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Case Report

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Deceived by Ultrasound: An Unexpected Discovery of Aggressive Peritoneal Malignancy Disguised as a Benign Gynecologic Complaint

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Abstract
Commonly diagnosed at an advanced stage, peritoneal mesothelioma is a rare and highly aggressive malignancy. This case demonstrates an atypical presentation of sarcomatoid mesothelioma, identified by gynecologists due to concern for hemorrhagic cyst.

Background

Although commonly pleural in origin, mesothelioma may develop in the mesothelial cells lining other serous cavities with malignant peritoneal mesothelioma being one of few primary peritoneal neoplasms. Both pleural and peritoneal mesothelioma share asbestos exposure as a primary risk factor, however, their gene expression profile and molecular pathogenesis differ significantly. Men are noted to have higher incidence of mesothelioma of all types with a 3-4:1 male predominance in pleural varieties, though a larger proportion of women will develop peritoneal mesothelioma.

Presenting with nonspecific symptoms such as abdominal discomfort/ pain, distention, increased abdominal girth, nausea, early satiety, and weight loss, many patients are at an advanced stage of disease when evaluated with classification further delayed by the challenges and complexity of diagnostic methods. Laboratory testing can demonstrate elevations in cancer antigen 125 (CA125), carcinoembryonic antigen (CEA), and soluble mesothelin related protein (SMRP) with low specificity. Imaging with CT, or MRI for those that cannot receive IV contrast, may reveal ascites, sheetlike thickening of the peritoneum with peritoneal nodules, or distinct masses with peritoneal studding suggesting peritoneal mesothelioma, but tissue sampling is required for diagnosis. Sampling may be achieved by core needle or laparoscopic biopsy, however, if disease suspicion is high, laparoscopic tracts should be excised during the procedure due to the propensity to seed the port sites.

Cytology of ascitic fluid is often non diagnostic or inconclusive as it cannot establish the degree of invasion into the peritoneum or viscera to define malignancy. Biopsies obtained should undergo immunohistochemical staining for calretinin, cytokeratins 5 and 6, mesothelin, and Wilms tumor 1 antigen. Of the four subtypes of peritoneal mesothelioma (epithelioid, sarcomatoid, mixed, and well-differentiated papillary), sarcomatoid is the most rare and associated with the highest rates of mortality.

Case Report

Our patient is a 29 year old G2P1011 female with no significant past medical history who initially presented for right lower quadrant pain. Initial evaluation revealed a benign abdominal exam and transvaginal ultrasound remarkable for a right-sided hemorrhagic cyst with mild-to-moderate pelvic free fluid. Laboratory findings included anemia (hemoglobin: 5.9 g/dL) and clinical picture was concerning for a ruptured hemorrhagic cyst. The patient received 2 units of packed red blood cells for anemia and was admitted for observation and serial abdominal exams in the setting of suspected hemorrhagic cyst. On hospital day two, the patient's hemoglobin rose appropriately to 10.2 g/dL. The patient remained hemodynamically and clinically stable with improved pain and was subsequently discharged home.

Five days later, the patient returned with recurrent right lower quadrant pain and bloating. At that time, her abdominal exam was notable for moderate distention and positive fluid wave. Bimanual exam was unremarkable with bilateral adnexa nontender and non enlarged. Imaging revealed an enlarged right ovary with heterogeneous 3.3cm cyst with layering hemorrhagic content and interval increase in moderate to marked abdominopelvic complex ascites as well as a right pleural effusion. Given the patient's secondary presentation for similar complaints, the decision was made to take the patient to the operating room for diagnostic laparoscopy. During the case, greater than 1500cc serous fluid was evacuated. Diffuse peritoneal and bowel nodularity and studding, peritonitis, and pelvic adhesions were noted; however, there was no evidence of a hemorrhagic cyst visualized. Subsequently, cytology was found to be negative for malignant cells. Patient was discharged home on postoperative day one in stable condition.

The patient then re-presented on postoperative day eight with similar complaints. CTAP performed showing soft tissue nodularity along the omentum, and large volume complex ascites suggestive of hemorrhagic fluid. IR guided paracentesis was performed with evacuation of 2.8L of clear yellow fluid. Peritoneal biopsies were collected and sent to an expert pathologist. Final pathology revealed sarcomatoid mesothelioma and the patient was referred to a tertiary care center for further management and treatment.

Discussion

When analyzing the case retrospectively, the first point the authors discussed was the initial medical management of what was suspected to be a hemorrhagic cyst. Without significant demographic or environmental risk factors or comorbidities and with nonspecific clinical complaints, this presentation of a healthy young adult P1 with right lower quadrant pain and

anemia thought to be explained by ultrasonographic findings of the cyst warranted a discussion with the patient about medical versus surgical management for which the patient, after weighing risk and benefits, opted for medical management and outpatient follow-up. Offering the patient medical management at that time with serial exams and appropriate rise in hemoglobin and hematocrit remains a reasonable option given the case.

On her second presentation, however, her pain presented with associated bloating and positive fluid wave on exam concerning for other etiologies despite imaging again reading as this hemorrhagic cyst, ultimately leading to the decision for diagnostic laparoscopy. In retrospect, the authors discussed once peritoneal and bowel nodularity and studding with large amount of serous fluid and no identifiable hemorrhagic cyst were seen, should other subspecialties have been consulted intraoperatively for more further evaluation including peritoneal biopsies and potential staging?

During this second presentation, only cytology from the evacuated fluid rather than biopsies was collected and no additional imaging was done including CTAP following the procedure's findings. These were delayed until her third presentation on postoperative day eight and significantly delayed her diagnosis and her referral to speciality treatment. That said, the availability of subspecialty care including gynecologic oncology for intraoperative consultation may be limited in many institutions and potentially should influence timing of such cases when more personnel are available given the concerning findings of new onset bloating and ascites.

In addition to diagnostic utility, early laparoscopy combined with appropriate imaging can assist in evaluation of which patients would benefit from cytoreductive surgery and hyperthermic intraperitoneal chemotherapy. Without having high clinical suspicion for malignancy when the patient presented, such surgical planning was not done at the time, but should be considered in future cases with similar findings if appropriate subspecialists are available.

Conclusion

This case initially presented as a typical, uncomplicated ruptured hemorrhagic cyst. The patient was initially managed medically, however when the patient presented with recurring symptoms the decision was made for surgical interventions.

This case underscores the importance of maintaining a broad differential diagnosis, particularly when evaluating recurrent presentations with unexplained ascites and peritoneal abnormalities. This also highlights the importance of having a low threshold for obtaining a biopsy in cases with uncertain diagnoses.

Mesothelioma is most commonly pleural in origin, however the peritoneal type has female predominance. Cytology of ascitic fluid is often non-diagnostic, and biopsies should be performed for evaluation of invasion and immunohistological staining. Sarcomatoid mesothelioma is the rarest form and associated with the highest rate of mortality, with median survival ranging from 3.5 to 8 months. Our patient was referred to a tertiary care center for further specialized management.

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