

00381 Diagnostic Utility of P16 Gene Status by Fluorescence in Situ Hybridization (FISH) in the Differential Diagnosis of Atypical Mesothelial Proliferations: An Institutional Experience

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Aims: Definitive diagnosis of malignant mesothelioma (MM) on small biopsies and effusion cytology is challenging. Homozygous deletions (HD) of 9p21, harbouring the p16 gene, is the most common genetic alteration and a highly specific marker for MM. This study aimed to evaluate the ability of p16 FISH to distinguish between MM and benign lesions.

Methodology: We retrospectively analyzed pathological samples from patients with suspicion of pleural pathology who underwent p16 FISH analysis between 2015-2018 at Singapore General Hospital. FISH results were compared with initial cyto-histological diagnosis.

Result: Fifteen pathological samples [1 pleural fluid (PF), 2 peritoneal biopsies (RB), 12 pleural biopsies (PB)] underwent p16 FISH analysis between 2015-2018. The median age of patients was 71 years, with 14 (93.3%) males and 1(6.7%) female. The initial cyto-histological diagnosis was: MM in 4PB and 1 RB (33.3%), suspicious for MM in 5 PB and 1 RB (40%), atypical mesothelial proliferation (AMP) in 2 PB and 1PF,(20%) and benign in 1 PB (6.7%). Seven cases (46.6%) showed HD, 4 (26.7%) showed heterozygous p16 deletion (HeD), and 1(26.7%) showed no deletion. Among MM cases, 4/5 (80%) had HD, and 1/5 (20%) had HeD. Among suspicious for MM cases, 2/6 (33.3%) had HD, 2/6 (33.3%) had HeD, and 2/6 (33.3%) were negative. Among the AMP cases, 1/3 (33.3%) had HD, 1/3 (33.3%) had HeD, and 1/3 (33.3%) was negative. The single case with benign histology had no deletion. The sensitivity of p16 FISH is 81.8% (9/11) and specificity is 100% (1/1).

Conclusion: Our limited pilot study demonstrated that p16 FISH can be performed on small biopsies and cytology specimens, and is a potentially sensitive and specific marker for MM. However, negative results do not entirely rule out MM. We propose conducting a larger prospective study to fully evaluate the diagnostic performance of p16 FISH.