes of patients with minimal amounts (≤ 5%) of GP4 tissue compared to 10% GP4 in GS7 prostate biopsy (PB) specimens.

Methods

This is a retrospective study of 165 patients that underwent MRI-guided prostate biopsies over a 12-month duration in 2019, at University College London Hospital. Patients that scored Gleason 3+4, Grade Group 2, with a %GP4 ≤ 10%, were selected and further reviewed if they underwent RP at UCLH.

Results

From our cohort, 34 patients had ≤ 5% GP4, and 131 patients had 10% GP4 in their GS 3+4 PB specimens. The 10% GP4 group exhibited more adverse pathological features, including higher percentage core involvement, greater cancer length, and perineural invasion. Conversely, the ≤ 5% GP4 group showed higher pre-treatment radiological risk parameters. In RP outcomes, 10% GP4 cases displayed higher risk T-staging (>T2c) and more discordance in Gleason grading and clinical T-staging, resulting in higher rates of upgrading and upstaging compared to the minimal %GP4 group.

Conclusions

Our study underlines the value in reporting %GP4 to guide patient management, with increasing amounts of %GP4 associated with poorer pathological outcomes in both GS7 PBs and RPs. Unlike previous studies, our data failed to show that minimal %GP4 cases are often downgraded to GS 3+3=6 in RP biopsies.

P49

Metastatic prostate cancer masquerading as otitis externa.

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Poster Round 1 - 18 June, 1pm - 2pm

Background
The external auditory canal is an uncommon site for malignancies, with metastases being even rarer. Literature only describes 11 such cases originating from kidney (3 cases), oesophagus (2 cases), lung, breast, liver colon, rectum and prostate (1 case each). Metastatic prostatic adenocarcinoma is commonly seen spreading to the bone (frequently axial skeleton), lung, liver and adrenal glands.

Purpose
This case report details the unusual presentation of metastatic prostate adenocarcinoma masquerading as otitis externa with an external auditory canal polyp and facial nerve palsy.

Methods:
A 75 year old man presented to the ENT clinic with left sided facial nerve weakness and necrotizing otitis externa. His full past medical history was unavailable at the time. Imaging showed a left external auditory canal polyp and features of let temporal bone osteomyelitis. Debulking of the left auditory canal polyp was performed and tissue was sent for histopathological examination.

Result:
Histology showed fragments of skin infiltrated by adenocarcinoma. It comprised of cuboidal cells with clear to eosinophilic cytoplasm and prominent nucleoli. Immunohistochemistry was done and the adenocarcinoma showed positive immunostaining with AE1/3, PSA and NKX3.1 consistent with metastatic prostate adenocarcinoma. It was negative for p63, CEA, CK20, CK7, CD10, PAX8, TTF-1 and MART-1.

Conclusions:
The morphological and immunohistochemical findings suggested a metastatic prostate adenocarcinoma in a rare site. Further investigation into the patient's past medical history revealed a previously diagnosed metastatic adenocarcinoma of prostate with spinal cord compression.

P50

Audit of Adequacy of Prostate Biopsies Obtained by an Ultrasound Guided Trans-perineal technique

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Poster Round 2 - 19 June, 1pm - 2pm

Background:
Trans-rectal ultrasound guided biopsy (TRUS) technique is the historical gold standard for taking systematic biopsies of the prostate gland. Unfortunately, due to faecal contamination the infection rate, despite prophylactic antibiotics, can reach 4% -6%. A number of new devices used with ultrasound guidance allow the trans-perineal approach with local anaesthetic and minimal skin incisions (LATP).

Purpose:
We propose a simple quality measurement to confirm that adequate prostate tissue was obtained for diagnosis.

Methods:
We audited sequential patients undergoing systematic LATP: each patient had cores from 12 sites taken; the length of the notch in the 18 gauge biopsy needle is 22mm. Cores were measured macroscopically and prostate tissue confirmed on microscopic examination. Each core was classified as: unsatisfactory - <5mm, sub-optimal- 5 to 10mm, or satisfactory (>10mm).

Results:
420 cores were assessed from 35 patients. 2.9% were unsatisfactory, 6% were suboptimal, and 91% were satisfactory. 20% of the cases had at least 1 core which was unsatisfactory, 31% cases had at least 1 core which was suboptimal, and in 47% of cases all cores were satisfactory.

Conclusion:
The diagnosis of prostate cancer is not likely to be made if there is limited prostate tissue in the biopsies. Assessing biopsy tissue length alone is not sufficient for a fully satisfactory audit as biopsies need to be appropriately spatially distributed to ensure that significant cancers are detected. Controlled trials will be needed for this assessment. Meanwhile, confirming that the technique provides adequate prostate tissue reassures clinicians and patients.

References

1. NICE guideline: Transperineal biopsy for diagnosing prostate cancer.
2. PCRMP: Undertaking a Transrectal Ultrasound Guided Biopsy of the Prostate.
3. A randomised controlled trial of TRANSrectal biopsy versus Local Anaesthetic Transperineal biopsy Evaluation (TRANSLATE) of potentially clinically significant prostate cancer (The TRANSLATE Trial).

P51

A recurrent eosinophilic vacuolated tumour of the kidney over 18 years of long-term follow-up

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Poster Round 1 - 18 June, 1pm - 2pm

We report a case of a recurrent eosinophilic vacuolated tumour (EVT) of the kidney, observed over 18 years of long-term follow-up. Recently described and included as an emerging renal entity in the WHO 2022 classification, recurrence has never been reported in EVT. However, our case has shown evidence of disease recurrence.

The patient, a 47-year-old female, presented with severe right-sided abdominal pain in 2005. Imaging revealed a highly vascular soft tissue mass in the interpolar area of the right kidney. A nephrectomy was performed, and microscopy revealed a vascular tumour composed of nests and tubular structures lined by cells with abundant eosinophilic and vacuolated cytoplasm. Despite electron microscopy, a definitive diagnosis remained elusive at the time, and the tumour was considered unclassified.

For the next 9 years, the patient remained disease-free on CT imaging. However, in 2015, a follow-up scan detected a 22mm soft tissue mass behind the inferior vena cava, at the level of the left renal vein, suggestive of local recurrence. Microscopy of the excision revealed that this mass shared similar morphology with the renal tumour in 2005. Immunohistochemistry was strongly positive for CD10, E-cadherin, c-Kit, PAX-8, CD117 and negative for CK7 and AMACR.

Six years later, an enlarged nodule below the liver in the right pericolic gutter was identified on imaging, raising concerns for recurrent disease again. Microscopy of the metastasectomy showed a lesion with a similar morphological and immunohistochemical profile to the previous disease. Additional immunohistochemistry was positive for SDH.

This case report highlights EVT behaviour previously unreported and emphasises the clinical importance of vigilant long-term follow-up. Furthermore, it was satisfying to definitively classify this tumour in accordance with the updated WHO 2022 classification.

P52

Concordance of T and Gleason staging in Prostate Biopsies (Gleason 3+4 with <10% pattern 4) with Matched Radical Prostatectomy Specimens

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Poster Round 1 - 18 June, 1pm - 2pm

Background

Prostate adenocarcinoma is the most common male cancer in the UK, accounting for 27% of all new cancer cases. Risk stratification using MRI T staging, biopsy data, and Gleason scores are assessed to guide management decision. Gleason pattern 4 is known to confer a worse prognosis and the % should be reported in biopsies.

Purpose

Prostate cancer shows heterogeneity and therefore discrepancies are seen between prostate biopsy (PB) score and radical prostatectomy (RP).

Method

Data was retrospectively collected for PB cases performed in University College London Hospital (UCLH) for a 1-year period in 2019 using Co-Path Database. Cases which scored Gleason (G) 3+4 with <10% G4 and had a RP were reviewed. All cases were reported at UCLH.

Results

169 patients had biopsies with G3+4 with <10% G4 during this period, 49 of which went on to have RPs. Following reporting of Gleason score and stage of the matched radical prostatectomy, 44 (89.8%) were unchanged, while 5 (10.2%) were upstaged. Following reporting of the radical prostatectomy specimen, the T stage was changed in 30 patients (61.2%); 25 were upstaged (51.0%) and 5 (10.2%) were down staged. Pre-operatively, 22 (44.9%) of the cases were intermediate risk and 27 (55.1%) were high risk while post operatively 7 (14.3%) cases were intermediate risk and 42 (85.7%) cases were high risk.

Conclusion

In this cohort, the Gleason score and stage changed in a small number of patients and there was significant upstaging in T stage and risk stratification. This highlights the heterogeneity of prostate biopsies and the discrepancy between MRI staging pre-operatively and T staging post operatively which should be taken into account by clinicians when making management decisions.

P53

Unlocking Insights: Exploring the Harmony Between Urine Cytopathology and Histopathology

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Poster Round 1 - 18 June, 1pm - 2pm

Background: The correlation between urine cytopathology and histopathology is crucial for accurate diagnosis and treatment planning. Standardized guidelines, such as the Royal College of Pathologists "Tissue Pathways for Diagnostic Cytopathology," provide benchmarks for assessing this correlation.

Purpose: This audit aims to investigate the correlation between urine cytopathology and histopathology, specifically focusing on cases from 2022 and 2023, and evaluate adherence to the guidelines outlined by the Royal College of Pathologists

Methods: A total of 23 cases from 2022 and 2023 were included in the audit. The correlation between cytology and histopathology results was analyzed according to the criteria set by the Royal College of Pathologists' guidelines.

Results: Among the 12 cases with negative cytology results, 83.3% were confirmed negative on tissue biopsy, slightly below the expected correlation rate (>90%). All 5 cases diagnosed as carcinoma on cytology were confirmed malignant on tissue biopsy, demonstrating a strong correlation(100%) in positive cytology results. For cases with atypical cells on cytology, 83.3% were malignant on biopsy, with one case showing a discrepancy, slightly below the expected correlation rate (>90%).

Conclusions: The audit reveals a generally strong correlation between urine cytopathology and histopathology, particularly in cases with positive cytology results. However, there were discrepancies observed in cases with negative cytology results and atypical cells, highlighting the importance of follow-up histopathology. Recommendations include continuous monitoring and further training for pathologists to enhance diagnostic accuracy, ensuring improved quality assurance in urine cytopathology and histopathology correlation

References

Royal College of Pathologists. (2019, October). Tissue pathways for diagnostic cytopathology. Retrieved from https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.rcpath.org/static/b328ab3d-f574-40f1-8717c32ccfc4f7d8/G086-Tissue-pathways-for-diagnostic-cytopathology.pdf&ved=2ahUKEwi6our8_PmEAxURV0EAHfw6B_EQFnoECCAQAQ&usg=AOvVaw0gdsXwzD2uYH6untrGqQwM

P54

Not All ‘Papillary’ Lesions of the Urinary Tract are Urothelial Neoplasms

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Villous adenomas of the urinary tract are rare benign glandular neoplasms that are morphologically identical to those found within the colon. They can arise throughout the urinary tract but are most commonly found in the bladder and urachus. Clinical manifestations include haematuria and irritative symptoms. At cystoscopy, they typically appear as an exophytic papillary mass, raising suspicion for a papillary urothelial neoplasm.

Purpose: Here, we present a villous adenoma arising within the prostatic urethra.

