

# A Huge Ovarian Cyst: Why was it Missed?

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## ABSTRACT

A 15-year-old girl presented with progressive abdominal distention for four months duration. An initial assessment by primary care and gynaecological teams concluded that ascites as the cause based on the clinical and initial ultra sonographic findings. However, an abdominal radiography revealed that a huge mature cystic teratoma as the actual cause of the presenting issue. Despite being a rare incidence, this case report highlights why a high index of suspicion of ovarian pathology in large abdominal fluid accumulation in the paediatric population should be raised. The case report also highlights the value of abdominal radiography, particularly in a primary care setting facility in differentiating intra-abdominal mass and ascites, especially when the massive volume of ovarian mass hampered the ultrasound findings. Though it is not specific, it may improve accuracy of initial diagnosis leading to an appropriate investigation with timely referral to the appropriate department. The unusual component of this case was the 'pseudoascites' presentation and the literature on the detail of distinction between the two conditions from the primary aspect point.

### Keywords

ovarian mass, ascites, imaging, abdominal radiograph, primary care

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## INTRODUCTION

Ovarian tumours are uncommon in children and adolescents as they account for only 1% to 2% of all tumours in this age group.<sup>1</sup> The incidence of this pathology is reported to be approximately 3 per 100,000 girls per year with the higher incidence occurring at ages of between 10 and 19 years.<sup>2</sup> The most frequent benign and malignant tumour encountered in the paediatric population is mature teratoma and immature teratoma, respectively.<sup>3</sup> Owing to unspecific and wide spectrum of clinical presentations of ovarian mass in this particular cohort.<sup>3</sup> The diagnosis is often challenging and delayed.<sup>4</sup> Especially if the volume of the mass has grown massively. This case report illustrates the diagnostic challenge experienced by physician when treating adolescents whose ovarian cyst mimics the ascites presentation. This case also highlights the limitation of the ultrasonography in diagnosing ovarian mass, particularly due to its enormous size. In a low-resource setting facility, a plain abdominal radiograph may also be helpful in differentiating intra-abdominal mass and ascites. However, the initial salient

findings in the plain radiograph and bedside ultrasound image were missed in this case.

## CASE

This is a case of a 15-year-old girl who presented with a four-month history of rapidly progressive abdominal distension. It was associated with early satiety and had caused her clothes to be tighter. Otherwise, she denied shortness of breath, abdominal pain, nausea, vomiting, constitutional symptoms and change in urinary or bowel habit. The delay in seeking treatment was partly due to the fact that the condition did not compromise her daily activities and the COVID-19 pandemic that restricted people from going to health facilities. There was no other contributory history suggestive of underlying malignancy, liver disease, heart failure or undiagnosed renal problems. She attained menarche at the age of 12, and her menses were regular. Her last normal menstrual period was a week prior to the consultation.

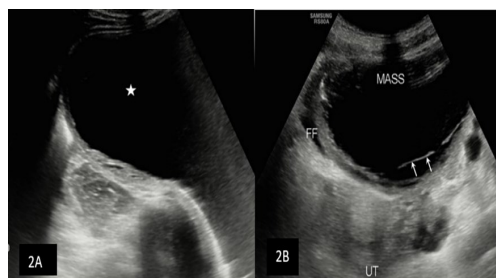
Physical examination revealed a small built adolescent with normal vital parameters. Her height- and weight-percentage were at 15th and 25th percentiles, respectively. There was no evidence of stunted growth. She appeared to be in good general condition with no sign of pain or distress. There was no clubbing, pallor, icterus, peripheral oedema or lymphadenopathy. The abdomen was grossly distended, extending from the pelvis to the xiphisternum, comparable to a 36-week gravid uterus. There were no visible dilated veins noted on the abdomen. Palpation did not reveal any tenderness or masses. Fluid thrill was positive. There were no stigmata of chronic liver disease. Examinations of cardiovascular, respiratory and nervous systems were unremarkable. Urine dipstick was negative for both pregnancy test and proteinuria.

