INTRODUCTION

While ultrasound is the most sensitive and specific method of identifying ascites, most texts and guidelines consider it optional prior to therapeutic paracentesis. We present a case of desmoplastic small round blue cell tumor, a rare tumor most commonly seen in young men and adolescents, feigning large volume ascites in a patient with shortness of breath.

LEARNING OBJECTIVES

1. Discuss the use of ultrasound in therapeutic paracentesis with malignant ascites.
2. Review the presentation, epidemiology, and pathological characteristics of desmoplastic small round blue cell tumor (DSCT).

THE CASE: A 21 year old man

Background: Patient was diagnosed with DSCT during a previous admission 5 months prior to presentation. Chief complaint at the time was abdominal distension and weight loss occurring over several weeks to months. Initial workup revealed diffuse large abdominal lymphadenopathy, and a 1.5cm pelvic mass. Core needle biopsy of mass identified DSCT. Patient was offered chemotherapy at time of diagnosis but chose to forgo therapy against medical advice and was discharged home. There was no further interaction with the health system until second presentation.

Chief Complaint: Shortness of breath, leg edema and abdominal distension.

History of Present Illness: Patient reported that since his prior discharge, he returned to his daily routine as best as possible. Prior to this presentation, patient reported that his abdominal distension had become significantly worse over the few weeks preceding also with progressive leg swelling. His feet became swollen to the point where ambulating without assistance was very difficult. Moreover, over the final 2-3 days he reported increasing dyspnea on exertion that had reached the point where he had the sensation at rest. Additional review of systems was otherwise negative.

Past Medical History: Only significant for his previous admission and cancer diagnosis. There was no significant family or surgical history.


High Power malignancy affecting young individuals tumors.

Pathology

Ramsamooj SV

CT Scans and ultrasound are displayed in figures 1 and 2. Laboratory: Bilaterally.

Genitourinary: scrotal edema.


Differential:

Laboratory

Imaging:

Chest X-Ray: Noted to be compatible with ascites with compressive atelectasis and marked volume loss in the lungs.

CT Scans and ultrasound are displayed in figures 1 and 2. Patient’s CT scan with contrast from initial presentation and after three cycles of chemotherapy. Bulky intrabdominal lymphadenopathy and liver metastases are the primary findings. Arrows highlight the displacement of the inferior vena cava – highlighting the improvement with therapy and the intrabdominal masses.

Histology of patient’s tumor demonstrates the classic description of DSRCT tumor cells. On the left, small round cells are found along with desmoplastic stroma (arrows).

On the right, a high power view demonstrates the high nucleus-to-cytoplasmic ratio in a group of cells surrounded by desmoplastic stroma.

Histology Figure 1 - Low Power

Histology Figure 2 - High Power

Excluding the surrounding stroma, these cells are morphologically similar to other small round cell tumors, such as Ewing’s sarcoma, or neuroendocrine tumors.

Non-contrast CT scan from second presentation. Patient’s abdominal girth is primarily from solid growth of tumor (arrows) with only very small areas of ascites.

Ultrasound of Abdomen. Demonstrates solid appearance of abdominal metastases.

Ultrasound image from CT scan – highlights the patient’s profile at his second presentation.

DISCUSSION

Ultrasound for paracentesis

For many practicing physicians, the use of ultrasound to identify ascites prior to large volume paracentesis has become almost routine. Yet clinical guidelines, including suggested guidelines for cancer patients in palliative settings, generally advocate that ultrasound continues to be optional. This patient’s personal history of two-to-three weeks of worsening dyspnea with history of malignancy, development of shortness of breath and the presence of the most sensitive physical exam findings of distension and lower extremity edema were highly suggestive of new onset large volume ascites. However, the use of ultrasound only identified small pockets of ascites. An attempted paracentesis may have placed the patient at risk of complication, and delayed the diagnosis of his pleural effusion as a significant contributor to his shortness of breath.

Most guidelines cite a case series of ultrasound for paracentesis published in JAMA in the 1980s by Burt et al. Yet, this article’s purpose was to advocate for more frequent use as ultrasound was found to identify small bowel or other hazards near the site of paracentesis in many patients. Admittedly, published case series of paracentesis generally find rates of complications less than 1%, even without ultrasound, and no studies have directly compared paracentesis with or without it. However, studies on numerous other procedures suggest improved complication rates with ultrasound visualization. Given the already wide clinical practice, it may be time for guidelines to be updated.

Desmoplastic Small Round Blue Cell Tumor (DSCT)

DSCTs are a rare neoplastic tumor with sarcoma-like features. Initially described in the 1980s as a distinct tumor type, they are primarily a disease of young persons with male predominance (5:1). The tumor’s course is aggressive and prognosis is typically poor. Patients will typically respond to chemotherapy for several months before the disease relapses. This patient’s presentation is classic for this tumor type. He initially presented with abdominal distension and cæcitis. Moreover, on his later presentations, despite the high intraabdominal tumor burden, this patient displayed no symptoms of bowel or bladder obstruction, which prior case series have also noted as a feature. Knowledge of this tumor type can be important, even for the general internist, as cases can be confused with other malignancies. Indeed, the initial working diagnosis for this patient was lymphoma prior to hospital admission. Confusion regarding the diagnosis can persist if an institution’s pathology department is unfamiliar with this rare tumor.

DSCT should be included in the differential diagnosis of any young person, especially men, with new, large intrabdominal mass.

REFERENCES


To Tap or Not To Tap: When Ascites is Not Ascites
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