Case History: A 71-year-old gentleman with a history of a right nephrectomy following tuberculosis, a caecocystoplasty and recurrent urinary infections underwent cystoscopy and bladder wash-out. During the procedure, a mucosal lesion with papillary architecture was seen in the prostatic urethra, raising the suspicion of a transitional cell carcinoma and warranting histological assessment.

Pathology: The laboratory received an intact 5x2x1mm biopsy. Microscopy showed a glandular neoplasm composed of villoglandular fronds lined by pseudostratified columnar epithelium with nuclear hyperchromasia and stratification amounting to low grade dysplasia. There was no high-grade dysplasia, carcinoma in-situ, or invasive carcinoma.

Discussion: The lesion was diagnosed as a villous adenoma, with an identical appearance to the lesion more frequently associated with the colon. Although the aetiology of urinary tract lesions is incompletely understood, proposed mechanisms include development of the neoplasm from an embryological cloacal rest or chronic irritation initiating the metaplasia-dysplasia sequence. Some evidence suggests that augmentation cystoplasty, as seen in this case, may be a risk factor for their development. Complete excision is curative for pure villous adenomas, however, an association with high-grade dysplasia, carcinoma in situ, and invasive adenocarcinoma has been shown, demanding thorough sampling and clinico-radiological correlation to rule out co-existing malignancy.

References

1. WHO Classification of Tumours Editorial Board. Urinary and male genital tumours [Internet]. Lyon (France): International Agency for Research on Cancer; 2022. (WHO classification of tumours series, 5th ed.; vol. 8). Available from: https://tumourclassification.iarc.who.int/chapters/36.
2. Ho SY, Rosli N, Lim LY. Villous adenoma of the prostatic urethra. J Postgrad Med. 2022 Apr-Jun;68(2):106-108. doi: 10.4103/jpgm.jpgm_811_21. PMID: 35381754; PMCID: PMC9196286.
3. Algaba F, Matias-Guiu X, Badia F, Solé-Balcells F. Villous adenoma of the prostatic urethra. Eur Urol. 1988;14(3):255-7. doi: 10.1159/000472952. PMID: 2454820.
4. Cheng L, Montironi R, Bostwick DG. Villous adenoma of the urinary tract: a report of 23 cases, including 8 with coexistent adenocarcinoma. Am J Surg Pathol. 1999 Jul;23(7):764-71. doi: 10.1097/00000478-199907000-00003. PMID: 10403298.
5. Wang J, Manucha V. Villous Adenoma of the Urinary Bladder: A Brief Review of the Literature. Arch Pathol Lab Med. 2016 Jan;140(1):91-3. doi: 10.5858/arpa.2014-0198-RS. PMID: 26717061.
6. Demir H, Cin S, Citgez S, Uygun N. Villous Adenoma Arising in the Urethra of a Female with Bladder Augmentation History: A Case Report and Review of the Literature. Turk Patoloji Derg. 2021;37(2):161-166. doi: 10.5146/tjpath.2020.01502. PMID: 32779155; PMCID: PMC10512680.
7. Seibel JL, Prasad S, Weiss RE, Bancila E, Epstein JI. Villous adenoma of the urinary tract: a lesion frequently associated with malignancy. Hum Pathol. 2002 Feb;33(2):236-41. doi: 10.1053/hupa.2002.31293. PMID: 11957151.

P55

A third cycle audit on the adequacy of LLETZ pathology reports at Betsi Cadwaladr University Health Board

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Poster Round 1 - 18 June, 1pm - 2pm

Background:
Biopsies are considered as 'Gold Standard' tests to diagnose cancers. In case of suspicion of cancerous changes during colposcopy clinic, 'Large Loop Excision of the Transformation Zone' (LLETZ), a minimally invasive surgical technique is performed and the histopathology findings are correlated against the findings of colposcopy and cytology.

Aim:
To assess the completeness of histopathology reports of LLETZ samples and to obtain uniformity in reporting practice.

Method:
A third cycle audit was performed on the microscopic aspect of the LLETZ histopathology reports. The reports were assessed against The Laboratory CPG guidelines to include the relevant data set items in the reports [1]. The data was collected and analysed retrospectively with a view to assess the completeness of the histopathology reports of LLETZ samples and present at the Clinical Governance meeting.

Result:
A total of 100 LLETZ reports over 3 months were analysed. In terms of the presence of relevant data set items, there was a compliance of 78.7% overall. The data exhibited 78-99% compliance in reporting of number of slices examined, excision margin status, presence or absence of transformation zone, CIN, CGIN and HPV related changes. Certain components such as P16 or other immunohistochemistry performed and MDT discussion were only mentioned in relevant cases.

Discussion:
There are around 3,197 new cases of cervical cancer in the UK each year, accounting for 2% of all new cancer diagnosis in females [2]. Surgical and therapeutic intervention largely depends on the screening programme findings. In case of premalignant or early malignant cervical lesions, the LLETZ technique is considered as the first choice of minimally invasive surgical treatment which can be done outpatient. Histopathology report of the LLETZ biopsy sample ensures excision of the involved margins as well as prompt MDT discussions in cases where further intervention are needed.

References

1.Cancer Research UK. Cervical cancer statistics [Internet]. Cancer Research UK. 2015. Available from: https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/cervical-cancer#heading-Five

2. Cervical Screening Programme: histopathology reporting handbook [Internet]. GOV.UK. Available from: https://www.gov.uk/government/publications/cervical-screening-histopathology-reporting-handbook/cervical-screening-programme-histopathology-reporting-guidance

P56

Papillary Thyroid Carcinoma Arising From Struma Ovarii Coexisting With Strumal Carcinoid: A Case Report and a Literature Review

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Malignant transformation of a papillary thyroid carcinoma (PTC) in Struma Ovarii in a teratoma is a rare event with few case reports and no previous literature review on the management of such cases.
Purpose: To report an exceptionally rare malignant transformation of struma ovarii into PTC, and to systematically review the literature on the occurrence and management of such cases.
Methods: This was a case report accompanied by a systematic literature review covering the period 2014 - present. Main medical databases were searched for any reports of PTC arising in struma ovarii and its consecutive management.
Results: We report on a young female patient presented with a right abdominal mass. Gross examination of the adnexal mass was in keeping with a teratoma. Microscopic examination of the teratoma predominantly revealed a cyst lined by stratified squamous epithelium with mature skin appendages. A small focus consisted of well-developed papillae lined by cuboidal cells was observed. Additionally, nests of cells with abundant eosinophilic granular cytoplasm and oval nuclei with stippled chromatin were seen. The diagnosis of a PTC and an ovarian strumal carcinoid tumour arising within teratoma was made. The patient underwent further investigations in the form of imaging and peritoneal fluid analysis to exclude metastasis. No metastasis was found and the patient was discharged. The literature review included a case-series of similar findings. The review revealed that the management of PTC arising in a teratoma is controversial. A risk stratification schema for malignant struma ovarii is cited in the literature, which incorporated various pathological parameters. Management options suggested included thyroidectomy followed by total-body scan and serum studies.
Conclusions: Histopathologists should be aware of the potential for malignant transformation when evaluating struma ovarii. Our review revealed limited guidance for managing malignant foci of PTC within struma ovarii.

References

Cymbaluk-Ploska A, Chudecka-Glaz A, Chosia M, Ashuryk O, Menkiszak J. Conservative treatment of a young patient with thyroid carcinoma in adult ovarian teratoma—case report. Gynecol Endocrinol. 2014;30:187–191.

Goffredo P, Sawka AM, Pura J, Adam MA, Roman SA, Sosa JA. Malignant struma ovarii. Thyroid. 2015;25:211–215.

Haugen BR, Alexander EK, Bible KC, et al. American thyroid association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer. Thyroid Am Thyroid Assoc. 2015;2016;26:1–133.

P57

Case Report – Ovarian Steroid Cell Tumour: a Rare, Potentially Malignant, Diagnosis

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Poster Round 1 - 18 June, 1pm - 2pm

Background: Ovarian steroid cell tumours, previously referred to as lipid or lipoid cell tumours, represent a rare type of sex cord stromal cell tumours constituting only 0.1% of all ovarian tumours. The majority are functional presenting with features of virilisation. Though cases have been reported in all ages, incidence is highest in women of reproductive age. The literature suggests that up to one third of cases are malignant. Parameters associated with malignancy have been studied and documented in case series however, these are not absolute and therefore, clinicopathological and radiological correlation is essential in predicting malignant potential and determining follow up after histological diagnosis.

Purpose: We present a case of a unilateral ovarian steroid cell tumour in a 69 year old, postmenopausal female presenting with hyperandrogenism, raised serum testosterone and normal adrenal glands on imaging. We aim to bring attention to this rare entity, its clinical presentation and the parameters influencing its malignant potential.

Methods: The patient underwent a diagnostic bilateral salpingo-oophorectomy as there was a clinical suspicion of the potential source of testosterone being in the ovaries.

Results: On dissection, a unilateral 35 mm ovarian nodule was noted with a solid, yellow and lobulated cut surface. Histologically this represented an expansile, well defined and nodular proliferation of large polygonal cells with a predominantly pale and vacuolated cytoplasm. On immunohistochemistry the tumour cells demonstrated diffuse labelling with Melan-A, Inhibin and Calretinin, confirming the diagnosis of a steroid cell tumour.

Conclusion: Ovarian steroid cell tumour, constitutes a rare sex cord stromal tumour which can be a cause of virilisation in postmenopausal women. Parameters such as size >7 cm, necrosis, haemorrhage, significant atypia and mitoses predict malignant behaviour and clinicopathological correlation is essential to determine clinical follow up.

P60

An unusual uterine tumour in an elderly patient

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Poster Round 1 - 18 June, 1pm - 2pm

Case Presentation:
We report a case of a uterine sarcoma in a 77-year-old female.
The patient presented with post-menopausal bleeding, abdominal pain and urinary frequency. She had a history of 2 uneventful vaginal deliveries and was non-compliant with the cervical smear programme. She was an ex-smoker. Her last menstrual period was at the age of 56.
Imaging showed a bulky, anteverted uterus with a thickened endometrium.
A pipelle biopsy was performed and showed features suggesting a sarcoma.
The hysterectomy specimen showed a large uterine tumour composed of sheets of pleomorphic cells with hyperchromatic nuclei and densely eosinophilic cytoplasm. The immunohistochemical profile suggested a high-grade sarcoma with rhabdomyosarcomatous differentiation. This case was referred for specialist opinion, which confirmed a diagnosis of primary pleomorphic rhabdomyosarcoma of the uterus.
Discussion:
Uterine sarcoma accounts for about 1% of all female genital tract malignant tumours and 3-7% of malignant tumours in the body of uterus[2]. Most uterine sarcomas fall into the category of leiomyosarcoma, endometrial stromal sarcoma or undifferentiated sarcoma[3]. Uterine sarcomas and carcinosarcomas can show rhabdomyosarcomatous differentiation.
Pure rhabdomyosarcoma of the uterus is rare, with only only 80 reported cases in the English literature[4].
Rhabdomyosarcomas are aggressive mesenchymal tumours exhibiting skeletal muscle differentiation. In the 2020 World Health Organisation classification, rhabdomyosarcomas are subdivided into four histological types:
Embryonal (30-40%), Alveolar (<5%), Pleomorphic (60-70%) and Spindle cell/sclerosing (<2%)[2].
Pinto et al studied a cohort of 8 patients with primary uterine rhabdomyosarcomas. They found they typically occurred in patients ranging from 22-70 years of age. The most common presenting symptom was vaginal bleeding. 5/8 were post-menopausal. The tumour size ranged from 6.0cm to 15.2cm. Grossly the tumours were large and demonstrated a tan-white fleshy appearance, with necrosis. 2/8 cases arose from the cervix[4].
Pleomorphic rhabdomyosarcomas typically behave as very aggressive neoplasms with an extremely poor prognosis[3,5].

