Omental mesothelioma as a diagnostic and therapeutic challenge: A case report

Cihan Akgul Ozmen, Yekta Tuzun, Hatice Ozturkmen Akay, Hasan Nazaroglu

ABSTRACT

Introduction: Peritoneal mesothelioma is one of the very rare tumors of the abdominal cavity and represents 10% of all mesothelioma cases.

Case Report: A 54-year-old male presented with weight loss and abdominal swelling. Computed tomography scans revealed calcified plaques in the pleura and extensive thickening of the omentum. A laparoscopic biopsy of the omentum revealed malignant epithelial mesothelioma.

Conclusion: Although extremely rare, primary omental mesothelioma must be present in the differential diagnosis of omental mass in subjects with a history of exposure to asbestos.
Omental mesothelioma as a diagnostic and therapeutic challenge: A case report

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ABSTRACT

Introduction: Peritoneal mesothelioma is one of the very rare tumors of the abdominal cavity and represents 10% of all mesothelioma cases. Omental mesothelioma is an extremely rare condition reported in only a few cases in the medical literature and presents both diagnostic and therapeutic challenges. In this report, we present the clinical and radiological findings of a patient who had malignant mesothelioma originating from the omentum.

Case Report

A 54-year-old male patient with no previous complaints presented to our hospital with a 7–8 kg weight loss within a month. The patient described the onset of extensive bone pain in whole body and abdominal swelling within the last month. The patient was cachectic and ascites and tenderness on the right lower quadrant was detected on physical examination. Computed tomography (CT) scans revealed calcified plaques in the pleura and extensive thickening of the omentum. A laparoscopic biopsy of the omentum revealed malignant epithelial mesothelioma. Conclusion: Although extremely rare, primary omental mesothelioma must be present in the differential diagnosis of omental mass in subjects with a history of exposure to asbestos.

Keywords: Peritoneal mesothelioma, Asbestosis, Omental mass

How to cite this article

Ozmen CA, Tuzun Y, Akay HO, Nazaroglu H. Omental mesothelioma as a diagnostic and therapeutic challenge: A case report. International Journal of Case Reports and Images 2013;5(1):71–75.

doi:10.5348/ijcri-2014-01-443-CR-16
Discussion

Mesothelioma originates from the mesothelial cells lining the surface of the serous body cavities. Typically, tumors originate from the pleura and, to a lesser extent, from the peritoneum and, rarely, from the pericardium and tunica vaginalis testis [6]. Malignant peritoneal mesothelioma is characterized by neoplastic changes in the cells lining the peritoneal cavity surface and is very rare compared to pleural mesothelioma, representing approximately 10% of all mesothelioma cases [1]. Peritoneal involvement usually manifests as abdominal distention, anorexia, weight loss, and symptomatic malignant ascites. However, ascites was not reported in a previous case with omental mesothelioma [4]. Ascites was present in three out of four cases with primary omental mesothelioma. Cytological analysis of the fluid may help, however, diagnosis is usually established by laparotomy or laparoscopy. At the time of diagnosis, the mean age is 60 years, and the female male ratio is 1:3 [7]. Most of the patients have a history of asbestos exposure [1, 4]. However, this correlation is weaker in females [1]. Epidemiological trials have demonstrated an association between the occurrence of mesothelioma and environmental factors and carcinogens. The association between mesothelioma and asbestos was first demonstrated in 1960 by Wagner et al. In most of the cases presented in literature, there is a history of apparent asbestos exposure and of living close to regions where asbestos is intensively used [4, 8]. Asbestos exposure was present in our patient and a previous case [4] but not in another case [3]. We also detected pleural thickening in our case, which may be a radiological clue to the diagnosis of mesothelioma in patients with a concomitant omental mass or thickening.

Diffuse peritoneal mesothelioma is often characterized by many small (1–5 mm) bright, whitish nodules on the peritoneal surface at surgery. Larger nodules (2–5 cm) and infiltrative masses are commonly observed. At advanced stages, tumors mostly infiltrate the omentum and pleural cavity via the trans diaphragmatic route and exhibit distant metastasis [6, 7]. To the best of our knowledge, only three cases of malignant mesothelioma originating from the omentum have been reported [2–4]. Although the omentum primarily consists of fatty tissue, tumors of smooth muscle origin occur more commonly than fatty-origin tumors. Tumors originating from...
mesothelial cells are relatively rare. Most patients may present with complaints of abdominal discomfort, nausea, early satiety, weight loss, and a palpable abdominal mass, or patients may be asymptomatic [8]. In our case, the disease occurred with omental involvement, and weight loss was the most marked complaint.

