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Peritoneal Mesothelioma Chronicles: A Case Of Resilience

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Abstract

Presentation
Malignant mesothelioma, an aggressive cancer linked to asbestos exposure, often originates in the peritoneum, affecting males predominantly in high-risk occupations. We present the case of a 68-year-old retired electrician with a history of prostate malignancy and extensive comorbidities, presenting with gross abdominal ascites.

Diagnosis
Imaging revealed peritoneal metastatic disease, confirmed histologically as epithelioid subtype malignant mesothelioma, amidst a complex medical history including prior amputations and cardiovascular disease. Tumor markers were inconclusive, necessitating laparoscopy and biopsy of the omentum for definitive diagnosis.

Treatment
Despite multidisciplinary consultation, curative interventions were deemed unsuitable due to severe comorbidities, warranting palliative care.

Discussion
This case underscores the diagnostic challenges and therapeutic limitations in managing peritoneal mesothelioma, particularly in patients with significant comorbidities. Despite multidisciplinary team efforts and family involvement, the patient's condition rendered him ineligible for surgical or systemic treatment, highlighting the crucial role of palliative care in optimizing quality of life.

Introduction

Malignant mesothelioma is a rare and aggressive cancer and can originate in various locations within the body including the pleura, peritoneum, pericardium and tunica vaginalis of the

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testes.[1] The peritoneum is the second most frequent site of origin of mesothelioma, following the pleura.[2] Peritoneal mesothelioma represents 20- 33% of all cases of mesothelioma.[3]

The incidence of peritoneal mesothelioma is 0.5-3 cases per million in men and 0.2-2 cases per million in women.[4] Notably about 85% of male cases are linked to occupational exposure to asbestos[5,6]. Occupations at high risk of exposure encompass mechanics,[8] shipyard workers[7], plumbers, electricians and roofers[8]. Malignant mesothelioma has an insidious onset[9] and a poor prognosis[10].

Case Presentation

We present a case of a 68 year old male patient, a retired electrician, who was referred to the hospital for investigation of a gross abdominal ascites. He also had a background history of prostate malignancy (PSA 11.5; stage T20 N0 M0, Adenocarcinoma Gleason Grade 4+3=7). He was referred by our radiation oncology colleagues from a nearby hospital due to ascites noted on imaging during investigation for prostate cancer. He had also undergone radiation and hormonal therapy with Bicalutamide and Decapeptyl for prostate cancer.

His background history revealed right above knee and left below knee amputation secondary to peripheral vascular disease and ischemic heart disease (Post coronary artery bypass surgery in 2019, on treatment (Plavix) with preserved ejection fraction). Past history revealed hypertension, hyperlipidemia and history of smoking of 10 cigarettes/day for 51 years.

He presented to us with complaints of abdominal pain and increased size of abdomen for 6 months. He had no change in his bowel habits. He had poor sleep and poor appetite at the time of presentation to Hospital for workup of his ascites.

Imaging included CT thorax abdomen and pelvis reported a homogenous enhancing liver with a minimal irregular contour, gross intra-abdominal and pelvic ascites with enhancing peritoneal nodularity at the greater omentum. This was reported being consistent with peritoneal metastatic disease.

During admission he underwent two large volume paracentesis with the first draining 16L and the second draining 8L. Analysis of fluid sent reported Neutrophils >250 and as per protocol he was treated for spontaneous bacterial peritonitis. The serum ascites albumin gradient was reported as 4, this would tell that the ascites was not related to portal hypertension and was related to a malignant process.

He underwent work up for a primary malignancy with oesophago-gastro-duodenoscopy and colonoscopy normal studies. Tumour markers: CA 19.9 was elevated at 65.3. Alpha fetoprotein normal and CEA were normal. He was discussed at the gastrointestinal multi-disciplinary meeting, and as previous cytology on the ascitic fluid had not revealed any malignant cells, it was decided to investigate him further laparoscopically.

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He underwent laparoscopy and biopsy of the omentum. Histopathology showed malignant mesothelioma, epithelioid subtype. Pathology report from the omentum revealed fibroconnective tissue showing a prominent proliferation with papillary architecture and composed of epithelioid cells with moderate amounts of eosinophilic cytoplasm, ovoid nuclei and prominent nucleoli. One mitotic figure within 10 high-power fields. There was infiltration into fibroadipose tissue. The cells were strongly positive for calretinin, D2-40, WT1, CK5/6, CK7, EMA, CA-125 and HBME1. They were negative for BerEP4, CEA, PSAP and CK20.

He also underwent CT scan (computed tomography) thorax due to a finding on echocardiogram suggesting a mass at the left lung base. CT thorax reported no discrete pulmonary mass, no evidence of pleural effusion. There were bilateral subpleural nodules within the lower lobes. It's reported these were unchanged from prior CT.

