Rare Diagnosis of Malignant Mesothelioma in a Young Patient with Rheumatoid Arthritis

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BACKGROUND

Malignant pleural mesothelioma (MPM) is an aggressive, malignant neoplasm of the pleura. MPM most commonly develops in older patients with known history of asbestos exposure. It is less common in young patients. Studies of MPM in younger cohorts show decreased association with asbestos exposure, longer survival, and overall improved prognosis compared with older cohorts. Immunohistochemical markers, which include calretinin, WT-1, CK5/6, and most recently BAP-1, aid in the pathological diagnosis of the disease. Currently, the definitive criteria distinguishing MPM from a benign process is the microscopic demonstration of growth by atypical mesothelial cells.

METHODS

The patient is a 39-year-old female with history of rheumatoid arthritis leading to recurrent bilateral pleural effusions since 2014. She presents with cough, pain, and shortness of breath secondary to left pleural effusion. Pleural biopsy showed fat infiltration by mesothelial cells positive for calretinin, WT-1, and CK5/6 and BAP-1 staining retention (Image 1). Review by the U.S./Canadian Mesothelioma Panel was inconclusive, and seven of nine panel members favored the diagnosis of mesothelioma while two favored a benign process.

RESULTS

This is a rare presentation of malignant pleural mesothelioma in a young female patient with rheumatoid arthritis and no known asbestos exposure. Biopsy revealed morphology classic for a diagnosis of malignant mesothelioma except for BAP-1 staining retention. In the setting of a known immunoreactive disease, the diagnosis in this patient is unclear and suggests the need for further discussion about the diagnostic criteria of malignant mesothelioma in young patients.

PATHOLOGY

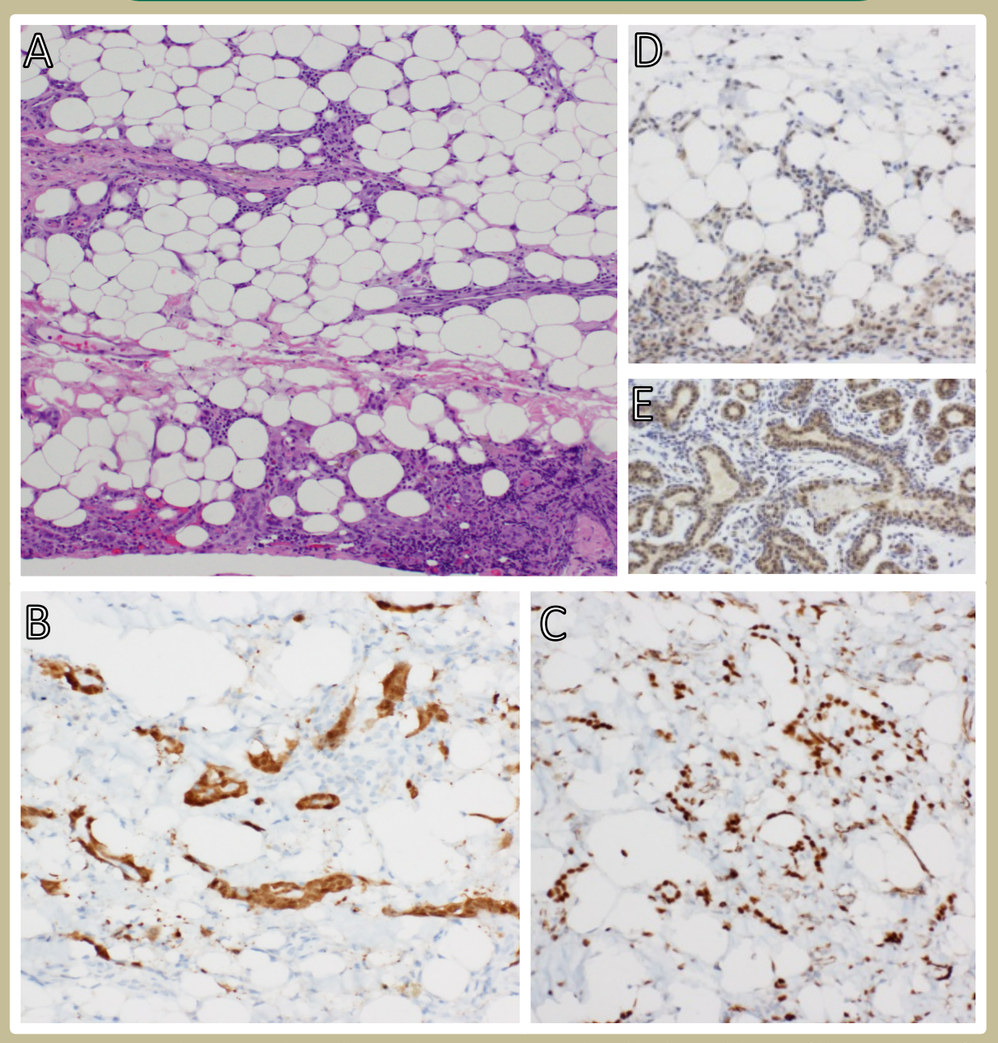

Image 1: A. H&E stain showing mesothelial cells infiltrating fat. B. Calretinin expression in infiltrating mesothelial cells. C. WT-1 expression in infiltrating mesothelial cells. D. BAP-1 retention in infiltrating mesothelial cells. E. BAP-1 positive control breast tissue.

CONCLUSION

This case of malignant mesothelioma was reported because of its rare presentation in a young patient with rheumatoid arthritis, a disease known to cause pleural effusions and reactive pleural proliferations. The presentation of malignant mesothelioma in younger populations differs from that in older populations, and further research is necessary to understand the associated risk and genetic factors contributing to rare mesothelioma development in younger patients. Further discussion about current diagnostic criteria of malignant mesothelioma may also be warranted. In this presentation, the morphologic presentation was consistent with MPM, but the U.S./Canadian Mesothelioma Panel could not conclude a diagnosis of MPM given the clinical history and presentation.

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