Salivary Neoplasia Cytopathology: A Logical Diagnostic Approach to Cytology Based on Histopathology Knowledge

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Introduction

Fine needle aspiration cytology is an important investigative tool in the pathogenesis of benign and malignant salivary pathologies. Current practise guidelines require that the nature of the salivary gland disease be determined before proceeding with definitive surgery. FNAc is a quick, easy, non-invasive diagnostic tool with few complications that achieves this goal. The diagnostic adequacy and accuracy of FNAc sampling are determined by a number of factors, including operator competence, lesional characteristics, and patient factors. As a result, the reported sensitivity of salivary cytology varies and is broad. However, the reported specificity is greater than 90%. The diagnostic accuracy of benign salivary gland lesions is very high worldwide, but it is relatively low for malignant lesions.

Description

Salivary gland pathology accounts for a significant portion of the specialist head and neck pathology practise. Salivary gland diseases include reactive conditions, benign neoplastic lesions, and malignant neoplasms. The current article will concentrate on primary benign and malignant neoplastic lesions of the salivary glands. The goal is to address diagnostic challenges associated with investigative fine needle aspiration cytology findings, and to show how knowledge and understanding of definitive and well-established histological features can aid in obtaining a conclusive diagnosis or narrowing down the differential diagnoses to the fewest possible entities. This is critical for discussion at the multidisciplinary meeting as well as appropriate surgical planning and management [1].

The most widely used, first-line diagnostic tool in the treatment and management of most head and neck "lumps and bumps," including salivary gland lesions. Ultrasonography, in particular, provides a very useful and safe imaging technique that is widely used to characterise salivary gland conditions. The most reliable, non-invasive method of obtaining a diagnostic cytological sample for most mass lesions is US-guided FNAc, which is routinely used as the first line of investigation in head and neck practise around the world. The diagnostic adequacy of a FNAc is dependent on operator factors, which are almost always performed by a specialist consultant radiologist in most tertiary specialist centres, significantly increasing diagnostic adequacy [2].

As a result, a thorough understanding of the histopathology of the salivary glands of the various described and recognised entities greatly aids in increasing the accuracy rate and thus assists the surgical team in planning definitive treatment, including the extent of the surgery offered, pertinent to specific entities. The Royal College of Pathologists data set, released in October 2019, supports the Milan salivary cytopathology reporting system, which was first published in 2017. This provides an international standard for reporting salivary cytopathology and aids in data auditing [3].

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Although the Milan system provides a universal method of communicating results, in routine cytopathology, most UK head and neck centres aim to provide either a narrow collection of differential diagnoses or a definitive diagnosis with a high degree of accuracy for a significant proportion of Milan categories 3, 4b, and 5 lesions in the above classification. A thorough understanding of salivary histopathology and the variations is required to accomplish this. This paper will use examples of cytopathology cases and their corresponding histopathology to highlight the importance of histology knowledge in obtaining accurate or near-accurate cytological diagnoses [4,5].

A significant number of primary salivary neoplasms are cystic or have a significant cystic component. Even common pleomorphic salivary adenomas can exhibit significant cyst change, with cystic dilatation of one or more ductal structures. Although the formation of a single cystic structure resembling a ductal retention cyst is uncommon, such lesions have been observed, with the solid component restricted to a rim of peripheral solid tissue alivary tumour category posing a difficult area in the arena of salivary cytopathology. There are numerous low-grade salivary adenocarcinomas and benign salivary gland tumours that enter the differential diagnosis of the "basaloid" tumour grouping due to overlapping cytomorphological features. The problem that arises from combining a diverse range of tumours with varying clinical behaviours in one cell adhesion is involved in the formation of a new extracellular matrix and the migration of cells to the site of injury.

Conclusion

Pleomorphic salivary adenoma (PSA) is the most common benign salivary gland tumour of the major glands, with a remarkable morphology that includes architectural diversity and stromal components. The chondromyxoid stroma in conventional pleomorphic salivary adenomas produces a classic metachromatic fibrillary appearance on cytological smears, which provides a reliable diagnostic clue. FNA cytopathology is the gold standard of care in the management of salivary lesions and is the best first-line diagnostic modality available. The complex nature of salivary neoplasms and the likely number of entities entering the differential diagnoses, however, call into question the diagnostic accuracy of salivary cytopathology. However, some primary salivary epithelial tumours can mimic "oncocytic cell" morphology on cytological smears. Oncocytic carcinomas and primary salivary oncocytomas are uncommon. However, nodular oncocytic metaplasia is fairly common.

References

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