potential for misdiagnosis both clinically and histologically. Here we present a case from our institution of a 27-year-old man with a testicular low grade serous carcinoma, arising from a serous borderline tumour, with a discussion of the histologic, immunohistochemical and molecular findings.¹⁻³

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BENIGN MESOTHELIAL INCLUSIONS IN A MEDIASTINAL LYMPH NODE

Yee Sing Lin, Alison Potter, Yvonne Bogun

Department of Anatomical Pathology, Prince of Wales Hospital, Sydney, Australia

Benign mesothelial proliferations found in lymph nodes present a diagnostic dilemma as they can mimic metastatic disease. There are only a few case reports of mesothelial proliferations in lymph nodes in the literature. We report our findings in a patient who developed heart failure and had an incidental mediastinal lymph node removed at the time of coronary artery by-pass graft and aortic valve replacement. Histologically the proliferations are characterised by epithelioid cells lacking atypia and which demonstrate an immunohistochemical profile characteristic of mesothelium. Incorrect diagnosis can lead to over-treatment and morbidity for the patient.

ROLE OF NEXT GENERATION SEQUENCING IN PANCREATOBILIARY BRUSHING SPECIMENS – A PILOT STUDY

Chen Xui Fen¹, Tan Gek San², L. K. Lim¹, L. H. Song¹, Sangeeta Mantoo¹

¹Cytology Section, Department of Anatomical Pathology, Singapore General Hospital, Singapore; and ²Department of Translational Pathology Centre, Singapore General Hospital, Singapore

Introduction: Pancreatobiliary brush cytology has high specificity but low sensitivity. Next generation sequencing (NGS) may improve its sensitivity. This pilot study aimed to evaluate diagnostic performance of NGS in detecting pancreatobiliary malignancy in brush cytology specimens.

Methods: NGS analysis was performed retrospectively on 17 pancreatobiliary duct brushing specimens sent to cytology department for routine cytological evaluation, between May 2018 to Dec 2018. NGS panel comprised the following frequently mutated gene-regions: KRAS, TP53, PIK3CA, CTNNB1, ERBB2, FGFR3, ATM, FGFR2, ALK, AKT1, BRAF, NRAS, MAP21K1, SMAD4 and STK11. Performance characteristics for each diagnostic modality were calculated based on clinic-pathological follow-up.

Results: Fifteen of 17 cases were analysed by NGS. Two failed due to poor sample quality. NGS revealed genetic mutations in 6 of 8 cases of pancreatobiliary adenocarcinoma. Mutations

detected were KRAS, TP53, BRAF, NRAS, ALK, MAP2K1 and SMAD4. On cytology, 5 of 6 NGS positive cases were diagnosed as malignant and one diagnosed as degenerate atypical cells. Both cytology and NGS had one false positive result on the same case which showed STK11 mutation. One case of cholangiocarcinoma was negative on both. Cytology and NGS had sensitivities of 63% and 75%, respectively, and similar specificities of 86%. The combination of NGS and cytology increased the sensitivity to 91% while specificity was not increased.

Conclusion: These results suggested that NGS improved the sensitivity of pancreatobiliary duct brushings and provided additional information on genetic mutations which may be used for targetable genomic therapies.

CYTOLOGY OF RARE MALIGNANT NEOPLASMS IN THE SALIVARY GLAND: MORPHOLOGIC AND HISTOPATHOLOGIC CORRELATES

Jerry C. Nagaputra, Sangeeta Mantoo

Cytology Section, Department of Anatomical Pathology, Division of Pathology, Singapore General Hospital, Singapore

Background: Mucoepidermoid carcinoma and acinic cell carcinoma are common malignant salivary-gland tumours. Rarer tumours include secretory carcinoma, epithelial-myoepithelial carcinoma and salivary duct carcinoma. Herein, we present five cases illustrating cytomorphology and subsequent histopathological/molecular diagnoses of rarer salivary-gland malignant neoplasms.

Results: Cytological smears from five patients 40–75 years old with 1.5–4.2 cm sized tumours were studied. Three cases showed cellular clusters of atypical cells exhibiting enlarged, irregular nuclei and prominent nucleoli diagnosed to favour salivary duct carcinoma on ancillary cytology testing and concurred on subsequent resection specimens. In another case, cytologic smears showed clusters of ductal cells admixed with spindle myoepithelial cells in close association with some acellular matrix. Initial cytologic diagnosis rendered was pleomorphic adenoma; subsequent resection showed epithelial-myoepithelial carcinoma. Fifth case showed cellular yield of epithelioid cells exhibiting mildly enlarged, uniform nuclei, conspicuous nucleoli and ample, finely-vacuolated cytoplasm, with cytologic diagnosis of epithelial neoplasm. Subsequent histopathological examination yielded a diagnosis of secretory carcinoma, confirmed with *ETV6-NTRK3* fusion on molecular analysis.

Conclusions: Diagnosing rare malignant salivary-gland neoplasms on cytology is challenging. Although the malignant nature of high-grade malignancies is often correctly made on cytologic examination, low-grade malignancies may appear deceptively benign. Thorough cytologic examination including cell types and matrix/background components is crucial for accurate diagnosis of these neoplasms.

SOLID PAPILLARY BREAST CARCINOMA WITH REVERSE POLARITY, A CASE REPORT

Salman Marvi¹, Con Theocharous¹, Amanda Palmer², Stephanie Inder³, Kim Tran¹

¹Anatomical Pathology Department, St George Hospital, Sydney, NSW, Australia; ²Radiology Department, St George