References

UK cancer Incidence by country. The National Cancer Registration and Analysis Service (part of Public Health England), on request through the Office for Data Release, July 2021. : Cancer Research UK, Uterine cancer incidence statistics | Cancer Research UK, Accessed [February [2024].
WHO Classification of Tumours Editorial Board . Female Genital Tumours WHO Classification of Tumours. 5th ed. World Health Organization; Geneva, Switzerland: 2020. Mesenchymal tumours of the lower genital tract; pp. 478–526.
McCluggage WG, Lioe TF, McClelland HR, Lamki H. Rhabdomyosarcoma of the uterus: report of two cases, including one of the spindle cell variant. Int J Gynecol Cancer. 2002 Jan-Feb;12(1):128-32. doi: 10.1046/j.1525-1438.2002.01069.x. PMID: 11860548.
Pinto A, Kahn RM, Rosenberg AE, Slomovitz B, Quick CM, Whisman MK, Huang M. Uterine rhabdomyosarcoma in adults. Hum Pathol. 2018 Apr;74:122-128. doi: 10.1016/j.humpath.2018.01.007. Epub 2018 Jan 7. PMID: 29320751.

Li ZJ, Li CL, Wang W, Fu XY, Zhen YQ. Diagnosis and treatment of pleomorphic rhabdomyosarcoma of the uterus: a rare case report and review of the literature. J Int Med Res. 2021 May;49(5):3000605211014360. doi: 10.1177. PMID: 34034549; PMCID: PMC8161909.

P61

Papillary Thyroid Carcinoma Arising in a Struma Ovarii: A Rare Diagnosis

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Poster Round 1 - 18 June, 1pm - 2pm

Introduction

Struma ovarii is an uncommon mature teratoma arising in the ovary, composed predominantly (>50%) or solely of mature thyroid tissue. These tumours are benign and malignant transformation is rare. In cases with malignant transformation, papillary thyroid carcinoma is the most common. We present of a case of this rare entity.

Clinical Case

A woman in her 40's presented with weight loss, nausea and lack of appetite. Examination identified a palpable abdominal mass extending above the umbilicus. Abdominal and pelvic ultrasound and CT scan revealed a 22cm cystic solid mass arising from the left ovary with focal areas of omental thickening. Serum Ca-125 was elevated at 115. A total abdominal hysterectomy with bilateral salpingo-oophorectomy and omentectomy was performed. Macroscopically the tumour was multicystic with a smooth lining and contained a central complex partly solid area. Histologically, the main bulk of the tumour comprised of mature thyroid tissue, with hair shafts and adipose tissue present. Within the tissue examined, a 6mm focus of cytologically atypical epithelium with nuclear grooves and nuclear clearing was present with a complex papillary architecture. Immunohistochemistry of this area was positive for CK7, TTF1, PAX8, thyroglobulin, HMBE1 and CK19. CD56 expression was lost. A diagnosis of papillary thyroid carcinoma in a struma ovarii was made due to the presence of other teratoma elements, as opposed to metastatic papillary thyroid carcinoma to the ovary. Thyroid function tests performed are within normal range. Referral to the germ cell tumour and endocrine multi-disciplinary teams have been made to ensure appropriate follow-up is established including further radiological imaging.

Conclusion

We have presented an unexpected and rare diagnosis of malignant struma ovarii. Prognosis following complete removal of the tumour is good. However, there are currently no established guidelines for the management and follow-up of these cases, making it clinically challenging.

P62

A Case of Mixed Systemic Histiocytosis Combining the Features of Erdheim-Chester Disease with Langerhan's Cell Histiocytosis

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Poster Round 2 - 19 June, 1pm - 2pm

Background:
Mixed histiocytoses present a unique diagnostic challenge to the pathologist. They commonly present with overlapping features of Langerhan's cell histiocytosis (LCH) and a non-Langerhan's histiocytosis and may account for up to one fifth of systemic histiocytoses (1).
We present an unusual case of mixed systemic histiocytosis combining the features of Erdheim-Chester disease (ECD) with LCH, presenting as multiple soft tissue and bone lesions in a young adult female.
Case:
Histiological examination of a soft tissue mass showed a diffuse infiltrate of small histiocytic cells, admixed with larger foamy cells with vacuolated cytoplasm. The background showed numerous multinucleated giant cells, including Touton type giant cells, admixed in areas with neutrophils, along with scattered lymphocytes and eosinophils. The majority of the histiocytic population showed CD68 and partial FXIIIA and lysozyme immunoreactivity, but were negative for CD1a and S100. However, a subset of the smaller histiocytes with more densely eosinophilic cytoplasm, showed a Langerhan's cell immunophenotype, demonstrating S100 and CD1a positivity, and CD68, FXIIIA and lysozyme negativity.
The histological features in xanthogranulomatous histiocytic proliferations are not in their own right diagnostic, with definitive diagnosis requiring clinical and radiological correlation, as well as correlation with the genetic findings. Molecular genetics in this case showed a BRAF c.1799T>A p(Val600Glu) variant. There was no KRAS/NRAS variant detected.
Given the disease distribution, the features in this case are those of EDC with focal Langerhans cell differentiation, or mixed histiocytosis.
Discussion:
Both LCH and ECD have recognised links with BRAFV600E mutation (2), as does mixed LCH and ECD as a standalone entity (3, 4). In the presence of a BRAFV600E mutation, specific BRAF inhibitor therapy can be considered (5). This case highlights the diagnostic challenge posed by these mixed entities, which may be under-recognised, as well as the importance of immunohistochemistry and molecular genetics in diagnosing histiocytoses.

References

1. Bonometti, Arturo, and Associazione Italiana Ricerca Istiocitosi AIRI ONLUS. "The triptych of mixed histiocytosis: a systematic review of 105 cases and proposed clinical classification." Leukemia & Lymphoma 62.1 (2021): 32-44.
2. Hervier, Baptiste, et al. "Association of both Langerhans cell histiocytosis and Erdheim-Chester disease linked to the BRAF V600E mutation." Blood, The Journal of the American Society of Hematology 124.7 (2014): 1119-1126.
3. Dai, J., Lin, H., Chang, L. et al. The clinical spectrum and prognostic factors of Erdheim-Chester disease and mixed Langerhans cell histiocytosis and Erdheim-Chester disease. Ann Hematol 102, 3335–3343 (2023). https://doi.org/10.1007/s00277-023-05501-1
4. Ocak, Suheyla, et al. "Mixed Langerhans cell histiocytosis and Erdheim-Chester disease in a girl: a rare and puzzling diagnosis." Journal of pediatric hematology/oncology 43.3 (2021): e375-e379.
5. De Menezes, Ivo, et al. "A Rare Presentation of Erdheim-Chester Disease Overlaped with Langerhans Histiocytosis." International Journal of Clinical Medicine 14.10 (2023): 438-448.

P63

Case Presentation: Paediatric-Type Follicular Lymphoma

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Paediatric-type follicular lymphoma (PTFL) is an uncommon lymphoid neoplasm that usually presents as localised nodal disease, often involving the head and neck region (1). PTFL predominantly affects males and usually occurs in children and young adults (2). Here we outline a case of this recently recognised entity, presenting as a unilateral neck mass in a teenage boy, without associated B symptoms.
Case
Histological examination of the neck mass demonstrated a lymph node in which the architecture was partially effaced by expanded serpiginous follicular structures lacking mantle zones. These follicles contained a mixture of centrocytes and centroblasts, with centroblasts forming the predominant cell population in many follicles and more than 15 centroblasts identified per high power field. In some follicles, large numbers of tingible body macrophages imparted a starry-sky appearance.
On immunohistochemistry, the expanded follicles were positive for CD20 and BCL6, with CD21 highlighting the expanded follicular structures. MIB1 showed a high proliferation index in the expanded follicular structures (90%). CD10, BCL2, MUM1, Cyclin D1 and EBV (by EBER in situ hybridisation) were all negative.
Polymerase chain reaction demonstrated clonal rearrangement of the immunoglobulin heavy and light chains against a polyclonal background. There was also clonal rearrangement of the kappa deleting element. Fluorescence in situ hybridisation showed no evidence of an IGH: BCL2 rearrangement or a MYC or BCL6 rearrangement. There was an IgH rearrangement to an unknown partner and loss of one copy of Bcl-2.
Overall, the appearances were those of a B cell lymphoma with features consistent with PTFL.
Discussion
Despite its indolent nature and very low potential for progression or recurrence, histologically PTFL has blastoid features and a high proliferative index (1, 3). PTFL can pose a diagnostic challenge as there is significant overlap with several other entities, and these cases must therefore be approached with care.

References

1. Alnughmush A, Fakih RE, Mohammed S, Aljurf M. Pediatric-type follicular lymphoma: a short review. Int J Hematol Oncol. 2022 Nov 22;11(4):IJH41. doi: 10.2217/ijh-2022-0003. PMID: 36514787; PMCID: PMC9732916.
2. Abner Louissaint, Adam M. Ackerman, Dora Dias-Santagata, Judith A. Ferry, Ephraim P. Hochberg, Mary S. Huang, A. John Iafrate, Daniel O. Lara, Geraldine S. Pinkus, Itziar Salaverria, Zakir Siddiquee, Reiner Siebert, Howard J. Weinstein, Lawrence R. Zukerberg, Nancy Lee Harris, Robert P. Hasserjian; Pediatric-type nodal follicular lymphoma: an indolent clonal proliferation in children and adults with high proliferation index and no BCL2 rearrangement. Blood 2012; 120 (12): 2395–2404. doi: https://doi.org/10.1182/blood-2012-05-429514
3. Abner Louissaint, Kristian T. Schafernak, Julia T. Geyer, Alexandra E. Kovach, Mahmoud Ghandi, Dita Gratzinger, Christine G. Roth, Christian N. Paxton, Sunhee Kim, Chungdak Namgyal, Ryan Morin, Elizabeth A. Morgan, Donna S. Neuberg, Sarah T. South, Marian H. Harris, Robert P. Hasserjian, Ephraim P. Hochberg, Levi A. Garraway, Nancy Lee Harris, David M. Weinstock; Pediatric-type nodal follicular lymphoma: a biologically distinct lymphoma with frequent MAPK pathway mutations. Blood 2016; 128 (8): 1093–1100. doi: https://doi.org/10.1182/blood-2015-12-682591

P64

Case report: Crystal-storing histiocytosis secondary to hypersecretory plasma cell myeloma.

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Poster Round 2 - 19 June, 1pm - 2pm

Background
A right clavicle fracture prompted a screen for multiple myeloma. PET scan highlighted a solitary clavicle lesion. Serum haematological and biochemical laboratory studies showed normal serum calcium, a historically stable haemoglobin (126g/dL) and eGFR (58), markedly elevated IgG kappa paraprotein (1233 mg/L, normal range 3.3 - 19.4); Kappa/Lambda Ratio (506, normal range 0.26 - 1.65), IgG kappa and positive urine BJP kappa. There was no evidence of end organ myeloma damage. Therapeutic response was eventually achieved with a maintenance drug regimen of Cyclophosphamide, Velcade and Dexamethasone.

