Background: Angiofibroma of soft tissue (AFST) is a recently described benign soft tissue neoplasm of adults and children characterised by low-grade spindle cells with a myxoid or collagenous stroma bearing very prominent small vasculature.¹ There is a characteristic but non-diagnostic immunohistochemical pattern.² A characteristic AHRR-NCOA2 fusion gene secondary to t(5;8)(p15;q13) is present in approximately two thirds of cases.³

Aims: We present three cases of AFST encountered at RPAH Tissue Pathology in order to outline and explore the clinical, macroscopic, histopathologic, immunohistochemical, and cytogenetic features of this tumour.

Methods: Three cases underwent histopathological and immunohistochemical analysis, as well as presentation at a multidisciplinary soft tissue meeting. One case underwent karyotyping.

Results and conclusions: All three tumours were well-circumscribed encapsulated soft tissue spindle cell tumours of the lower limbs with prominent vasculature and myxoid areas. All cases were negative for vascular markers and SMA (blood vessels highlighted only), as well as negative for S100, pancytokeratin, and MUC4. One case had scattered atypical cells interpreted as degenerative atypia; focal atypia has been reported as an infrequent feature of AFST.^{1,2} One case underwent cytogenetic analysis, revealing a t(5;8)(p14;q13) translocation. The cases are discussed, making comparisons to the available literature. Histologic mimics and the utility of cytogenetics and fluorescence *in situ* hybridisation are discussed.

References

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4. DEDIFFERENTIATED LIPOSARCOMA MASQUERADING AS AN INFLAMMATORY MYOFIBROBLASTIC TUMOUR (IMT) – A CASE REPORT AND REVIEW OF LITERATURE

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Background: The dedifferentiated component of a well-differentiated liposarcoma (WDL) shows a wide histologic variation. Herein, we describe a dedifferentiated liposarcoma with inflammatory myofibroblastic tumour-like (IMT-like) changes. Awareness that dedifferentiated liposarcoma can have prominent IMT-like features can help to prevent misdiagnosis.

Aims: To present a case report and literature review on a dedifferentiated liposarcoma with IMT-like changes.

Methods: A 77-year-old male presented with a parotid/masseter mass. The core biopsy was diagnosed as IMT.

The excision specimen of the parotid/masseter mass showed a solid, encapsulated, yellow tumour (42×35×33 mm). Histologically, the tumour showed two distinct morphology. The central part of the tumour showed bizarre large atypical cells with a brisk inflammatory component composed of neutrophils, eosinophils

and plasma cells. The peripheral part of the tumour showed atypical adipocytes of varying size with occasional recognisable lipoblasts. A wide range of immunohistochemistry stains performed including ALK were all negative. The FISH detected MDM2 amplification. On retrospective analysis the core biopsy appeared to have been taken from the central portion of the tumour.

Results and conclusions: A final diagnosis was given as a WDL with a dedifferentiated component, masquerading as an IMT.

In conclusion, this case illustrates that unequivocal areas of WDL are necessary in diagnosing histological variants. Careful sampling of adipose tissue in and around the tumour for microscopic evidence of WDL, which can be subtle, is essential to prevent a misdiagnosis.

Reference

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5. MULTIPLE UTERINE LIPOMATA: FIRST CASE REPORT

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Background: Although lipoma is the most common soft tissue tumour, pure uterine lipoma is exceptionally rare. There is only a handful of reports of this entity. Uterine lipoma often shows non-specific clinical and frequently worrisome radiological features.

Aims: The aim of this report is to shed the light on a rare diagnostic entity with broad differential diagnosis, which can occasionally raise concern for malignancy radiologically. To date, no previous reports of multiple uterine lipomata are identified in the literature.

Methods: We report a case of 59-year-old woman with features of fibroid uterus. Radiologically, multiple benign leiomyomata were suspected. A total laparoscopic hysterectomy was performed. Gross examination revealed three intramural fatty masses ranging in size between 2 and 8 cm. Microscopically the tumours were composed of mature adipocytes separated by thin fibrovascular septae. No leiomyomata were identified. There was no evidence of atypia or malignancy.

Conclusions: This is the first report of multiple intramural benign lipomata in a uterus. Previous cases of a single uterine lipoma have been reported. A uterine lipoma can be mistaken for carcinomas, especially in older patients with rapid progression. Several theories have been proposed as an explanation, including fatty tissue metaplasia, misplaced embryonic adipocytes and proliferation of perivascular fat cells. The presence of multiple uterine lipomata in our case suggests a histogenic proclivity to form these lesions beyond a mere incidental lipomatous differentiation. Further studies may help better understanding of this peculiar condition.

6. AUDIT OF BREAST SCREENING CORE BIOPSY DIAGNOSTIC PERFORMANCE MEASURES AT PATHWEST FIONA STANLEY HOSPITAL (FSH) FROM 2015 TO 2016

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Background: Core needle biopsy (CNB) is widely utilised in the investigation of screen detected breast abnormalities. National and international guidelines recommend classification of biopsies into categories: 'non-diagnostic (B1)', 'benign (B2)', 'atypical/indeterminate (B3)', 'suspicious (B4)' and 'malignant (B5)', each with common diagnostic and therapeutic implications. Accurate classification is imperative to reduce morbidity associated with breast screening programs such as over-diagnosis and the resulting overtreatment of patients. This issue is particularly relevant to the 'indeterminate/atypical (B3)' and 'suspicious (B4)' lesions on core biopsy where further tissue is required specifically for the purpose of diagnostic clarification and not treatment *per se*.

