A Heart within a Heart

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History of Presenting Illness

A 31-year-old female with a past medical history of polysubstance abuse (tobacco, cocaine, etoh), substance-induced psychosis, bipolar disorder, factitious disorder was brought from a shelter to the ED complaining of abdominal pain. EMS reports that the shelter called for reported bizarre behavior and noncompliance with her psychiatric medication. The facility reports that the patient had been forcing herself to vomit. The patient admits to recent drug use, appears acutely agitated, and is combative in the ED. Despite multiple attempts, the patient declined any further questioning.

Pertinent Physical Exam

Vitals: T 98.0° F | HR 72 bpm | BP 144/76 | RR 17 | SpO2 97% on room air

Generalized: Rolling around in the stretcher but without signs of distress or pain. Disheveled and unkempt appearance.

HEENT: Normocephalic and atraumatic.

Cardiovascular: Regular rate and rhythm. Normal S1 and S2.

Respiratory: Clear to auscultation bilaterally, equal chest expansion, respirations non-labored.

Abdomen: Gravid abdomen, firm and mildly distended. Non-tender, no guarding. No peritoneal signs or scars.

GU: Patient declined.

Extremities: No peripheral edema, and distal pulses intact in all extremities.

Neurological: No gross motor deficits, uncooperative with full neurological exam.

Skin: Warm and dry.

Pertinent Labs

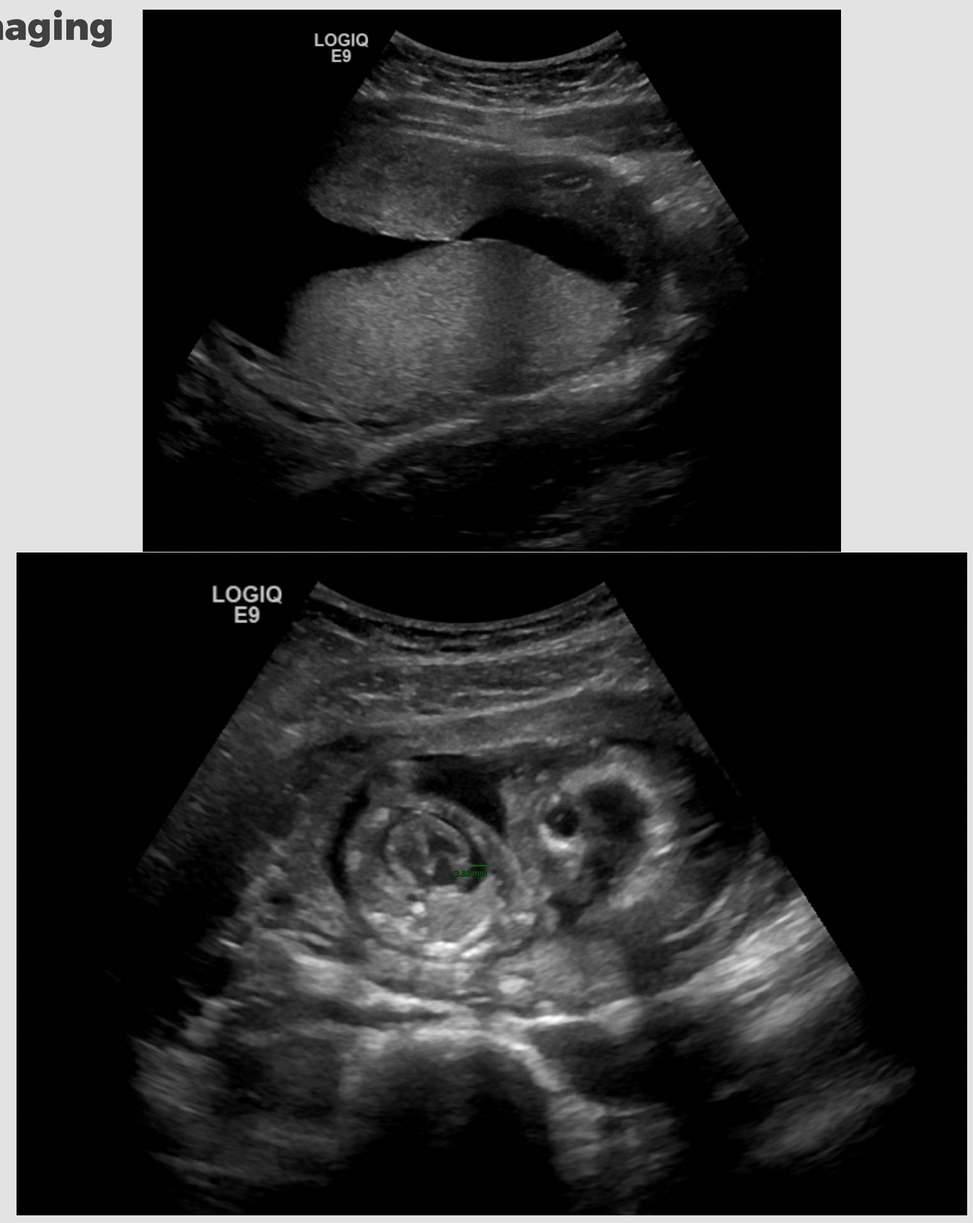
CBC: WBC: 17.4k, neutrophils: 88.6%
Hgb/Hct: 11.3/35
T&S: O positive
B-HCG Quantitative: 105,842 mIU/L
Urinalysis: Large leukocyte esterase with elevated WBC, 63 hpf. Positive for nitrites with many bacteria present. Negative for blood.
Urine Drug Screen: Positive for cocaine, THC, and benzodiazepines