Histology
A haematoxylin and eosin-stained section of bone marrow trephine shows dense clusters of histiocytes with abundant eosinophilic cytoplasm, resembling Gaucher cells (pseudo-Gaucher cells), with fibrillary/crystalline content. Intracytoplasmic fibrillary material highlights for CD68 & giemsa. A dispersed population of monoclonal plasma cells intermingled with crystal bearing histiocytosis. Plasma cell myeloma compromised ~20% of the cellular mass. Congo red was positive for low level amyloid deposition within periosteal connective tissue. Immunoperoxidase stains highlights the dispersed plasma cell population, positive for the Vs38c, CD138 and MUM1 with kappa light chain restriction by in situ hybridisation (intense staining). Findings confirm accumulation of monoclonal kappa protein produced by hypersecretory from nearby neoplastic plasma cells within crystal storing histiocytes. Electron microscopy studies reveal accumulation of crystallized immunoglobulin light chain fragments within nonneoplastic histiocytes.

Discussion
Bone marrow crystal storing histiocytosis is a very unusual finding mimicking a granulomatous condition or storage disorder. [1] Most cases are associated with underlying clonal proliferation of plasma cells expressing kappa light chains but occasionally lymphoplasmacytic B-cell lymphoproliferative disease. Ultrastructural analysis raises the possibility of an in vivo active process underlying the crystal formation.

References

References:
1. Wiese-Hansen, H. et al. (2021) 'Immunoglobulin-storing histiocytosis: A case based Systemic Review', Journal of Clinical Medicine, 10(9), p. 1834. doi:10.3390/jcm10091834.

P65

Keratoameloblastoma: A Case Report

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Ameloblastomas are benign, locally aggressive tumours, that may recur if incompletely excised. Their incidence is approximately 1% of odontogenic tumours. Keratoameloblastoma is a rare variant of an ameloblastoma and is characterised by the presence of markedly increased keratin production. The exact incidence of keratoameloblastoma is unknown. The average age of diagnosis is 43 years (range 26-76 years) and there is a male to female ratio of 2.5:1. The most common sites are the mandible (80%) and maxilla (20%).

Purpose: Presentation of a rare case of keratoameloblastoma in a 15 year old male. The case will highlight the clinical presentation, radiological appearance, surgical management and histological findings.

Methods: The patient underwent an initial biopsy with insertion of a decompression tube. Followed-up by enucleation. Definitive surgical resection with partial mandibulectomy and reconstruction with DCIA Free flap is planned.

Results: Macroscopically the specimen consists of multiple irregular pieces of greyish/white tissue, the largest measures 25x15x10mm, and the smallest measures 3x2x1mm. Histologically the specimen comprises multiple fragments of fibrous tissue within which there are lobules of odontogenic epithelium showing reverse polarity, peripheral palisading, and stellate reticulum-like areas. There is keratin pearl formation. Focally, there is a more plexiform growth pattern. In some areas, there is an increase in active and chronic inflammatory cell infiltrate with a foreign-body type giant cell reaction.

Immunohistochemistry carried out on the biopsy at a specialist centre showed the odontogenic epithelium extensively expresses CK19 and there is cytoplasmic expression throughout on Beta-Catenin. CD56 stains the peripheral ameloblast-like cells. The presence of a mutation in BRAF (V600E) is confirmed.

The diagnosis of keratoameloblastoma was confirmed.

Conclusions: Keratoameloblastoma is an exceptionally rare variant of ameloblastoma. It is not normally found in the paediatric population. The patient requires a three-stage procedure and will be closely monitored for recurrence.

P66

Intrathyroid Parathyroid Carcinoma Mimicking Papillary Thyroid Carcinoma: A Rare Case Report

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Poster Round 2 - 19 June, 1pm - 2pm

Intrathyroid parathyroid carcinoma (ITPC) is a rare neoplasm that can pose diagnostic challenges due to its rarity in literature. The importance of histopathological confirmation for precise diagnosis and management of ITPC will be emphasized in this case report, highlighting the necessity for thorough evaluations involving clinical, cytological, and histopathological assessments. A diagnostic dilemma in distinguishing ITPC from papillary thyroid carcinoma (PTC) was illustrated in this case where initial cytological examination suggested PTC. Still, the subsequent histopathological evaluation revealed features typical of ITPC, emphasizing the importance of comprehensive assessments.
A young patient presented with a short history of a right neck mass, notably with the right submandibular gland (SMG) larger than the left SMG. Ultrasound and guided fine-needle aspiration (FNA) revealed no salivary gland abnormalities but identified a U4-grade hypoechoic nodule within the left thyroid gland.
Cytological examination displayed nuclear grooves and features consistent with PTC. However, the histopathological evaluation revealed features typical of ITPC, including trabecular growth, prominent nucleoli, and psammoma bodies. Immunohistochemistry results indicated positivity for parathyroid hormone (PTH) and chromogranin, further solidifying the diagnosis of ITPC. This report also discussed the association of parathyroid carcinomas with familial hyperparathyroidism syndromes, suggesting the potential necessity for genetic evaluation.
In this case report on ITPC masquerading as PTC highlights the crucial role of histopathological confirmation in the diagnosis and management of this uncommon condition. Comprehensive assessments involving clinical, cytological, and histopathological evaluations are imperative for accurate diagnosis and proper management of ITPC. The study highlights the significance of clinician awareness regarding the diagnostic complexities associated with ITPC .

References

[1] (2007). Trends in the incidence and treatment of parathyroid cancer in the united states. cancer, 109(9), 1736-1741. https://doi.org/10.1002/cncr.22599
[2] (2017). Cytological challenges in the diagnosis of intrathyroidal parathyroid carcinoma: a case report and review of literature. diagnostic cytopathology, 46(1), 47-52. https://doi.org/10.1002/dc.23847
[3] (2015). Non-functional parathyroid carcinoma: a case report and review of the literature. cancer biology & therapy, 16(11), 1569-1576. https://doi.org/10.1080/15384047.2015.1070989
[4] (2010). Cytological findings of intrathyroidal epithelial thymoma/carcinoma showing thymus-like differentiation: a study of eight cases. diagnostic cytopathology, 40(S1). https://doi.org/10.1002/dc.21511
[5] (2013). Fine needle aspiration cytology of parathyroid lesions. the korean journal of pathology, 47(5), 466. https://doi.org/10.4132/koreanjpathol.2013.47.5.466
[6] (2021). Intrathyroidal parathyroid carcinoma: a case report and literature review. radiation oncology journal, 39(2), 145-151. https://doi.org/10.3857/roj.2020.01060

P67

Identification of altered miRNA cargoes of oral squamous cell carcinoma and oral epithelial dysplasia derived extracellular vesicles.

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Extracellular vesicles (EV) are lipid membrane bound nanoparticles with roles in cell signalling. There is evidence that EV produced by oral squamous cell carcinoma (OSCC) are larger and more numerous than those produced by normal oral keratinocytes (NOK). OSCC EVs also contain altered microRNA (miRNA) cargo. However, oral epithelial dysplasia (OED) EV are poorly characterised and unbiased next generation sequencing has not been used to characterise OSCC EV miRNA cargoes.

Purpose
Identification of altered miRNA cargoes and physical characteristics in EV derived from OED and OSCC cell lines, compared with an NOK cell line.

Methods
The FNB6 (NOK), DOK and D19 (OED), H357 and SCC4 (OSCC) cell lines were cultured in EV depleted medium (10ml) for 24 hours. Conditioned medium was collected, centrifuged and 0.5ml used for physical characterisation of particles by nanoparticle tracking analysis (NTA). EV were isolated from the remaining medium by immunocapture and isolation confirmed by western blot for CD63. RNA was extracted for small RNA sequencing. Alignment and quantification were performed with nextflow and counts analysed with DESeq2 in R.

Results
NTA data showed that SCC4 produced a greater number of particles than the other cell lines ($p=0.001$-0.04), excluding DOK ($p=0.145$). No difference in particle diameter was seen ($p=0.122$). The DOK EV had 8 altered miRNA cargoes when compared with FNB6, D19 had 40, H357 had 27 and SCC4 had 136. miR-21-3p, miR-196a-5p, miR-651-3p were present in increased abundance across all OED and OSCC EV. miR-100-5p was increased while, miR-7706 was decreased in the OED EV. Nine altered miRNA cargoes were identified which were specific to the OSCC EV.

Conclusions
The identification of EV miRNA signatures specific to OED and OSCC suggests that these miRNA may be useful as circulating diagnostic biomarkers in biological fluids.

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References

Yap T, Pruthi N, Seers C, Belobrov S, McCullough M, Celentano A. Extracellular Vesicles in Oral Squamous Cell Carcinoma and Oral Potentially Malignant Disorders: A Systematic Review. International Journal of Molecular Sciences. 2020; 21(4):1197. https://doi.org/10.3390/ijms21041197

P68

Ameloblastic fibroma and the diagnostic utility of BRAF V600E immunohistochemistry staining pattern: A case report of a rare entity

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Poster Round 2 - 19 June, 1pm - 2pm

Background

Ameloblastic fibroma is a rare benign, biphasic epithelial-mesenchymal odontogenic tumour which typically presents in young patients and is treated conservatively with excellent prognosis. An important differential is ameloblastoma, a relatively more common epithelial odontogenic tumour which requires an intensive treatment regimen due to its aggressive nature. Both lesions can show overlapping radiological and histological features and demonstrate BRAF V600E mutations, which can be identified by specific immunohistochemistry.

Purpose

We present a case of ameloblastic fibroma in a 13-year-old female where BRAF V600E immunohistochemistry showed a unique staining pattern with cytoplasmic staining in both stromal and epithelial components of the tumour. While epithelial staining is considered a surrogate marker for mutation and supportive of the diagnosis of ameloblastoma, the immunohistochemical staining pattern in ameloblastic fibroma has not been well defined or researched due to the rarity of the lesion.

Methods

We conducted a literature review in order to ascertain whether the BRAF V600E staining pattern we observed is significant and could support the diagnosis of ameloblastic fibroma as opposed to ameloblastoma.

Results

No published data was available regarding the expected BRAF V600E staining pattern in ameloblastic fibroma. However, molecular studies have found BRAF V600E mutations in the stromal component of ameloblastic fibroma and related lesions, which has been reported as consistent with the mesenchymal neoplastic component of these tumours.

Conclusions

We suggest that the specific stromal and epithelial staining pattern we observed in our case of ameloblastic fibroma is consistent with the biphasic nature of the lesion and may be of diagnostic utility in distinguishing ameloblastic fibroma from ameloblastoma, a purely epithelial and more aggressive neoplasm.

References

1. El-Naggar, A. K., Chan, J. K. C., Grandis, J. R., Takata, T. & Slootweg, P. J. WHO Classification of Head and Neck Tumours. (International Agency for Research on Cancer, 2017).
2. Vij, R. & Vij, H. Ameloblastic fibroma: an uncommon entity. BMJ Case Rep. 2013, bcr2013010279 (2013).
3. Mendez, L. D. et al. The diagnostic utility of BRAF VE1 mutation-specific immunohistochemistry in ameloblastoma. Mod. Pathol. Off. J. U. S. Can. Acad. Pathol. Inc 35, 1570–1577 (2022).

