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Pediatrics

Young girl with abdominal pain

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1 | PATIENT PRESENTATION

An 11-year-old female presented to the pediatric emergency department (ED) with acute onset, abdominal pain radiating from the flank to the left lower quadrant. She appeared ill and endorsed nausea, emesis, anorexia, and fever. Given her prior history of right ovarian torsion, point-of-care ultrasound (POCUS) was used to evaluate for ovarian torsion and to rule out hydronephrosis. Ultrasound revealed an enlarged left ovary with a complex mass (Figures 1A and 1B) and minimal venous flow without arterial flow (Figure 2). Although theoretically the low-pressure venous system should be impeded first in torsion, it is suspected that a large hemorrhagic cyst ruptured, causing decreased arterial flow and preserving minimal venous flow. Left adnexal torsion was identified on POCUS in the ED, expediting surgical intervention, confirmation of diagnosis, and salvage of the left ovary.

2 | DIAGNOSIS

Ovarian torsion is a surgical emergency requiring timely diagnosis and prompt surgical management to preserve the ovary and its hormonal function. Our early suspicion for adnexal torsion on POCUS was confirmed on radiology ultrasound and surgical findings. The POCUS technique used was a focused transabdominal ultrasound of the pelvis in B-mode, followed by color Doppler and then pulse wave Doppler.[1]

Ultrasound is the gold standard imaging modality for ovarian torsion. The absence of arterial flow and the increased size of the ovary are indicative of torsion. Lack of either finding does not exclude torsion.[2] The ovary has dual arterial supply from both the ovarian and the uterine arteries. This may lead to a persistent signal of arterial flow, despite there being an acute ovarian torsion. In cases of intermittent torsion, arterial flow can occasionally be found.[3] The enlarged ovary suggestive of torsion has a sensitivity reported in the pediatric literature of 92% and specificity of 96%.[1] The lack of either arterial or venous blood flow is reported to have a sensitivity ranging from 76%–94% and specificity of 99%–100%.[4,5]

The data is mixed for the sensitivity of ultrasound in torsion for both adult and pediatric cases. Although ultrasound is frequently considered the best test, if there is high concern, surgical exploration is warranted. However, data suggest that ultrasound has sensitivity ranging from 70%–84% and specificity of 87%–100% for torsion in adults.[3,4] A meta-analysis[6] by Bronstein et al in pediatric patients with ovarian torsion suggested that B-mode ultrasound had a high sensitivity and specificity, 92% and 96%, respectively, whereas Doppler ultrasound lacked sensitivity and was highly specific. The combination of B-mode and Doppler has the most use in detecting adnexal torsion.[6,7]