Aims: To assess the performance of Fiona Stanley Hospital (FSH) PathWest category reporting of screening breast core biopsies over a 2-year period against UK National Health Service (NHS) standards.

Methods: Retrospective collection of data regarding the diagnostic category classification of all breast core biopsies reported at PathWest FSH in the period between January 2015 and December 2016.

Results and conclusions: Out of 2470 breast lesions examined in this audit, 3.2% were non-diagnostic, 55.7% benign, 6.1% atypical, 0.4% suspicious and 34.5% malignant. The rate of B3 and B4 lesions in this audit were well within the NHS audit expected targets. The other categories were also comparable to rates found in similar large international studies. These results, a component of the pathology quality assurance metrics of a breast screening program, are a surrogate for adequate application of diagnostic criteria to all diagnostic categories, but are particularly relevant to the atypical/indeterminate category where there is great potential for over-investigation.

7. PD-L1 IN TRIPLE NEGATIVE BREAST CANCER – OPTIMAL TESTING FOR THERAPEUTIC EFFICACY

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Background: The recent IMpassion130 phase 3 trial reported that anti-Programmed death ligand 1 (PD-L1) monoclonal antibody therapy significantly improved progression free survival in triple negative breast cancer (TNBC). The SP142 clone of PD-L1 antibody was used as a predictive assay, which was an outlier antibody in previous harmonisation studies in lung cancer and melanoma.

Aims: We aimed to study PD-L1 expression in TNBC by comparing different clones of PD-L1 antibodies.

Methods: State-of-the-art quantitative multiplex immunofluorescent (QmIF) staining was performed on three *in vitro* diagnostic PD-L1 antibody clones (22C3, SP142 and SP263) on 269 TNBCs. To detect tumour and immune cells, cytokeratin and CD45 staining was applied. PD-L1 expression of tumour and immune cells was correlated with PD-L1 RNA expression, clinicopathological parameters, disease-free survival (DFS) and overall survival (OS).

Results and conclusions: PD-L1 positivity was described using Combined Positive Score (CPS). We observed a weak correlation between SP142 and SP263 clones ($R = 0.265$), while the

SP142 and 22C3 clones demonstrated a weak inverse correlation ($R = -0.256$). There was no significant association with clinical outcomes using CPS. Only high 22C3 clone Tumour Proportion Score (TPS) showed significant association with improved DFS, but not OS in multivariate analysis. However, tumours with positively stained SP142 immune cells displayed both enhanced DFS and OS. Correlations between protein and mRNA of PD-L1 are pending.

In this study, suboptimal correlation of PD-L1 positivity across different assays was observed. To develop a PD-L1 complementary diagnostic test in TNBC, more analysis and assay harmonisation will be essential. Clinicians and pathologists require this valuable information to predict patient response to anti-PD-L1 therapy, which will represent a tremendous advancement in the management of therapeutically challenging TNBCs. In the cancer immunotherapy era, QmIF ability to simultaneously detect and quantify multiple PD-L1 clones, and also allow accurate evaluation of tumour and immune components objectively, represents a promising tool.

8. CORRELATION OF NIPPLE DISCHARGE CYTOLOGY AND SUBSEQUENT HISTOLOGY

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Background: Nipple discharge, a common complaint in patients presenting with breast pathology, may be physiologic or pathologic. Spontaneous nipple discharge unrelated to pregnancy or lactation is usually pathologic. It has been reported that 3–29% of women with pathologic nipple discharge had an underlying malignancy. However, the sensitivity of nipple discharge cytology has been reported to range from 41% to 60%, and clinical utility of cytologic examination of nipple discharge is controversial.

Aims: Correlate nipple discharge cytology with histology to determine sensitivity and specificity of cytology in detecting malignancy.

Methods: All nipple discharge cytology cases in 2015 and 2016 and subsequent histology were retrieved from the departmental database, and reviewed for correlation to determine sensitivity and specificity of cytology in the diagnosis of malignancy (both DCIS and invasive carcinoma).

Results and conclusions: Of 202 specimens of nipple discharge cytology, 74 (36.6%) had subsequent histology reported in the department and 17 of these cases (23%) showed malignant histology (10 cases of DCIS and 7 cases of invasive carcinoma).

Two cases of DCIS had negative / benign cytology. Six malignant cases showed cytological features of papilloma and three cases had bloody discharge without atypical cells.

Of 4 cases suspicious for malignancy on cytology, one case showed a papilloma.

Considering positive cytology Results include cases with atypical cells, sensitivity of cytology for malignancy is 35%, specificity 87.5%, positive predictive value 46% and negative predictive value 81.7%.

Findings from this series support the recommendation that histological confirmation should be obtained prior to definitive treatment in cases of malignant nipple discharge cytology and that benign / negative cytology does not exclude malignancy. Nipple discharge cytology should always be correlated with clinical, radiological and other findings.