4. Brown, N. A. & Betz, B. L. Ameloblastoma: A Review of Recent Molecular Pathogenetic Discoveries. Biomark. Cancer 7, 19–24 (2015).
5. Brunner, P., Bihl, M., Jundt, G., Baumhoer, D. & Hoeller, S. BRAF p.V600E mutations are not unique to ameloblastoma and are shared by other odontogenic tumors with ameloblastic morphology. Oral Oncol. 51, e77-78 (2015).
6. Agaimy, A. et al. Ameloblastic fibrosarcoma: clinicopathological and molecular analysis of seven cases highlighting frequent BRAF and occasional NRAS mutations. Histopathology 76, 814–821 (2020).
7. Coura, B. P. et al. Targeted Next-Generation Sequencing and Allele-Specific Quantitative PCR of Laser Capture Microdissected Samples Uncover Molecular Differences in Mixed Odontogenic Tumors. J. Mol. Diagn. JMD 22, 1393–1399 (2020).

P70

Diffuse sclerosing variant of papillary thyroid carcinoma: A case report and review of the literature

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Poster Round 2 - 19 June, 1pm - 2pm

Introduction:

Papillary carcinoma of the thyroid (PTC) is the most common endocrine malignancy across all age groups, accounting for more than 85% of malignant thyroid lesions. (1,2) In excess of 15 histopathologic variants of PTC have been described, and these are classified based on growth pattern, cell type and stromal changes. (3) Diffuse sclerosing variant of PTC is an uncommon and comparatively aggressive subtype of PTC. Here we present a case of this entity, highlighting the prognostic implications.

Case:

A female patient in her 30s presented with enlarged cervical lymph nodes which were radiologically suspicious for malignancy. Fine needle aspiration cytology from a level II lymph node showed metastatic papillary thyroid carcinoma with classical cytomorphological papillary nuclear features. Immunohistochemsitry showed positivity for TTF-1, CK19 and HBME-1.

A total thyroidectomy and neck dissection showed bilateral involvement of the thyroid lobes by a diffuse sclerosing variant papillary carcinoma. The tumour showed a highly infiltrative growth pattern with classic nuclear features of PTC, along with dense stromal fibrosis and sclerosis, multiple psammoma bodies and extensive invasion of lympho-vascular spaces. The neck showed widespread nodal involvement in levels II, III, IV, and VI.

Discussion:

Diffuse sclerosing variant of papillary thyroid carcinoma (DSVPTC) is an uncommon variant of PTC which makes up between 1-6% of all diagnoses of PTC (4). It has a predilection for younger patients (5) and particularly females. It is usually associated with BRAFV600E mutation and is characterized by a more aggressive clinical course with a higher incidence of cervical lymph node metastasis. (6) This case demonstrates a primary presentation of DSVPTC as a level II neck metastasis, highlighting a variation from the more common clinical presentation of PTC as a thyroid mass.

References

1. Kitahara CM, Sosa JA. Understanding the ever-changing incidence of thyroid cancer. Nat Rev Endocrinol. 2020 Nov;16(11):617-618. doi: 10.1038/s41574-020-00414-9. PMID: 32895503; PMCID: PMC7476643.

2. Davies L, Welch HG. Current Thyroid Cancer Trends in the United States. JAMA Otolaryngol Head Neck Surg. 2014;140(4):317–322. doi:10.1001/jamaoto.2014.1

3. Lloyd RV, Buehler D, Khanafshar E. Papillary thyroid carcinoma variants. Head and Neck Pathology 2011551–56. (10.1007/s12105-010-0236-9)

4. Pillai, Suja, et al. "Diffuse sclerosing variant of papillary thyroid carcinoma—an update of its clinicopathological features and molecular biology." Critical reviews in oncology/hematology 94.1 (2015): 64-73.

5. Koo, Ja Seung, Soonwon Hong, and Cheong Soo Park. "Diffuse sclerosing variant is a major subtype of papillary thyroid carcinoma in the young." Thyroid 19.11 (2009): 1225-1231.

6. Vuong, Huy Gia, et al. "Prognostic significance of diffuse sclerosing variant papillary thyroid carcinoma: a systematic review and meta-analysis." European Journal of Endocrinology 176.4 (2017): 433-441.

P71

An Unusual Case of Hepatic Epithelioid Haemangioendothelioma and Brief Literature Review

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Poster Round 2 - 19 June, 1pm - 2pm

Introduction: Epithelioid haemangioendothelioma (EHE) is a rare vascular neoplasm arising in soft tissue, bones, and visceral organs. The diagnosis of EHE poses a challenge due to its diverse clinical manifestations and histological appearance, often resembling both benign and malignant lesions. The tumour's morphological characteristics consist of epithelioid endothelial cells within a myxohyaline stroma and immunohistochemical staining and molecular ancillary tests aid in reaching the diagnosis. EHE exhibits an intermediate behaviour between haemangioma and angiosarcoma. Treatment strategies include wide local resection with clear margins and adjuvant chemotherapy and radiotherapy.

Purpose: To report an unusual case of hepatic EHE and highlight the diagnostic challenge that vascular neoplasms offer.

Case report: We present a case of hepatic EHE in a fit and healthy 57-year-old female. The finding of liver lesions was incidental during routine cholecystectomy and biopsy was taken intraoperatively. Microscopic assessment revealed single and clusters of epithelioid cells which showed positive staining for CD31, CD34 and ERG but were negative for AE1/AE3 and CK8/18. The features raised a possibility of EHE and a repeat biopsy was performed. This also showed endothelial cells set in a myxohyaline stroma, which were immunopositive for the vascular markers and negative for epithelial markers although a very focal positivity with CK7 was identified. From the overall morphological appearances and immunoprofile of both biopsies, the consensus opinion favoured an EHE.

Conclusion: Our case is an unusual case of hepatic EHE and was diagnostically challenging despite use of immunohistochemical staining. Due to its unpredictable malignant potential and variable prognosis, we emphasize that careful consideration of each individual case of EHE is essential.

P72

Improving the Completeness of Histopathological Reports of Carcinomas of the Pancreas, Ampulla of Vater and Common Bile Duct

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Pancreatic cancer has a poor prognosis, with a 5-year survival rate of less than 5% (1,2). Early diagnosis and surgical resection are critical for improving survival rates (3). The number of lymph nodes retrieved and microscopically examined significantly impacts outcomes, as inadequate sampling can lead to understaging (4). Notably, a Whipple's resection should yield at least 15 lymph nodes (4).

Purpose
Pathologists play a crucial role in providing accurate, comprehensive, and understandable pathology reports. This audit aimed to assess report completeness.

Methods
78 pancreatic resections in a single health board were identified between September 2022 and 2023. The completeness of microscopic reports was audited against the Royal College of Pathologists dataset.

Results
Of the 78 pancreatic resections, 32 were excluded from analysis as the diagnosis was not of adenocarcinoma. For the remaining specimens, there were 24 cases of pancreatic adenocarcinoma, 11 cases of ampulla of Vater adenocarcinoma and 8 cases of CBD adenocarcinoma.

72% of patients had more than the recommended 15 lymph nodes harvested, with an average of 18.3 nodes. Overall, reports were very comprehensive, with most items in the dataset commented on. Areas identified for improvement were specifying the variant of pancreatic ductal adenocarcinoma, and including a comment on the gastric transection margin, even if that is 'N/A'.

Conclusions
Utilising proformas may enhance report completeness (5) and the key recommendation from this audit is to implement proforma reporting for resections for pancreatic/ ampulla of Vater/ CBD carcinoma.

References

References
1. Bengtsson, A., Andersson, R. and Ansari, D. (2020) 'The actual 5-year survivors of pancreatic ductal adenocarcinoma based on real-world data', Scientific Reports, 10(1). doi:10.1038/s41598-020-73525-y.

2. https://cks.nice.org.uk/topics/gastrointestinal-tract-upper-cancers-recognition-referral/

3. Jiang, J. et al. (2023) 'Artificial Intelligence in the diagnosis and treatment of pancreatic cystic lesions and adenocarcinoma', Cancers, 15(9), p. 2410. doi:10.3390/cancers15092410.

4. Campbell, F. et al (2019) 'G091 Dataset for histopathological reporting of carcinomas of the pancreas, ampulla of Vater and common bile duct'. Available at: https://www.rcpath.org/resourceLibrary/g091-pancreasdataset.html

5. Cross, S.S., Feeley, K.M. and Angel, C.A. (1998) ‘The effect of four interventions on the informational content of histopathology reports of resected colorectal carcinomas’, Journal of Clinical Pathology, 51(6), pp. 481–482. doi:10.1136/jcp.51.6.481.

P73

Lymph Node Yield for Malignant Whipple Resection Specimen

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Poster Round 2 - 19 June, 1pm - 2pm

Background:
The Whipple procedure involves the resection of the head of the pancreas, gallbladder, distal stomach, small intestine and bile duct(1). It provides treatment for malignant lesions of the peri-ampullary region of the duodenum and the majority of pancreatic neoplasms(2). Mean harvest of lymph nodes from a Whipple resection specimen should be at least 15 nodes(3) . The number of retrieved lymph nodes does influence survival (3).

Purpose:
Review lymph node (LN) yield for malignant Whipple resection specimens in our institution over a 16 month period.

Methods:
Reports from all Whipple Resection (pancreaticoduodenectomy) specimens from January 2022 to April 2023 at our institution were retrospectively reviewed. Tumour type, block count and lymph node yield for Whipple resection were recorded from microscopy reports. Whipple resections with pre-malignant lesions or no malignancy identified were excluded. Student's T test was performed to compare years.

Results:
A total of 79 Whipple's Resections (pancreaticoduodenectomy) were performed for malignant neoplasms: 10 well differentiated Neuroendocrine Tumours, 1 metastatic renal cell carcinoma, 65 primary pancreaticobiliary adenocarcinoma and 3 Intraductal papillary mucinous neoplasms (IPMN) with associated invasive carcinoma.

Average block count was 18.0 (range 11-34) in 2022 and 15.7 (range 10-25) in 2023 (P-value 0.0120).

Average lymph node yield was 16.8 (range 2-30) in 2022 and 12.3 (range 3-27) in 2023 (P-value 0.0046).

There was a statistically significant decrease in block count and lymph node yield for malignant Whipple resections when comparing 2022 and 2023.

Conclusions:
Lymph node yield and block count for malignant Whipple Resections decreased in our institution over the observed period. Our findings suggest the need to submit more peripancreatic soft tissue for histological evaluation. We have set new minimum sampling requirement of 18 blocks for malignant Whipple specimens in our department. To standardise macroscopic examination, our department has trained a specialised hepatobiliary medical scientist.

