Peritoneal Mesothelioma Associated with Bladder Cancer and Occupational Exposure to Asbestos: A Case Report

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Abstract

Introduction: Mesothelioma is a rare tumor which the occurrence is closely linked to asbestos exposure concerning pleural localization. However, this link of causality is not clearly established for peritoneal mesothelioma.

Case report: We present the case of a 47 year-old man, versatile worker in a craft brickyard. He was exposed to asbestos fibers emitted from an oven used for the preparation of bricks. The patient presented abdominal pains and decreased sense of general state. An abdominal scanning was realized showing a diffuse infiltration in peritoneal fat and an effusion of the vesical wall. The histological examination showed a peritoneal mesothelioma associated with a vesical tumor.

Occupational origin of the peritoneal mesothelioma was held in front of the chronic exposure to the asbestos. Thus, a statement of occupational disease in conformance with the legislation in force was made.

Conclusion: In this case, the chronic and important asbestos exposures as well as the absence of other risk factors are towards the incrimination of this fiber in the emergence of peritoneal mesothelioma.

Keywords: Peritoneum; Mesothelioma; Asbestos; Profession

Introduction

Mesothelioma is a rare tumor that affects the cells of the mesothelium, a protective membrane that covers most internal organs of the body including the pleura, peritoneum and pericardium [1].

Several agents likely to induce this mesothelioma were reported such as exposure to erionitis, viral infections, vaccine products and/or genetic susceptibility [2,3]. Although the causal link between pleural mesothelioma and asbestos exposure is well established, this relationship is still controversial for peritoneal mesothelioma. Thus, we report a case of peritoneal mesothelioma observed in a worker who has an occupational exposure to asbestos.

Case Presentation

The patient was a 48-year-old, active smoker at 45 packages/year, without significant pathological history. He had worked as a versatile worker in a craft brickyard for 19 years. His duties included mixing raw materials intended to be placed in an oven containing friable asbestos used as a thermal insulator. This oven was old and worn, which could emit asbestos fibers under the effect of shock and air movements. Then, the patient was responsible for molding, drying and waiting for the cooling of these bricks to take them out of the oven. At the end of the shift, he was cleaning the oven with a brush that contained asbestos dust.

However, the patient reported bad industrial hygiene conditions, and lack of protective respiratory devices. Also, no medical supervision in the context of occupational medicine was provided to him. Besides smoking and asbestos, anamnesis did not disclose other significant exposures to occupational or environmental carcinogens.

The history of the disease was marked by a gradual onset of abdominal pain and distension associated with anorexia, asthenia and weight loss. Physical examination found an abdominal distension without a palpable mass. The patient was investigated with thoraco-abdominopelvic Computed Tomography (CT) which revealed a diffuse infiltration of peritoneal fat with an important intra-peritoneal effusion and focal effusion of the left and lateral wall of the bladder.
However, radiological investigations of the thorax did not reveal any signs of asbestos impregnation. Histopathological examination of biopsic samples performed on peritoneal and bladder lesions led to a diagnosis of malignant peritoneal mesothelioma of the epithelial type associated with urothelial bladder carcinoma. The patient was treated with hyperthermic intraperitoneal chemotherapy and six sessions of systemic chemotherapy and endoscopic treatment of his bladder tumor. The initial evolution was marked by a partial improvement of its general state. In the absence of medical coverage at work, the patient resumed his usual professional activity. Approximately three years later, the patient was hospitalized for continuous, slowly worsening abdominal pain. Total body Positron Emission Tomography (PET) showed diffuse epiploic mesenteric infiltration associated with peritoneal thickening and an important ascites evoking a recurrence of peritoneal mesothelioma. No signs of recurrence of the bladder tumor were objectified. The patient was referred to a department of occupational pathologies to study the accountability of this illness to his profession. The occupational origin of this peritoneal mesothelioma was found in front of the chronic asbestos exposure present in the ovens of the brick factory, objectified by a post office study carried out by the occupational doctor. Tunisian Judicial Authority recognized the occupational origin of mesothelioma.

