rearrangements. Desmeules *et al.* reported 4 cases of EWSR1/FUS-ATF1 fusion with epithelioid morphology within a younger cohort with no known asbestos exposure.³

Case report: We present a previously well 19-year-old male with no prior asbestos exposure with EWSR1 gene rearranged peritoneal mesothelioma. CT/PET demonstrated widespread FDG avid peritoneal deposits with supra-diaphragmatic nodal involvement. Cytoreductive surgery and adjuvant hyperthermic intraperitoneal chemotherapy was performed. Histopathological findings demonstrated epithelioid malignant mesothelioma (CK5/6, WT1/calretinin positive, BAP1 positive, ALK negative). There were long, slender microvilli on electron microscopy, and FISH revealed EWSR1 rearrangement.

Discussion: EWSR1 fusions are usually associated with sarcoma. Together with other reports, this case demonstrates that EWSR1 rearrangements may occur in young patients with malignancies showing mesothelial differentiation. Usually classified as epithelioid mesothelioma, this group shows several clinicopathological differences to other mesotheliomas.

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THE ROLE OF PD-L1 IN THE PREDICTION OF TREATMENT RESPONSES TO NEOADJUVANT CHEMOTHERAPY IN BREAST CARCINOMA

Alexandra Kang¹, Paige Tucker², Lorella Manso^{1,2}, Amanda Ireland¹, Ben Dessauvage^{1,3}

¹Department of Anatomical Pathology, PathWest Fiona Stanley Hospital, Murdoch, WA, Australia; ²Department of Anatomical Pathology, PathWest Sir Charles Gairdner Hospital, Nedlands, WA, Australia; and ³University of Western Australia, Nedlands, WA, Australia

Aims: To assess programmed death ligand 1 (PD-L1) expression and its correlation with prediction of response to neoadjuvant chemotherapy (NACT) in invasive breast carcinoma (IBC).

Introduction: NACT is being increasingly utilised in IBC management with pathologic complete response (pCR) strongly correlated with excellent disease-free and overall survival. PD-L1 has recently gained attention in breast carcinomas as a potential therapeutic target as well as a prognostic indicator. PD-L1 is expressed in response to inflammation and has been found to be expressed on a number of tumours. The presence of tumour infiltrating lymphocytes has been found to be strongly associated with pathological complete response (pCR) and a relationship between PD-L1 and pCR has been suggested in recent studies.

Methods: Pretreatment core biopsies and their matched subsequent surgical excision from 74 consecutive patients with IBC from the PathWest pathology database, Fiona Stanley Hospital, in 2013–2016 were assessed for TILs and PD-L1 expression.

Results: Eighteen cases achieved pCR while 56 cases did not. When comparing these groups, there was a greater likelihood of

pCR in patients with higher TILs scores ($p=0.006$) and higher PD-L1 scores ($p=0.018$).

Conclusion: Our study demonstrates a significant association between PD-L1 expression with pCR in NACT.

APPLICATION OF MSH3 IMMUNOHISTOCHEMISTRY AND TETRANUCLEOTIDE MICROSATELLITE ANALYSIS TO IDENTIFY ELEVATED MICROSATELLITE ALTERATIONS AT SELECTED TETRANUCLEOTIDE REPEATS (EMAST) IN COLORECTAL TUMOURS

Alexandra Kang¹, Sophia Ang², Michael Texler¹, Jacqueline Bentel¹, Andrew Laycock^{1,3,4}

¹PathWest Anatomical Pathology, Fiona Stanley Hospital, Perth, Australia; ²Clinical Services, Fiona Stanley Hospital, Perth, Australia; ³School of Medicine, University of Notre Dame, Perth, Australia; and ⁴School of Medicine, Curtin University, Perth, Australia

Background and aims: Reduced function of the DNA mismatch repair enzyme MSH3 in tumour cells results in elevated microsatellite alterations at selected tetranucleotide repeats (EMAST). In contrast to microsatellite instability (MSI) caused by MLH1/PMS2/MSH2/MSH6 defects, EMAST in CRCs is a marker of poor prognosis. This study examined the prevalence of EMAST-positive CRCs in a Western Australian population and critically evaluated immunohistochemical and molecular detection methods.

Methods and results: MSH3 immunostaining of 250 archival CRCs identified aberrant MSH3 expression (focal or widespread reduction of nuclear MSH3, cytoplasmic MSH3 mis-localisation) in 66% cases. Tetranucleotide MSI (EMAST) was detected in 46% cases, a proportion consistent with limited previous reports. Discordance between MSH3 immunostaining and molecular detection of tetranucleotide MSI resulted from over-detection of abnormal MSH3 immunostaining, which is focal and confounded by common tissue damage (crush, autolysis).

Summary and conclusions: Aberrant MSH3 function in CRCs results from elevated inflammatory signalling, a potentially modifiable risk factor that may be targeted to reduce or prevent disease relapse. A combination of MSH3 immunostaining and molecular methods can be used to identify EMAST-positive CRCs, however further antibody development and establishment of consistent tetranucleotide panels will improve the reliability and reproducibility of its detection in routine practice.

THREE DIFFERENT APPROACHES TO QUANTIFICATION OF KI-67 IMMUNOHISTOCHEMISTRY IN NEUROENDOCRINE TUMOURS OF THE LUNG AND MEDIASTINUM

A. Kang, A. Laycock

Department of Anatomical Pathology, PathWest Fiona Stanley Hospital, Murdoch, WA, Australia

Classification of neuroendocrine tumours (NETs) of the lung and mediastinum is largely based on mitotic index. Ki-67 immunohistochemistry has been incorporated into the grading system of gastrointestinal tract and pancreatic NETs. However, the significance of Ki-67 in pulmonary and mediastinal NETs is still a