References

1. https://www.qub.ac.uk/research-centres/nicr/FileStore/PDF/Filetoupload,1756444,en.pdf
2. Changazi SH, Ahmed Q, Bhatti S, Siddique S, Abdul Raffay E, Farooka MW, Ayyaz M. Whipple Procedure: A Five-Year Clinical Experience in Tertiary Care Center. Cureus. 2020 Nov 13;12(11):e11466. doi: 10.7759/cureus.11466. PMID: 33329963; PMCID: PMC7733773.
3. https://www.rcpath.org/static/34910231-c106-4629-a2de9e9ae6f87ac1/G091-

Dataset-for-histopathological-reporting-of-carcinomas-of-the-pancreas-ampulla-of-Vater-and-common-bile-duct.pdf

P74

Evolving Patterns of Sinusoidal Injury in Paracetamol Overdose

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Poster Round 2 - 19 June, 1pm - 2pm

Introduction:
Paracetamol overdose causes acute liver injury characterised by centrilobular (zone 3) hepatic necrosis. Although hepatocytes represent the main target of the cytotoxic effect, disturbances within the endothelium causing morphological changes of liver sinusoidal endothelial cells are also described. We aim to review the histological patterns of hepatic vascular injury in paracetamol overdose in both an orthotopic liver transplant and autopsy cohort.
Methods:
Cases of paracetamol overdose resulting in either an orthotopic liver transplant (OLT) or autopsy were identified over a 10 year period. Histological analysis was carried out in each case.
Results:
44 cases of paracetamol overdose were identified (23 autopsy cases and 21 cases of OLT). Patient's age ranged from 17 – 61 years. 27 cases were females and 17 were males. Slides were available for review in 16 autopsy cases and 15 OLT cases.
Percentage of zone 3 necrosis ranged from 30 – 90% in the OLT group and 40 – 100% in the autopsy group. 33.3% of OLT cases showed >80% necrosis, 81% autopsy cases showed >80% necrosis.
A subacute pattern of injury with sinusoidal obstruction was more frequently seen in the OLT group. Mummification was associated with an acute pattern of injury and not seen in the subacute group. Sinusoidal occlusion was observed predominantly in a perivenular distribution and most commonly associated with areas of collapse. Some degree of sinusoidal occlusion was seen in all subacute cases.
Conclusion:
Two distinct patterns of injury were noted: an acute pattern with perivenular necrosis and mummification with patent sinusoids and a subacute pattern with pericentral collapse and obstructed sinusoids. The later appears to occur more commonly in the OLT group.
We hypothesise that early injury may be associated with open sinusoids and patients may develop sinusoidal obstruction as a later phenomenon as cases become more subacute.

P75

Minimum lymph node yield in pancreaticoduodenectomy specimens. Results from the Recurrence After Whipple's (RAW) study

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Poster Round 2 - 19 June, 1pm - 2pm

Background:

Pancreaticoduodenectomy (PD) is the surgical treatment of choice in curative intent head of pancreas ductal adenocarcinoma (PDAC), distal cholangiocarcinoma (CC) and ampullary carcinomas (AC). Minimum lymph nodes required to ensure true node negativity has only been studied in individual cancer types without a pragmatic look at the PD specimen as a whole[1].

Purpose:

To explore minimum lymph node yields in PD specimens.

Methods:
Data was extracted from the Recurrence After Whipple's (RAW) dataset which included 1425 patients who underwent pancreatoduodenectomy for PDAC, distal CC and AC. A beta binomial model was used to estimate the nodal staging score (NSS) which is the probability that a patient is truly node negative based on examining a given number of nodes. The NSS was stratified for the tumour T stage. Odds ratio (OR) for positive nodes were also plotted against number of lymph nodes examined.

Results:
1370 patients had complete data for analysis with a median of 16 lymph nodes examined. The greater the number of nodes examined, the greater the number of positive nodes identified up to an apparent break point of 22 nodes. The OR for nodal positive disease is greatest at 27 nodes at which point the OR decreases. The probability of missing a positive node in a truly node-positive patient decreases with the number of nodes examined. The number of nodes required for true negativity is directly proportional to the T-stage (NSS of 90% is 7 nodes for T1, 15 nodes for T2, 25 nodes for T3 and 31 nodes for T4).

Conclusion:
The greater the number of lymph nodes examined in a PD specimen the less likely false negativity will be ascribed to the nodal staging. The minimum lymph node yield is dependent on stage and the statistical method used.

References

1. Pu N, Gao S, Beckman R, Ding D, Wright M, Chen Z, et al. Defining a minimum number of examined lymph nodes improves the prognostic value of lymphadenectomy in pancreas ductal adenocarcinoma. HPB. 2021 Apr 1;23(4):575–86.

P76

Case Series of Mass Forming Necrotising Granulomas in Hepatic Resections – Clinical Mimics and Differential Diagnoses

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Hepatic necrotising granulomas rarely present as a hepatic mass, identifiable on imaging. These lesions are clinically mistaken for primary or metastatic tumours and may subsequently be resected.

Purpose: To determine the association and possible aetiology of mass-forming necrotising granulomas in the liver.

Methods: A search was conducted on our laboratory information management system from 2015 to 2024 for necrotising granulomatous inflammation in liver specimens. This included four cases reported previously (1). Cases of non-mass forming granulomatous inflammation were excluded.

Results: Nine cases were found for which the mean age was 60 and 6 were male patients. Four cases showed necrotising granulomatous inflammation following percutaneous biliary drainage (1). Two cases were found during hepatic resection for metastatic colorectal carcinoma in patients who had chemotherapy. Completely regressed tumour was considered unlikely given the context of further background lesions showing only a mild response to treatment. Furthermore, immunohistochemistry confirmed that no tumour was found in these nodules. In the remaining three patients the aetiology was uncertain in spite of extensive histochemical tests for infective aetiology.

Conclusions: Necrotising granulomatous inflammation has been reported post-chemotherapy and post-instrumentation, as confirmed by our findings. The pathogenesis of necrotising granulomatous inflammation in the liver following instrumentation and chemotherapy is currently not well understood. Differentials for pathologists include mycobacterial infection, fungal organisms, vasculitis, parasites and granulomas associated with malignancy. This case series emphasises the importance of extensive clinicopathological and radiological correlation as well as special stains when working up cases of necrotising granulomatous inflammation. Furthermore, this highlights the importance of consideration of frozen sections and biopsies to potentially reduce overtreatment of these lesions.

References

1) Hadjimichael E, et al. Liver Nodules after Percutaneous Transhepatic Biliary Drainage: A Case Series. Clinics in Oncology. 2018; 3: 1457

P77

Preliminary GBM analysis of CD146, PDGF-Rβ, CD3, CD8 in Argentina's CRC cohort to correlate with clinicopathological and epidemiological data.

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Colorectal cancer (CRC), the third leading cancer globally, is expected to reach 2.2 million cases and 1.1 million deaths by 2030, highlighting the urgent need for new diagnostic and prognostic approaches. The use of Gradient Boosting Machine (GBM) algorithms in data analysis represents a major progress, enabling an in-depth analysis of biomarker interactions within CRC. This approach could reveal new therapeutic strategies by clarifying the complex relationships between biomarker expressions and CRC's complexities.
Purpose: Our research is dedicated to exploring the efficacy of GBM algorithms in evaluating the relationships between expressions of CD146, PDGF-Rβ, CD3, and CD8; CD146 standing out as biomarker for angiogenesis tumorigenesis, and correlate clinico-pathological as well as epidemiological factors in Argentine CRC patients. This inquiry is nested within a broader investigation into diverse machine learning techniques, aiming to bolster our understanding of GBM's analytical capabilities.
Methods: Immunohistochemical analysis was conducted on FFPE tissue samples from 53 sporadic CRC patients at the Italian Hospital of Buenos Aires, examining CD146, PDGF-Rβ, CD3, and CD8 expressions. The study combined these with clinico-epidemiological data using the GBM model to delineate the key variables determinants of antibody expression.
Results: The GBM analysis identified significant biomarker interactions, particularly highlighting influence the expression of CD146 such as tumor location (45.9%), TNM staging (12.4%), and tumor size (5.8%). Supported by logistic regression, these results highlight the potential of GBM for advancing personalized treatment approaches, affirming its efficacy in colorectal cancer research.
Conclusions: GBM analysis underscores a significant impact on crucial clinical and epidemiological factors within the Argentine CRC patient cohort, affirming the method's analytical prowess. The imperative for further validation and research is evident, as it holds the potential to broaden our comprehension of GBM's application scope. This investigation propels the integration of machine learning algorithms into CRC research, heralding new investigative pathways.

References

Garcia-Vidal C., Puerta-Alcalde P., Cardozo C., Orellana MA., Besanson G., Lagunas J., Marco F., Del Rio A., Martínez JA., Chumbita M., Garcia-Pouton N., Mensa J., Rovira M., Esteve J., Soriano A.(2021). Machine Learning to Assess the Risk of Multidrug-Resistant Gram-Negative Bacilli Infections in Febrile Neutropenic Hematological Patients. Infect Dis Ther, 10:971–983. https://doi.org/10.1007/s40121-021-00438-2

Hijazi, A., Antoniotti, C., Cremolini, C., & Galon, J. (2023). Light on life: immunoscore immune-checkpoint, a predictor of immunotherapy response. OncoImmunology, 12(1). https://doi.org/10.1080/2162402X.2023.2243169

Menezes, K., Rosa, B. G., Freitas, C., da Cruz, A. S., de Siqueira Santos, R., Nascimento, M. A., Alves, D. V. L., Bonamino, M., Rossi, M. I., Borojevic, R., & Coelho-Sampaio, T. (2020). Human mesenchymal stromal/stem cells recruit resident pericytes and induce blood vessels maturation to repair experimental spinal cord injury in rats. Scientific reports, 10(1), 19604. https://doi.org/10.1038/s41598-020-76290-0

Mitsala, A., Tsalikidis, C., Pitiakoudis, M., Simopoulos, C., & Tsaroucha, A. K. (2021). Artificial Intelligence in Colorectal Cancer Screening, Diagnosis and Treatment. A New Era. Current Oncology, 28(3), 1581–1607. https://doi.org/10.3390/curroncol28030149

Renman, D., Gylling, B., Vidman, L., Bodén, S., Strigård, K., Palmqvist, R., Harlid, S., Gunnarsson, U., & van Guelpen, B. (2021). Density of CD3+ and CD8+ Cells in the Microenvironment of Colorectal Cancer according to Prediagnostic Physical Activity. Cancer Epidemiology, Biomarkers & Prevention, 30(12), 2317–2326. https://doi.org/10.1158/1055-9965.EPI-21-0508

Yang, H.-J., Cho, C. W., Jang, J., Kim, S. S., Ahn, K.-S., Park, S.-K., & Park, D. Il. (2021). Application of deep learning to predict advanced neoplasia using big clinical data in colorectal cancer screening of asymptomatic adults. The Korean Journal of Internal Medicine, 36(4), 845–856. https://doi.org/10.3904/kjim.2020.020

Zhu, Y., Wang, M., Yin, X., Zhang, J., Meijering, E., & Hu, J. (2022). Deep Learning in Diverse Intelligent Sensor Based Systems. Sensors, 23(1), 62. https://doi.org/10.3390/s23010062

P78

Amiloidosis Detection by Mass Spectrometry: Development of a Diagnostic Technique.