Her preliminary laboratory work-up, which included haematology, biochemistry and liver function, were within the normal range. An initial transabdominal bedside scan by the primary care team revealed fluid accumulation intra-abdominally without any mass or septation resembling ascites being seen. An abdominal radiograph was also taken at this stage, not as a first-line investigation but as an adjunct to rule out any other possible pathology of abdominal distension in view of ascites, which was uncommon at this age group, and inability to detect any primary cause from the ultrasound. A plain abdominal radiograph in supine position showed an area of homogeneous opacity occupying the pelvic region extending superiorly until the upper abdomen with displacement of the bowel loops supero-laterally (Figure 1). Unfortunately, the primary team unable to appreciate the bowel loop displacement to the peripheral part of the abdomen, which would suggest the mass effect; hence, the intra-abdominal mass was missed as the primary pathology.



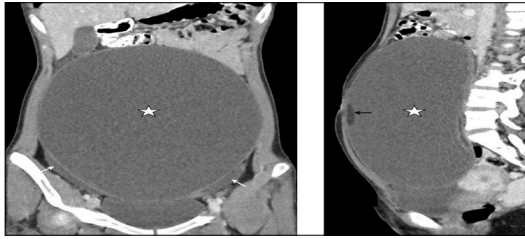
**Figure 1:** Plain abdominal radiograph showed homogenous opacity occupying the pelvic region till the upper abdomen with displacement of the bowel loops supero-laterally (white arrow).

The gynaecology team was subsequently consulted. A repeated bedside transabdominal ultrasound image revealed consistent findings of massive fluid occupying the pelvic and abdomen regions, with no obvious adnexal mass seen (Figure 2A). The patient was admitted for further work-up of what was presumed to be massive ascites following the sonographic findings. A diagnostic abdominal paracentesis was done; draining of 1.4 litres of hemerosous fluid without any complication occurred. Ascitic fluid analysis revealed an exudate with a negative microbiological test including tuberculosis and no cytological evidence of malignancy. Serum tumour markers including Ca 125, carcinoembryonic antigen (CEA) and alpha feto protein came back as normal. The inconclusive nature of the above investigations led to a diagnostic dilemma in this young girl at the initial investigation work-up. The patient was later subjected to a formal abdominal sonographic study by the radiology team, which found a large cystic mass with multiple septations, occupying the entire pelvic and abdomen measuring approximately 20 cm × 12 cm (Figure 2B).



**Figure 2A:** Bedside transabdominal ultrasound revealed massive fluid (white star) occupying the pelvic and abdomen region with no obvious adnexal mass. **Figure 2B:** Formal ultrasound of the abdomen and pelvis performed at radiology department showed a huge cystic mass with septation (white arrow) occupying the pelvic and abdominal region. Minimal ascites was also seen (FF).

The findings were missed previously prior to abdominal paracentesis and were mistaken for ascites, partly due to their massive cystic volume. As some amount of fluid had been drained out, the size of the mass became smaller, thus allowing for a proper and better sonographic evaluation of the lesion. A subsequent contrast-enhanced Computed Tomography (CT) scan of the abdomen revealed a large cystic mass arising from the pelvic region extending until the upper abdomen, causing displacement of bowels peripherally. Fat component and minimal ascites were observed Figure 3:



**Figure 3:** Contrast Enhanced CT abdomen showed a huge cystic mass arising from the pelvic region extending until the upper abdomen. Fat component is noted within it (black arrow). Minimal ascites seen at the pelvic region (white arrow) with the bowels displaced superiorly.

Following counselling, the patient agreed to undergo exploratory laparotomy and right salpingo-oophorectomy and omentectomy. The intraoperative finding showed a large uniloculated 16 cm × 15 cm right ovarian tumour, which drained 3 litres of haemorrhagic fluid. There was presence of sebum, hair and fleshy solid areas with soft-to-firm consistency inside the cyst. The histopathological examination confirmed the diagnosis of mature cystic teratoma consistent with the preoperative CT diagnosis. Postoperatively, the patient showed an excellent recovery and was discharged on the fourth day.