Discussion

Malignant Peritoneal Mesothelioma (MPL) is a rare disease whose spontaneous evolution remains fatal [4]. Its epidemiology is complicated because of the possible geographical and temporal variations. In all mesotheliomas, peritoneal mesothelioma occurs, in order of frequency, the second place after pleural localization.

In addition, peritoneal malignant mesothelioma accounts for 10% to 30% of malignant mesotheliomas with an annual incidence estimated at 1 in 500000 in France and 1 in 200000 in certain regions of Europe (Italy) [5]. It occurs preferentially in the elderly with an average age ranging from 47 years to 60.5 years [6]. Three forms of mesothelioma are described with different physiopathology, morphology, and prognosis: diffuse malignant mesothelioma, well-differentiated papillary mesothelioma, and multi-cystic mesothelioma. Among the malignant mesotheliomas, three types are individualized: The diffuse epithelioid mesothelioma (the most common) and which was observed in our case, sarcomatoid mesothelioma and biphasic mesothelioma [6]. Exposure to asbestos is the main risk factor for pleural mesothelioma. However, this causality is not clearly established for peritoneal mesothelioma and the debate concerning the mechanism of exposure of peritoneal cells to asbestos remains open. On the other hand, several studies have established a relationship between asbestos exposure and the occurrence of peritoneal mesothelioma [7].

The latter appears, usually as a tumor secondary to a primary source of malignancy, which is pleural mesothelioma. Inhaled asbestos fibers in the lungs would be transported by the lymphatic system to the abdominal cavity, or enter directly into the digestive tract after ingestion. Cancer cells from the primary source could also become mobile and spread through the lymphatic system to other areas, causing metastases [8].

In our patient, pleuropulmonary lesions were not observed in thoracic radiological investigations, which could be related to a direct mechanism of exposure to asbestos fibers. The link between peritoneal mesothelioma and asbestos exposure has been described previously among workers in different jobs. In the literature, the age of patients ranged from 45 years to 75 years. Job tenure ranged from 7 years [9] to 40 years [10]. Our patient was working for 19 years before the onset of his illness. The main occupations were: A hairdresser using hair dryers emitting asbestos dust [11], a mine worker [10], a former soldier [12] and a worker in buildings handling asbestos cement [9]. Besides asbestos exposure, these patients with peritoneal mesothelioma had no other risk factors.

The development of bladder carcinoma and peritoneal mesothelioma in the same patient is utterly exceptional. Another case was previously observed in a 75-year-old man with significant occupational exposure to asbestos [12]. Bladder cancer preceded five-year peritoneal mesothelioma. In our case, the diagnosis of urothelial carcinoma was concomitant with that of peritoneal mesothelioma. This association could signal a possible relationship between exposure to asbestos classified as a certain carcinogen for humans by the International Agency for Research on Cancer (IARC) [13] and bladder cancer. Nevertheless, the histological type, which is different from the two tumors, eliminates the hypothesis of peritoneal mesothelioma metastasized in the bladder. Similarly, the presence of active smoking in our patient would be the most implicated etiological factor in bladder cancer. Another association with renal carcinoma with clear cells has been described by Candura et al. [8] in 2016. The modalities of expression of the disease were abdominal pain as was the case for our patient, hemorrhagic ascites, [14] a cutaneous nodule [12] or a fortuitous finding [15]. Chryosotel was the form of asbestos most implicated in the occurrence of peritoneal mesothelioma. There was no documented exposure to products containing amphiboles [16]. About the histological type, diffuse malignant mesothelioma of the epithelioid type was the most common type and no case of pure Sarcomatoid mesothelioma was reported [16]. Nevertheless, two cases of biphasic mesothelioma were reported by Candura et al. [8] and Cabibi et al. [16] respectively.

Finally, our observation is similar to the cases described in the literature from standpoint of exposure to asbestos, the time of onset of the disease, the absence of other risk factors and the histological type revealed. Regarding occupational origin, peritoneal mesothelioma is recognized in our country by our system of compensation as an occupational disease, once the criteria for recognition are established.

Conclusion

Peritoneal malignant mesothelioma is a rare tumor, for which the etiological role of asbestos exposure is very likely.

Thus, and given the rapidly evolving nature of this tumor making early detection difficult, setting up technical protection means with monitoring facilities containing asbestos proves essential.

References