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Amyloidosis, a rare disease impacting 1 in 10,000 individuals globally, arises from misfolded proteins forming insoluble fibrillar deposits in various body regions.
Purpose: Identifying these proteins is crucial for appropriate treatment. Amyloid fibers are visible as apple green birefringent color with polarized light in tissue slides, stained with Congo Red. The gold standard for the identification of the amyloid protein, we used LMD/MS, which consists of a laser microdissection of the birefringent material and subsequent analysis by tandem mass spectrometry1. Alongside our Hospital, the Institute of Biology and Experimental Medicine (IBYME/Conicet) and CEQUIBIEM, we aim to develop this diagnostic technique to offer it as a service in Argentina and Latin America.
Method: The study included pathological samples from various organs affected by amyloidosis: Heart (9), Oral cavity (2), Liver (1), Larynx (1), and Rectum (1), alongside 3 control Heart samples. These samples were slides stained with Congo Red, and paraffin embedded blocks. Laser microdissection was performed. At CEQUIBIEM, a standardized protocol for protein extraction was established for both microdissected samples (9) and fixed biopsy sections (14). All samples underwent analysis using nano HPLC coupled with Orbitrap (QExactive) mass spectrometry.
Results: 6 of the 9 samples analyzed, amyloidogenic proteins were detected. Amyloidogenic proteins were detected in all 14 biopsy samples analyzed directly by LC/MS. In all cases, 5 proteins that are described as “signature” and accompany the amyloid fiber (Apolipoprotein A-IV. Apolipoprotein A-I; Apolipoprotein E, Serumamyloid and Vitronectin) were identified. Also, amyloidogenic proteins were detected in abundance in non-microdissected biopsies, suggesting a granular accumulation compared to LMD/MS samples.
Conclusions: Further analysis of diverse tissue samples and corresponding controls is necessary, yet initial findings indicate promising prospects for the technique's development and application. This collaborative effort holds potential to enhance diagnostic capabilities and therapeutic strategies for amyloidosis in the region.

References

1. Dogan, A.(2017)Amyloidosis: Insights from Proteomics.AnnuRevPathol. 24(12):277-304.BIBLIOGRAFÍA
2. Sipe JD, Benson MD, Buxbaum JN, Ikeda S-I, Merlini G, Saraiva MJM, et al. Amyloid fibril proteins and amyloidosis: chemical identification and clinical classification International Society of Amyloidosis 2016 Nomenclature Guidelines. Amyloid. 2016. pp. 209–213. doi:10.1080/13506129.2016.1257986
3. Nuvolone M, Merlini G. Systemic amyloidosis: novel therapies and role of biomarkers. Nephrol Dial Transplant. 2017;32: 770–780.
4. Picken MM, Herrera GA, Dogan A. Amyloid and Related Disorders: Surgical Pathology and Clinical Correlations. Humana Press; 2015.
5. Sethi S, Vrana JA, Theis JD, Leung N, Sethi A, Nasr SH, et al. Laser microdissection and mass spectrometry–based proteomics aids the diagnosis and typing of renal amyloidosis. Kidney International. 2012. pp. 226–234. doi:10.1038/ki.2012.108
6. Picken MM. Proteomics and mass spectrometry in the diagnosis of renal amyloidosis. Clinical Kidney Journal. 2015. pp. 665–672. doi:10.1093/ckj/sfv087

7. Vrana JA, Theis JD, Dasari S, Mereuta OM, Dispenzieri A, Zeldenrust SR, et al. Clinical diagnosis and typing of systemic amyloidosis in subcutaneous fat aspirates by mass spectrometry-based proteomics. Haematologica. 2014. pp. 1239–1247. doi:10.3324/haematol.2013.102764
8. Mollee P, Renaut P, Boros S, Loo D, Hill M. Diagnosis Of Amyloidosis Subtype By Laser-Capture Microdissection (LCM) and Tandem Mass Spectrometry (MS) Proteomic Analysis. Blood. 2013. pp. 5295–5295. doi:10.1182/blood.v122.21.5295.5295
9. Hill MM, Mollee PN. Mass spectrometry analysis for amyloidosis typing - is the future bright for its clinical implementation? Expert Review of Proteomics. 2017. pp. 565–566. doi:10.1080/14789450.2017.1322905
10. Dogan A. Classification of Amyloidosis by Mass Spectrometry-Based Proteomics. Amyloid and Related Disorders. 2012. pp. 261–272. doi:10.1007/978-1-60761-389-3_21
11. Inc. KN, Kernel Networks Inc. Amyloidosis Typing Using Mass Spectrometry-based Proteomics: a New Accurate Tool for Difficult Typing. Case Medical Research. 2019. doi:10.31525/ct1-nct03984721
12. Gordon A, Kannan SK, Gousset K. A Novel Cell Fixation Method that Greatly Enhances Protein Identification in Microproteomic Studies Using Laser Capture Microdissection and Mass Spectrometry. PROTEOMICS. 2018. p. 1700294. doi:10.1002/pmic.201700294
13. Simone N. Laser capture microdissection: Beyond functional genomics to proteomics. Molecular Diagnosis. 2000. pp. 301–307. doi:10.1054/modi.2000.19808a
13. Papa R, Lachmann HJ. Secondary, AA, Amyloidosis. Rheum Dis Clin North Am. 2018;44: 585–603.

P79

UK participation in the mismatch repair immunohistochemistry National External Quality Assessment Scheme: insights from the last decade.

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Poster Round 2 - 19 June, 1pm - 2pm

Background
The National Institute for Health and Care Excellence (NICE) recommends Lynch syndrome screening in people initially diagnosed with colorectal cancer, either by mismatch repair (MMR) immunohistochemistry (IHC) or microsatellite instability testing.
The UK National External Quality Assessment Scheme for Immunocytochemistry and In-situ Hybridisation (UK NEQAS) has quality assessed MMR IHC since 2011.

Purpose
To explore the quality and quantity of submissions to the scheme from participating UK medical laboratories (2011-2021).

Methods
Participants performed in-house MMR IHC on quality-controlled, Formalin-fixed, paraffin-embedded tissue supplied by UK NEQAS. Tissue was also supplied to antibody and platform manufacturers to produce reference slides.
Four independent assessors, calibrated to reference slides, scored according to pre-defined standards. Non-diagnostic submissions were scored 1-2. Borderline staining was scored 3. Scores of 4 indicated acceptable staining with minor technical issues. Optimal staining quality was scored 5. The final aggregated score (FAS) was the sum of assessor scores.
Submissions were assessed biannually in protein pairs (MLH1/PMS2 and MSH2/MSH6).

Results
Thirty-eight assessments ran between 2011-2021 (Run 95 – Run 135) with 3405 submissions from 100 UK participants. Run 95 received 40 submissions; Run 135 received 175 submissions.

Borderline or better scores were achieved in 93.4% of submissions (n=3179). Lowest scores were observed in earlier runs (Run 95-117, Average FAS 14.6, StdDev 0.89, Var 0.79). Greater concordance between participant scores was observed in later runs (Run 118-135) (Average FAS: 15.1, StdDev 0.54, Var 0.29).

Conclusions
Increased scheme participation reflects the growing clinical importance of MMR IHC. Recent runs demonstrate less variability between participant scores indicative of improving technologies and participants' established technical competence.
Whilst further scheme growth is anticipated, submission numbers may reach a zenith as UK Lynch syndrome screening implementation settles. Alternatively, newer technologies may challenge the screening paradigm and reduce demand for MMR IHC and the quality assessment scheme.

P80

Patient-derived organoids as robust pre-clinical models for translational research in prostate cancer

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Patient-derived organoids (PDOs) have emerged as robust pre-clinical models for oncology research. However, generating PDOs from prostate cancer patient samples has been challenging.
Purpose: Here, we present a living biobank of PDOs derived from prostatectomy specimens, which represent a range of prostate carcinoma phenotypes and can be utilised for predictive molecular testing.
Methods: We established a robust protocol for generation of PDOs from prostate carcinoma specimens, and applied whole-genome and RNA sequencing, methylome profiling and functional studies.
Results: Phenotypic and genotypic analysis revealed good representation of the original tumours in PDOs, and histological assessment confirmed similarity of morphological features. Molecular profiling of PDOs showed close alignment to the corresponding primary tumour tissues. For instance, Illumina HumanMethylation450 Bead Chip array-based methylome profiles of PDOs clustered with prostate cancer tissues, distinctly different from normal prostate tissue or other tumour entities. Whole-genome sequencing and RNA-Seq demonstrated similar profiles between PDOs and their original tumours. Additionally, comparative functional analyses of the responses of PDOs and ex vivo prostate cancer tissue slice cultures to anticancer agents, such as second-generation antiandrogens, PARP inhibitor olaparib, cisplatin, and ionising radiation, demonstrate their utility for individual treatment response prediction.
Conclusions: PDOs can provide a valuable tool in the personalisation of prostate cancer therapy.

P81

Chronic Inflammatory Changes in the Placenta - a Single Centre Experience

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Poster Round 2 - 19 June, 1pm - 2pm

Background

Chronic placental inflammation can result in adverse clinical outcomes, and recur in subsequent pregnancies. Patterns of chronic placental inflammation include low and high-grade chronic villitis, comprising of maternally-derived CD8+ T cells, collectively called Villitis of Unknown Etiology (VUE, incidence 5-15%)[1]; Chronic Histiocytic Intervillositis (CHI, incidence 0.6%)[2]; and Eosinophilic/ T-cell Chorionic Vasculitis (E/TCV, incidence 0.37-0.6%).

Purpose

To determine the incidence of chronic placental inflammation in Northern Scotland.

Methods

SNOMED codes for placenta (T88000) and chronic inflammation (M43000) were used to screen all surgical specimens submitted for histological analysis to the pathology department at the Aberdeen Royal Infirmary between 01/01/2017 - 31/12/2023. Diagnostic histopathology reports were reviewed for data extraction.

Results

Of the 3095 placental specimens, 223 were excluded: multiple gestations (n=212), duplicated cases (n=5), coding error (n=3), infectious aetiology (n=2, one CMV, one malaria), non-specific changes (n=1). The resulting study cohort of singleton placentas (n=2872) comprised 138 cases of chronic villitis/VUE (4.8%, mean gestation 37 weeks, range: 27-42), with high-grade features in 112 cases (3.9%), with recurrence in two cases. VUE was observed in six perinatal deaths: two in a case of recurrent intrauterine death (IUD), one further IUD, and three neonatal deaths. There were six cases of CHI (0.2%, mean gestation 32 weeks, range: 26-40), with one baby requiring significant resuscitation following delivery. Three cases of E/TCV were identified (0.1%, mean gestation 29 weeks, range: 20-36), and one case occurred in an IUD at 20 weeks gestation.

Conclusion

Chronic placental inflammation, with associated adverse clinical outcomes, has been demonstrated at lower incidence rates than expected, which could be due to our cohort not including post-mortem samples.

References

1. Parast M. Chronic Villitis / Villitis of Unknown Etiology (VUE). In: Redline RW, Boyd TK, Roberts DJ, eds. Placental and Gestational Pathology. Diagnostic Pediatric Pathology. Cambridge University Press; 2017:137-144.
2. Redline RW. Chronic Histiocytic Intervillositis. In: Redline RW, Boyd TK, Roberts DJ, eds. Placental and Gestational Pathology. Diagnostic Pediatric Pathology. Cambridge University Press; 2017:152-156.

P82

Extraneural metastases of a myxopapillary ependymoma diagnosed on axillary node core biopsy

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Poster Round 2 - 19 June, 1pm - 2pm

Myxopapillary ependymomas are WHO grade II glial neoplasms classically arising in the distal spinal cord and cauda equina. Despite carrying a relatively favourable prognosis, they can show locally advanced growth leading to incomplete surgical removal and recurrent spinal disease. Metastatic spread is infrequent and when it does occur, the most common site is intracranial. There are only a handful of published case reports detailing ependymomas of the thoracolumbar spine metastasising outside the central nervous system, only one of which was a myxopapillary ependymoma of the conus medullaris and cauda equina.