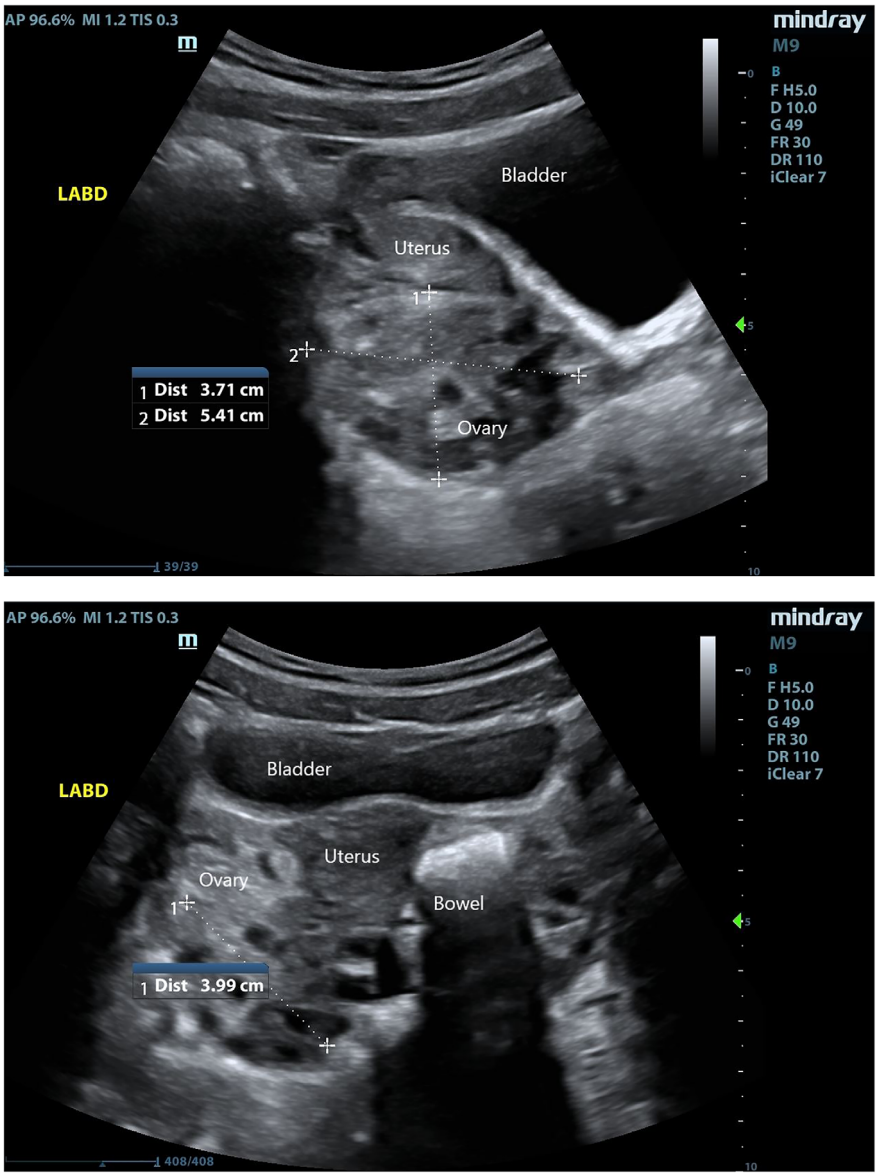

FIGURE 1 (A) Transabdominal ultrasound of the left adnexa revealed enlarged ovary with complex mass. (B) Transabdominal ultrasound of the left adnexa revealed enlarged ovary with complex mass

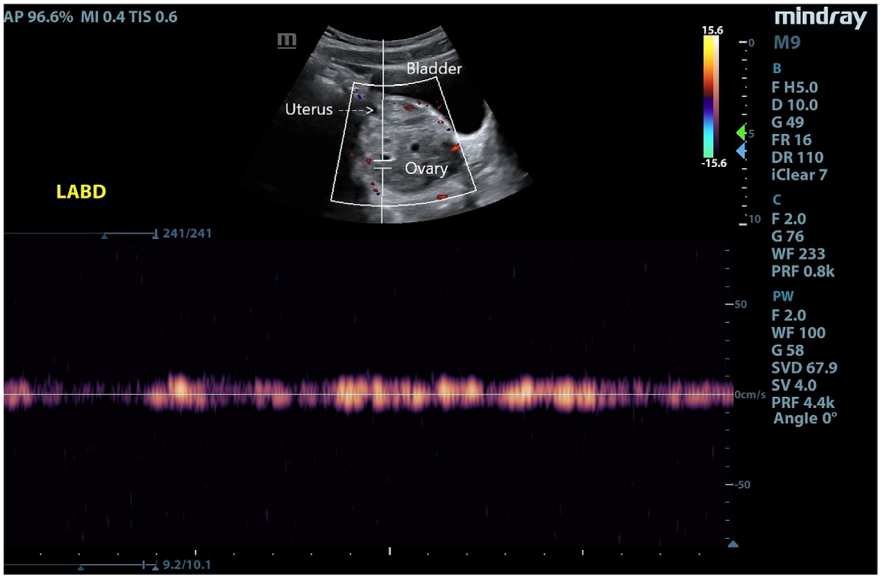

FIGURE 2 Color Doppler revealing minimal venous flow. Arterial flow not visualized

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