## DISCUSSION

Ovarian tumours are a rare entity in children and adolescents, who account for only 1% to 2% of all tumours in this age group.<sup>1</sup> The incidence of this pathology is reported to be approximately 3 per 100,000 girls per year.<sup>2</sup> Mature teratoma being the commonest benign type encountered in the paediatric population.<sup>3</sup>

The presentation of ovarian masses in the teenage group is often unspecific, and it varies widely. The most common presenting complaints were abdominal pain (46.4%), lump abdomen (24%) and abdominal distension (10.7%), whereas other patients might have developed acute pain due to the cyst complication having either ruptured or been twisted.<sup>3</sup> Apart from that, in some children and teenagers, the ovarian mass was an incidental finding encountered during the presentation for other illnesses or conditions.<sup>3</sup> The Literature has demonstrated that the size of the ovarian mass in the paediatric age group rarely grows immensely to exceed 15 cm.<sup>5</sup> However, if this occurs, the presentation of the large cyst with a massive volume may mimic ascites and pose a diagnostic challenge to the physicians.

As primary care providers, we need to acknowledge that ovarian pathology may present as ‘pseudoascites,’ despite its rarity in childhood and the adolescent age group.<sup>3,6</sup> In our patient, owing to the presence of a prominent fluid thrill supported by bedside transabdominal ultrasound findings, which failed to detect other associated findings of this large cystic mass, the pathology was originally thought to be ascites of unknown origin. Multiple studies reported similar incidences, in which a giant ovarian cyst was mistakenly diagnosed as ascites.<sup>6-8</sup> These are mainly due to the enormous size and the completely cystic nature of the mass, which impedes the diagnosis of the ovarian mass using sonographic equipment.<sup>6</sup>

This diagnostic dilemma subsequently subjected this patient to unnecessary abdominal paracentesis that yielded inconclusive results. However, the repeated abdominal sonography post paracentesis revealed the evidence of a large ovarian mass. This might as well be facilitated by the decompressive effect post paracentesis. However, bear in mind that abdominal paracentesis should never be undertaken if an ovarian mass is suspected as it could lead to bleeding, infection and increase in peritoneal adhesion, thus making cystectomy much challenging later on.<sup>9</sup>

Generally, the diagnosis of the ovarian mass can be made through sonographic evaluation, though it can be non-specific.<sup>10</sup> However, there are certain limitations to the ultrasound as depicted in our case, resulting in a delay in diagnosis and unnecessary paracentesis. Therefore, though the patient presented with atypical signs and symptoms, the index of suspicion must be kept high, given varied presentation of the ovarian pathology, especially in the paediatric age group. Prior to any invasive procedure, it would be useful to subject patients with diagnostic issues to other imaging modalities such as CT scan or magnetic resonance imaging (MRI), depending on their availability. Nevertheless, from our retrospective evaluation, we noted that there are some features from a plain radiograph that may provide a clue in distinguishing a large abdominal mass from ascites. This is particularly helpful in low-resource primary care facilities, wherein other advanced imaging modalities may not be widely available. Table I shows the comparison between ascites and a large ovarian cyst in radiological findings at a primary care practice.

Though it is non-specific, this radiological finding can be one of the supporting keys in differentiating these two conditions, especially when the mass effect of the large cyst impedes the accuracy and sensitivity of the abdominal sonogram.

**Table I:** Comparison between ascites and large ovarian cyst on a plain radiograph and ultrasound of the abdomen.

	Ascites	Huge ovarian cyst
Abdominal Radiograph	Centrally displaced bowel shadow. Diffuse increase abdomen opacity. Obliteration of properitoneal fat.	Peripherally displaced and compressed bowel shadow. Occasional calcification or presence of fat component in the mass. Preserved properitoneal fat.
Abdominal Ultrasound	Bowels floating within anechoic ascites. May contain floating debris.	No bowels floating. Visible cyst margin or wall. Septation, solid component and calcification can be visualised if present.

In conclusion, it is vital for us, as primary care providers, to consider the diagnosis of an ovarian mass in unexplained ascites, despite its infrequent occurrence in the adolescent age group. Whenever establishing a diagnosis becomes a dilemma, it is best to confirm the clinical suspicion with advanced imaging modalities before erroneously subjecting the patient to any invasive procedure that may cause harm. Other than that, in low-resource setting facilities, abdominal plain radiography may give a clue in differentiating large abdominal mass from ascites, particularly when a massive volume of the ovarian mass becomes a hindrance in the accuracy and sensitivity of sonographic findings.

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Not applicable

#### CONFLICT OF INTERESTS

The authors have no conflict of interests to declare.

#### ETHICAL APPROVAL

Consent was obtained from the patient and guardian to use radiographs and information. The patient and guardian understood that their names and initials would not be published.

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