We report a case of myxopapillary ependymoma of the lumbar spinal cord with extraneural metastases to the lungs, retroperitoneal, para-aortic and axillary lymph nodes diagnosed on an axillary node core biopsy in a 62-year-old gentleman 37 years after his initial surgery. He had a long history of recurrent and progressive disease in the thoracic and lumbar spine, previously undergoing multiple surgeries, rounds of radiotherapy and chemotherapy (PCV and temozolomide). No actionable genetic mutations were detected. National MDT discussion of potential treatment options proposed oral etoposide, with careful risk-benefit counselling, and focal palliative radiotherapy for symptomatic control.

P83

Unusual case of myopathy with crystalline inclusions

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Man in 80s has been referred by GP due to elevated serum creatinine kinase which has not decreased despite discontinuation of the statin therapy.
Purpose
He reported a prolonged history of progressive proximal muscle burning-like pain and difficulty getting up from sitting position. The symptoms were worse after period of inactivity. There were no changes to his facial appearance, speech or swallowing functions. He also complained of a weak hand grip. The autoantibodies were not detected in serological investigations. On examination, he had mild distal weakness in the upper limbs (4/5) with respective reduced muscle bulk.
Methods
He was investigated for possible myopathy. Electromyography examination concluded that the results of upper limb assessment was in keeping with the working diagnosis of myopathy.
Results
Bicep muscle biopsy was performed which demonstrated mild variability of fibre size and presence of necrosis. Some of the myofibers containing grey refractile inclusions in the sarcoplasm which were PAS positive and diastase resistant, red on Gomori trichrome and p62 positive. These inclusions were particularly found in the type 2 fibres, and type 2B fibres were the most affected. There was no apparent glycogen or lipid accumulation. The cellular infiltration was minimal. Electron microscopy demonstrated non-membrane bound inclusions (approximately 40 µm in diameter) filled with a large number of non-membrane bound rectangular and rhomboidal crystalline bodies (ranging from 0.5 to 2 µm in diameter).
Conclusions
A working diagnosis of myopathy with crystalline inclusions was given. Literature search has revealed a limited number of published cases with similar morphological features observed in this case which were reactive with tubulin immunohistochemistry. Undertaking Mass Spectrometry to confirm the nature of the crystalline inclusions has been suggested.

References

Shelton, G. Diane, Beverly K. Sturges, Leslie A. Lyons, D. Colette Williams, Monica Aleman, Yun Jiang, and Andrew P. Mizisin. 2007. “Myopathy with Tubulin-Reactive Inclusions in Two Cats.” Acta Neuropathologica 114 (5): 537–42. https://doi.org/10.1007/s00401-007-0217-6.
Vu, T. H., A. P. Hays, K. Tanji, D. Younger, G.G. Gundersen, A. Eastwood, C. W. Braun, S. DiMauro, and E. Bonilla. 2001. “Myopathy with Tubulin-Reactive Crystalline Inclusions.” Neurology 57 (1): 149–52. https://doi.org/10.1212/wnl.57.1.149.

P84

An Unusual Case of Medulloblastoma in Adult with Extracranial Metastases

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Poster Round 2 - 19 June, 1pm - 2pm

Background: Medulloblastoma (MB) is the most common embryonal craniospinal (CNS) tumour[1]. It is more prevalent in the paediatric population and occurs rarely in adults, accounting for <1% of adult CNS tumours[2]. MB metastasise extremely rarely, however when metastases occur, they are seen predominantly by leptomeningeal seeding[3].

Purpose: In this case report we present case of adult onset aggressive medulloblastoma that showed early metastases to the patient's bone marrow.

Methods: Bone marrow aspirate specimen was received from referring clinicians, fixed in formalin and processed for standard paraffin block embedding. Sections were stained using routine histopathological practice and paraffin-embedded sections were submitted for the methylation array analysis.

Results: A 40 year old female patient presented with pancytopaenia and neutropenic sepsis. 10 months previously she had a cerebellar MB surgically excised, followed by cradiospinal radiotherapy. Bone marrow trephine biopsy was obtained from her iliac bone. The marrow showed reduced normal haematopoiesis and extensive infiltration by pleomorphic tumour cells with irregular nuclei and multiple small nucleoli. There were frequent mitoses and apoptotic bodies and histology resembled earlier brain MB resection. Tumour cells were positive for synaptophysin, NeuN, and negative for CK7, CK20, MNF, S100. Ki67 proliferation index was high (up to 35%). EPIC array failed due to low cellularity of the tumour.

Conclusion: We present here a rare case of MB metastases into bone marrow with clinical symptoms of profound pancytopaenia. In cases of extracranial spread, the most common sites for metastasise are bone and bone marrow[3]. It is important to be aware of extracranial metastases of MB, as early diagnosis would inform appropriate changes to the clinical management.

References

1. Orr BA. Pathology, diagnostics, and classification of medulloblastoma. Brain pathology. 2020;30(3):664-678. doi:10.1111/bpa.12837
2. Franceschi E, Giannini C, Furtner J, Pajtler KW, Asioli S, Guzman R, et al. Adult Medulloblastoma: Updates on current management and future perspectives. Cancers. 2022;14(15):3708. doi: 10.3390/cancers14153708
3. Kondoff S, Milev M, Laleva L, Tzekov C, Kostadinova C, Kirova-Nedyalkova G, et al. A case of early extraneural medulloblastoma metastases in a young adult. Asian Journal of Neurosurgery. 2015;10(04):331–333. doi:10.4103/1793-5482.162723

P87

QIP: Recommendations for MDM2 FISH Testing for Lipomatous Tumours

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Poster Round 2 - 19 June, 1pm - 2pm

Background:
Atypical Lipomatous Tumours (ALTs) are locally aggressive, adipocytic neoplasms, which are the most common form of liposarcoma. They may present as a mass or can be identified as an incidental finding on imaging. They usually have a benign clinical course, but a small a proportion dedifferentiate into higher-grade tumours. Molecularly, they are characterised by MDM2 amplification, which can be detected through IHC or FISH.

Purpose:
The aim of this QIP was to understand the reasons for requesting MDM2 FISH, the characteristics of the MDM2-amplified lesions, and to use this information to develop a departmental standard operating procedure (SOP).

Methods:
33 lipomatous lesions underwent MDM2 FISH in 2023. We reviewed the following parameters for each lesion: location, size, depth, morphology, age and sex of patient. Pelvic, retroperitoneal, intra-abdominal, visceral, and tongue lesions were excluded.

Results:
The mean patient age was 59.4 years and the F:M ratio was 9:24.

The reasons for requesting FISH were:
- Histological features of atypia (2).

- Recurrent lesions (1).

- Radiological atypia (8).

- >10cm (11).

- Deep to fascia (23).

MDM2 testing was requested for more than one reason per case, which is why the numbers of each requesting reason exceed the number of cases overall.

5 of the 33 lesions were MDM2 amplified, and they had the following characteristics:

- 4 were deep to fascia, >10cm and were ≥50 years of age. 3 of which were morphologically within normal limits.

- One was a recurrent lesion.

Conclusions:
We recommend MDM2 analysis for all lipomatous lesions that have atypical histological features, or lesions that are recurrent. We also recommend MDM2 testing for patients ≥50 years of age with lesions that are both deep to fascia, and that are greater than 10cm in size. This is in keeping with previous literature recommendations.

P88

Clear cell sarcomas: A 10-year case series review from a tertiary soft tissue centre.

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Clear cell sarcomas of the soft tissue (ST) and GI tract (malignant gastrointestinal neuroectodermal tumours) are aggressive sarcomas, uncommonly encountered even within tertiary referral centres. As such, CCS prognostic factors are largely extrapolated from relatively small cohort studies. Factors indicating poor prognosis in CCS include; tumours >5cm, lymph node and distant metastasis at presentation, necrosis, and high mitotic index.
Purpose
To assess if our tertiary referral CCS cases correlated with the prognostic factors documented within the literature.
Methods
From 2013-2023, 20 CCS specimens were identified, corresponding to 12 patients, of which 7 were ST CCS and 5 GI CCS.
Results
Of the 6 ST CCS patients whom had no metastasis at presentation, 4 were deceased at follow up (median follow up 3years). Whereas the only patient with lymph node metastasis at presentation, was still alive 8years post follow up. At 5 years' post-primary excision, all patients had recurrent disease. Patients with a presenting tumour size of >5cm (2/7) were all dead <1year after excision. Patients still alive at follow up all had necrosis of <10% and between 2 and 11 mitoses/10 HPF, in contrast to deceased patients whom all had necrosis of >10% and between 6 and 21 mitoses/10 HPF. Regarding GI CCS, all patients presented with metastatic disease. 4/5 were deceased (with alive patient <1year follow up but palliative). Only 2 cases had; a tumour size >5cm, necrosis and notable mitotic activity.
Interestingly 2 patients survived 14 and 17years post diagnosis in GI and ST CSS respectively, an unusual finding in these aggressive sarcomas.
Conclusions
In our ST CCS cases, known poor prognostic factors were readily reproducible, particularly tumour size >5cm and the presence of necrosis/high mitotic index. However in GI CCS, metastatic disease at presentation was markedly more reflective of poor prognosis compared to other prognostic factors.

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Unusual Extragenital Sites of Cellular Angiofibromas: Experience from a Tertiary Soft Tissue Centre

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Poster Round 2 - 19 June, 1pm - 2pm

Background
Cellular angiofibromas (CA) are mesenchymal tumours that are commonly described within the distal genital tract. They show similar morphological and immunohistochemical (IHC) features with mammary-type myofibroblastoma (MMM)and spindle cell lipoma (SCL), with whom they share a loss of retinoblastoma 1 (RB1) protein on chromosome 13q14. There are very rare reports of extragenital CAs, and herein we report 4 unusually located CAs encountered within our own histopathological practise.
Purpose and Methods
A search of our pathology database from 2011-2023 yielded 25 CAs, of which 13 were present within the vulvo-vaginal region, 6 within the inguinoscrotal area and 2 within a para-testicular location. However, 4 cases were identified in 4 different, unusual sites for CA including the; uterus, bladder, groin lymph node and peritoneum.
Results
The 4 CA cases identified showed a similar morphology. All cases showed a variably circumscribed lesion comprised of oval, cytologically bland spindle cells with pale eosinophilic cytoplasm. There was no increased atypia or mitoses seen and no necrosis present. Consistently the background appeared collagenous, with a variable amount of hyalinisation present. All cases commented on the prominent vascular component of small to medium sized blood vessels.
IHC results showed a consistent pattern of staining for CA. In all cases were it was performed (3/4), oestrogen receptor, androgen receptor and CD34 were all positive. All CA cases (4/4) showed positivity for Desmin and RB1 loss.
Conclusion
Although rarely encountered outside of the distal genital tract, it is important to have a high index of suspicion for CA in other locations, as these soft tissue neoplasms carry a low risk of local recurrence and thus a favourable outlook for patients. Utilisation of a broad IHC panel, including RB1, is desirable and very helpful in excluding other fibroblastic neoplasms when considering a diagnosis of extragenital CA.