Non-Asbestos-related Malignant Pleural Mesothelioma

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Abstract

Malignant pleural mesothelioma (MPM) is an uncommon tumor derived from mesothelial lining cells. MPM has been described as an insidious neoplasm because of its long latency period. The tumor is typically found in patients several decades after asbestos exposure. We herein describe a 26-year-old patient with MPM who presented with pleural effusion. The patient had not been exposed to asbestos or erionite. There are few case reports of non-asbestos-related MPM in young patients. We report this case to remind physicians to consider MPM in the differential diagnosis of pleural effusion in young patients without exposure to asbestos or erionite.

Key words: malignant pleural mesothelioma, young patient, asbestos, erionite

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Introduction

Malignant pleural mesothelioma (MPM) is an uncommon tumor arising from mesothelial lining cells and is mostly seen in patients with a history of asbestos exposure (1). There is a high incidence of MPM in certain villages in the Cappadocia region of Turkey (2). There are several putative causes of MPM, such as carbon nanotubes, irradiation with thorium dioxide, simian virus 40, and exposure to metals that cause chronic serosal inflammation (3). MPM has been described as an insidious neoplasm because of its long latency period—up to 40 years after asbestos exposure in some series. It usually arises in the mesothelial surfaces of tissues in the pleura, but it can also occur in the peritoneum and the tunica vaginalis (4). The pleura is likely affected because asbestos can translocate from the lung to the pleural space and then concentrate in the parietal pleura at lymphatic drainage sites (5). Approximately 90% of all MPM cases are associated with asbestos due to reported occupational and environmental exposure. Tumors typically appear in patients in the fifth or sixth decades. MPM commonly spreads locally and to the lung, heart, pericardium, chest wall, and vertebrae (6, 7). Distant metastasis of MPM is rare (8). Histologically, MPM classified as the epithelioid type in 60%, biphasic type in 30%, and sarcomatoid type in 10% of cases (9). In the literature, reports on young age mesothelioma cases are rare (10, 11). We herein describe a young patient with MPM without any previous exposure to well-established risk factors.

Case Report

A 26-year-old man was admitted to our hospital with the complaints of dyspnea and chest pain for the last two months. His chest X-ray revealed diffuse pleural thickening on the right pleura (Fig. 1). His medical history was not remarkable for the etiology of pleural effusion. The patient had no history of exposure to asbestos or erionite, and there were no malignancies among his relatives. A computed tomography scan showed a large effusion and irregular pleural thickening (Fig. 2). The thoracentesis sampling was very dense and oil-like. The patient’s pleural fluid cytological analysis revealed class III mesothelial cell proliferation, and he underwent video-assisted thoracic surgery (VATS) for histopathological diagnosis. The VATS results showed nodules at different sites on the pleura. His cytokeratin (CK)5/6 test was positive, but tests for carcinoembryonic antigen (CEA), B72.3, and periodic acid Schiff-alcian blue (Pas-AB) were negative. A pleural biopsy resulted in a diagnosis of...
epithelial type MPM (Fig. 3, 4), and the stage of the neoplasm was T3N3M0. The patient was referred to the oncology department for six cycles of cisplatin and pemetrexed chemotherapy treatment. He died 28 months after diagnosis.

Discussion

The widespread use of asbestos during the 20th century has produced a legacy of illness, death, and contamination that will endure well into the current century. MPM is usually exclusively caused by asbestos exposure (12). Erionite exposure is the other main cause of MPM in Turkey. The rare causes of MPM are carbon nanotubes, irradiation with thorium dioxide, and simian virus (3). However, although there are few reports of spontaneous MPM in the literature (13), we should nevertheless be aware that MPM can also occur without exposure to asbestos fibers.

The histopathological diagnosis of MPM is difficult due to its morphologic resemblance to other neoplasms, such as adenocarcinoma. Therefore, immunohistochemistry plays an important role in confirming the diagnosis (8). In this patient, a biopsy of the nodules on the pleura showed typical histopathologic features of the epithelial type of MPM. The tumor mainly affects older men who were occupationally exposed to asbestos at early ages, but malignant mesothelioma can also occur in children (14). In contrast to previous reports, this patient was young and had none of the well-established risk factors for MPM.

We wish to alert physicians to the importance of the early recognition of MPM, which is essential in reducing complications and mortality due to this disorder. MPM can be a cause of pleural effusion even in younger patients without exposure to erionite or asbestos and it should therefore be considered in the differential diagnosis of pleural effusion associated with dyspnea. A high index of suspicion is required for the diagnosis. We emphasize the importance of obtaining tissue samples from all patients with suspicious lesions in any organ to avoid missing rare, but curable pathologies.

The authors state that they have no Conflict of Interest (COI).

References


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