Clinical Questions

1. **What is the significance of a bicornuate uterus?**
   A bicornuate uterus results from the partial fusion of the Mullerian ducts leading to a heart-shaped uterus rather than the more common pear-shaped uterus.
2. **How can a bicornuate uterus affect a viable IUP?**
   Increased risk of miscarriages, IUGR, preterm labor, and fetal malpresentations.
3. **How is a fetal pericardial effusion managed?**
   Primarily supportive with frequent observation of fetus. Approximately 45% of these cases are transient, self-limiting, and idiopathic in nature.

Take a picture with your phone for images, references, and acknowledgements

Imaging



Discussion

Our patient was found to have a single gestation with a pericardial effusion within a bicornuate uterus. A bicornate uterus is a rare anatomical variant occurring in 0.1-0.6% of the population. It results from the partial fusion of the Mullerian ducts resulting in a heart-shaped uterus rather than a typical pear-shaped uterus (1). Patients with this anatomical variant are frequently presumed to have false positive pregnancy tests. After obtaining a B-HCG, we confirmed our suspicion with a POCUS and confirmed a single viable IUP measuring approximately 17 weeks while also demonstrating a pericardial effusion.

Isolated fetal pericardial effusions are rare occurrences that are manifestations of fetal edema (2). These can be attributable to immunological and non-immunological causes. Risk factors include chromosomal anomalies, fetal infections (i.e. parvovirus, CMV, HIV), congenital cardiac anomalies, arrhythmias and tachyarrhythmias, and congenital hydrops fetalis (2). This patient has multiple factors that increase her risk including exposure to bacteria via a urinary tract infection and abnormal fetal growth resulting from restriction caused by the bicornuate uterus anatomy.

Patients follow up with Maternal Fetal Medicine (MFM) and require continuous outpatient monitoring of the fetal pericardial effusion (2). Asymptomatic effusions <4mm do not require intervention and up to 45% resolve spontaneously by birth. MFM evaluates for both infectious and congenital etiologies. If no cause is found, the fetal pericardial effusion is suggested to be transient and idiopathic (2).

After our patient was evaluated for her altered mental status which was attributable to illicit substance use with a concomitant urinary tract infection, she was evaluated by psychiatric and OBGYN.
The patient was recommended to be treated with PO antibiotics and to follow up outpatient with MFM.