Our gastroenterology colleagues had multiple family meetings with his daughter during his admission. The family was kept informed at each step of care. He was reviewed by our multi-disciplinary team colleagues. Physiotherapy and occupational therapy deemed to be at his baseline function. He was seen by colorectal team in their out-patient department and was referred to oncologists. In view of rarity of this case, he was referred to Oncology department at another hospital. In his case, unfortunately he was unfit and the oncologist didn't not believe he is a candidate for either surgery or systemic treatment due to his severe co-morbidities. Therefore he was recommend palliative care.

We checked on his progress last month and he was doing fine with on and off abdominal pain. He was independent in his daily activites of life but has increased his cigarette intake.

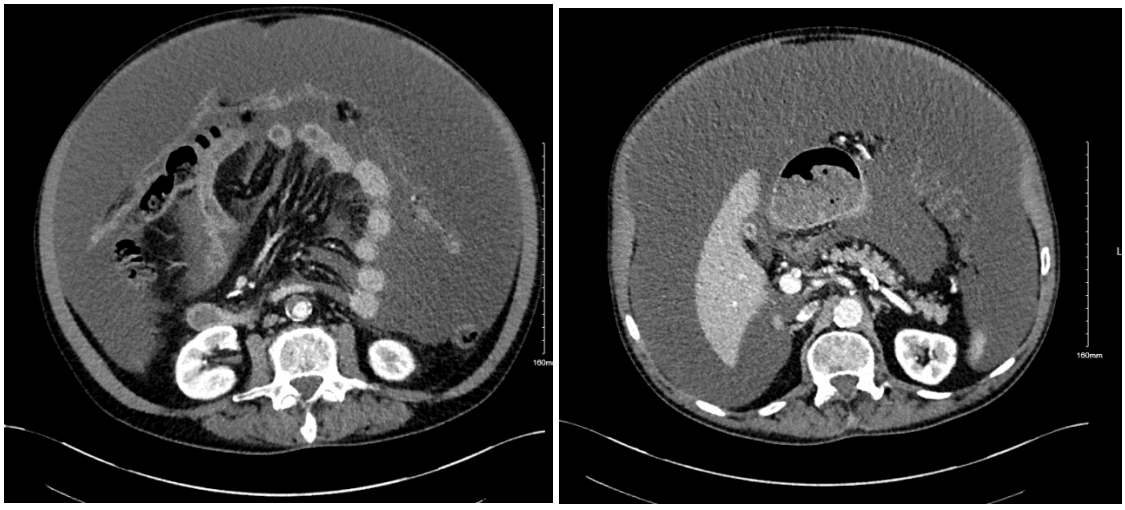

Figure A and B: Axial section of CT showing extensive ascites and peritoneal nodules

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Discussion

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The incidence of peritoneal mesothelioma is 0.5-3 cases per million in men and 0.2-2 cases per million in women.[4] Notably about 85% of male cases are linked to occupational exposure to asbestos.[5,6] Occupations at high risk of exposure encompass mechanics,[8] shipyard workers[7], plumbers, electricians and roofers.[8] Malignant mesothelioma has an insidious onset[9] and a poor prognosis.[10]

Mesothelioma can be categorized into 3 subtypes; Epithelioid, sarcomatoid and biphasic. Epithelioid is the most common and has a better prognosis as compared to the sarcomatoid and biphasic.[12] Peritoneal mesothelioma represents 20- 33% of all cases of mesothelioma.[3] Imaging for staging primarily relies on computed tomography (CT) but magnetic resonance imaging (MRI) with specific protocol can also be helpful. Radiographic imaging typically shows ascities, omental caking, peritoneal thickening, mesenteric nodules and mesenteric folds thickening. With the increase in severity, there is progress thickening of visceral and parietal peritoneum which eventually encases the abdominal organs and the bowel[13].

Diagnosis of malignant peritoneal mesothelioma requires histological confirmation by core biopsy or by omental/peritoneal biopsy. Immunohistochemistry shows positivity for WT1, Ck 5/6, calretinin, mesothelin and D240. BAP1 and MTAP shows loss of expression. In addition, peritoneal mesothelioma would be negative for carcinoma markers CEA, Ber-EP4, LeuM1 and B72.3. These immunohistochemical stains can be used for confirmation of diagnosis[14].

The life expectancy in mesothelioma is much reduced. Median survival is 1 year[3]. A few cases of long term survivors have also been reported[15] but that is very rare (Longest survival reported is 19 years[15]). Some patients with germline mutations in BAP1 gene have better survival rates[16]. These patients should be discussed in multidisciplinary team meetings and managed according to disease burden.

This case report highlights the appropriate workup, diagnosis and management of a challenging case of malignant mesothelioma.

Declarations of Conflicts of Interest:

None declared.

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