The histology of malignant peritoneal mesothelioma is generally the same as the pleural type, and is classified into epithelial, sarcomatoid, and biphasic subtypes. In various series, the distribution of the types has been published. The most common histopathologic type affecting the pleura and peritoneum is the epithelial type, as it was the case in our patient [1].

The prognosis of mesothelioma is poor. After the diagnosis, the mean survival is 9–18 months for peritoneal tumors and 4–12 months for pleural tumors in cases of untreated patients [7]. Systemic chemotherapy and radiotherapy have little effect on the course of the disease, and complete surgical resection is not that beneficial [1]. However, prolonged survival in selected patients after intensive multimodality treatment has been reported [5]. These authors used surgical debulking, intraperitoneal chemotherapy, and immunotherapy followed by whole abdominal radiotherapy [5]. Sugarbaker et al. documented marked survival benefits of a multimodality approach that combined cytoreductive surgery with perioperative intraperitoneal chemotherapy [9]. The surgery utilizes a new peritonectomy surgical technique, which strips away the lining of the body cavity using ball-tip electrosurgery. This surgery removes the primary cancer and any dissemination within the cavity, and chemotherapy is used to eradicate microscopic disease. Hyperthermic intraperitoneal chemotherapy is showing some promise for the treatment of peritoneal mesothelioma; the combination of cisplatin plus doxorubicin at a temperature of 42°C was the preferred regimen by experts in hyperthermic intraperitoneal chemotherapy [10]. These new medical and surgical approaches have made previously lethal disease curable in selected patients.

| Cases            | Case 1 [2]                        | Case 2 [3]                        | Case 3 [4]                          | Case 4 |
|------------------|-----------------------------------|-----------------------------------|-------------------------------------|--------|
| Age-Sex          | 83-Male                           | 61-Female                         | 70-Male                             | 54-Male |
| Exposure to Asbestos | Non available                     | Absent                           | Present                             | Present |
| Symptoms and     | -abdominal pain                   | -lower back pain                 | -abdominal pain                     | -abdominal pain, |
|                  | -weight loss                      | -weight loss                     | -weight loss                        | -weight loss |
|                  |                                   | -abdominal mass                  | -lethargy,                           | -extensive bone pain |
|                  |                                   |                                   | -painful mass                       |         |
| US Findings      | -Ascites                          | -hyperechoic solid mass in the pelvis | -normal                            | -ascites |
|                  | -chronic cholecystitis            | -minimal ascites in the cul-de-sac |                                   | -thickening of the omentum |
| CT Findings      | -ascitic fluid                    | -Well circumscribed soft tissue mass, with heterogeneous enhancement | -No Ascites                        | -calcify plaques in the pleura |
|                  | -thickening of the greater omentum and the root of the mesentery |                                   | -diffuse infiltration of the omentum | -thickening of the omentum |
|                  | -thickening of the mesentery of the terminal ileum | -edema of the peritoneal fat |                                   | -ascites |
| Surgery or       | Laparotomy and omentectomy:       | -omentectomy                      | -US guided biopsy                   | -laparoscopic biopsy |
| Intervention     | -diffuse infiltration in greater omentum | -hysterectomy                    |                                     |         |
|                  |                                   | -bilateral salpingo-ophorectomy    |                                     |         |
|                  |                                   | -a large tumor of greater omentum  |                                     |         |
|                  |                                   | -invasion of uterus               |                                     |         |
| Histopathology   | -malignant mesothelioma-          | -Well differentiated epithelial malignant mesothelioma of the greater omentum | -malignant mesothelioma             | -Epithelial malignant mesothelioma |
|                  | multiple psammoma bodies          |                                   |                                     |         |
| Survival         | 12 months                         | No recurrence in two years eight months | three weeks                        | two years |
CONCLUSION

Although, the association between pleural mesothelioma and chronic asbestos exposure is well known, primary peritoneal mesothelioma is a rare complication of asbestosis. Typically, it may manifest with ascites and peritoneal nodule-masses or it may be observed as an omental mass, as was the case in our patient. Therefore, primary peritoneal mesothelioma, although very rare, must be present in the differential diagnosis of subjects with an omental mass and a history of asbestos exposure.

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Author Contributions
Cihan Akgul Ozmen – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Yekta Tuzun – Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Hatice Ozturkmen Akay – Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Hasan Nazaroglu – Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor
The corresponding author is the guarantor of submission.

Conflict of Interest
Authors declare no conflict of interest.

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