Malignant Peritoneal Mesothelioma: a Case Report

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Abstract. In this paper we report a case of malignant peritoneal mesothelioma, a rare abdominal tumour. A 72-year-old male with a medical history of heart disease presented to our Clinic because of pain in the right half of the abdomen. Diagnostic procedures, including clinical and laboratory examination, X-ray, ultrasonography and computed tomography, revealed a tumour in the right lower quadrant of the abdomen. The approximate size of the tumour size at initial detection was 7 cm. During the pre-operative procedure an evident growth of the tumour was noticed, indicating exploratory laparotomy. Intra-operative findings revealed a large tumour of the anterolateral abdominal wall, involving the greater omentum. Tumour resection was performed, as well as resection of the portion of the anterolateral abdominal wall and omentectomy. Postoperative immunohistochemical analysis revealed malignant peritoneal mesothelioma.

Introduction

Malignant peritoneal mesothelioma is a rare abdominal tumour, which is in many cases not diagnosed until after surgical exploration. Development of such tumours is not gender-, age-, ethnically-, geographically or genetically-dependent (1).

Mesothelioma is a malignant neoplasm arising from the pleura (65-70%), peritoneum (30%) or may even arise rarely in the tunica vaginalis of the testis and pericardium (1-2%). A long history of asbestos exposure has been implicated in the pathogenesis of 50% of cases of malignant peritoneal mesothelioma. The correlation of asbestos exposure with peritoneal mesothelioma is less strong than with pleural mesothelioma. The association of malignant peritoneal mesothelioma with Simian virus 40 (SV40) is still conflicting (2). The influence of genetic factors on the development of the disease is still to be elucidated (3). The period of clinical latency from the initial exposure to asbestos until the development of mesothelioma may extend over 15-50 years. There are three common types of malignant mesothelioma: the epithelioid, the sarcomatoid and the non-sarcomatoid. The best survival rate was observed in the patient population with epithelioid mesothelioma (55-65%). Pathohistological findings strongly resemble adenocarcinoma. The sarcomatoid type (10-15%) is similar to sarcomas. The non-sarcomatoid type (20-35%) reveals elements of the epithelioid and sarcomatoid forms (1).

The average prevalence in the USA is one to two cases per million per year, with an anticipated incidence of 200-400 newly diagnosed cases per year (2). Mesothelioma occurs more often in men than in women, who are less exposed to asbestos.

Mesothelioma is mostly diagnosed between the ages of 50 and 70, and the period from the onset of first symptoms to final diagnosis is usually 4-6 months. The most common symptoms in patients with peritoneal mesothelioma include abdominal pain (60%), anorexia (27%), fatigue (12%) and nausea (11%). The usual clinical presentations of the peritoneal mesothelioma are abdominal distention (56%), ascites (37%), weight loss (38%) and abdominal tumour (11%) (4).

This paper presents a case of malignant peritoneal mesothelioma diagnosed after exploratory laparotomy and immunohistochemical analysis.

Case report

A 72-year-old male who presented with pain localised in the right half of the abdomen was examined in January 2006. Clinical examination revealed a palpable tumour in the lower right quadrant of the abdomen. The tumour was oval, about 7 cm in size, and was fixed to the anterolateral abdominal wall.

Results of laboratory examination were within the range of reference values. Ultrasonography and colonography examinations did not identify the site of tumour origin. Computed tomography did not identify the primary site of the tumour, yet demonstrated its peritoneal dissemination. There were no significant increases in values for tumour markers Carcino-embryonic antigen (CEA) and Cancer antigen 19-9 (Ca19-9).
During the diagnostic procedure and pre-operative treatment, evident tumour growth was observed. The tumour reached a size 20 mm × 10 cm, spreading from the anterior superior iliac spine towards the epigastrium. The time to diagnosis was 2 months because of actual cardiological problems (absolute arrhythmia, cardiomyopathy, hypertension) and transition from oral to parenteral anticoagulant therapy. Intra-operative examination identified peritoneal dissemination, particularly in a Douglas' pouch. The greater omentum was adhered to the anterolateral abdominal wall on the right side, proceeding without infiltration along the right colon, callous, with dilated veins, and with a great number of swollen lymph glands. The surgical procedure included omentectomy and resection of the tumour and rectus muscle of the abdominal wall, as far as the macroscopically healthy tissue (Fig. 1).

Standard histological examination suggested adenocarcinoma; however, this diagnosis did not conform with the macroscopic intra-operative findings. Secondary immunohistochemical analysis (calretinin, vimentin and epithelial membrane antigen (EMA) staining) was performed, revealing the diagnosis: malignant epitheloid mesothelioma. During the postoperative period the patient was not subjected to chemotherapy and died four months after surgery.

**Discussion**

The peritoneum is a two-layered serous membrane composed of mesothelial cells, with a dense vascular and lymph capillary network. Peritoneal mesothelioma is a primary tumour of the peritoneal mesothelium. The tumour is classified as benign, malignant or borderline. Malignant mesothelioma, is extremely rare, and occurs mostly in female patients (5).

Malignant mesothelioma mostly develops over a long period of exposure to asbestos. The highest incidence of the disease in North America is expected in 2010, whereas more than 250,000 lethal outcomes are predicted in Europe in the coming 20 years (2).

Specific tests for proving this type of malignancy are still lacking. In our case, the definitive diagnosis was made on the basis of explorative laparotomy, which corresponds with the experiences of other authors (6-8). Considering that our patient spent his life working as a construction worker in Germany, there is reasonable suspicion that he has been exposed to asbestos over a long period of time.

Malignant mesothelioma is a rare disease identified in only 0.01-0.1% of all autopsy findings (6-8). Peritoneal mesothelioma accounts for only 20-30% of all cases of malignant mesothelioma (7-9). Ascites, associated with malignant mesothelioma, results in abdominal distension, and is identified in 90% of patients (8, 9). Some authors suggest biopsy as the method of choice in diagnosing malignant mesothelioma (6, 9). The best marker for differentiating malignant mesothelioma from malignant abdominal tumours is the fact that malignant mesothelioma is immunohistochemically positive for calretinin, whilst negative for CEA (6).

The prognosis for malignant mesothelioma is determined by numerous factors, i.e. the size and stadium of the tumour, its spread and cellular type, as well as by patient’s response to the applied therapy. The most important clinical factors are the completeness of cytoreduction and the nuclear size (10). The treatment of malignant peritoneal mesothelioma generally implicates surgical treatment, chemotherapy and radiological therapy or, in most cases, the combination thereof. Common therapy techniques for this kind of mesothelioma include extensive cytoreduction and hyperthermic intraperitoneal chemotherapy (HIPEC) (11). In our case, due to the advanced spread of the tumour, the advanced age of the patient and his poor general condition, no adjuvant chemotherapy was applied. The patient underwent postoperative multiple palliative paracentesis of the ascites and finally died 4 months after the diagnosis. In cases of diffuse spreading of the malignant mesothelioma, chemotherapy is preferable to surgical treatment (6).

There are reports on complete remission after cisplatin (cis-diamminedichloroplatinum) chemotherapy (6, 8). After surgical removal of the tumour and peri-operative intraperitoneal chemotherapy, female patients with diffuse malignant peritoneal mesothelioma revealed better survival rates than men (12). The efficacy of radiotherapy in the treatment of malignant peritoneal mesothelioma has not yet been confirmed (6).
and assessing the quality and outcome of the therapy. Diagnostic problems associated with malignant peritoneal mesothelioma at our clinic are similar to those at clinics worldwide and definitive diagnosis can only be made after surgical exploration and immunohistochemical analysis.

References


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