Isolated Fetal Pleural Effusion with Progression to Non-Immune Hydrops Fetalis: A case report and literature review

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Introduction

- Fetal pleural effusions are fluid collections in the chest cavity of a developing fetus
  - Primary: from lymphatic malformation; unilateral and isolated findings
  - Secondary: structural or infectious etiologies; diagnosis of exclusion
- Small effusions regress or stabilize allowing for surveillance
- Can progress to contralateral side or lead to hydrops – 2 or more abnormal fluid collections (ascites, pleural, pericardial, skin edema)
- There is a multitude of causes of NIHF
- Early hydrops can lead to IUFD

- This is a case presentation of the diagnosis of unilateral pleural effusion with the evolution to NIHF with a good perinatal outcome.

Case Report

- 26 yo primigravid female with resolved COVID-19 infection with suspected fetal ascites.

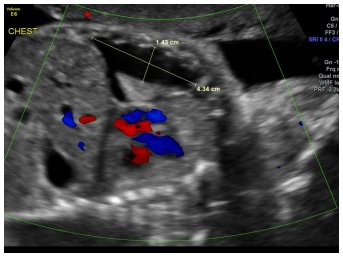
Timeline

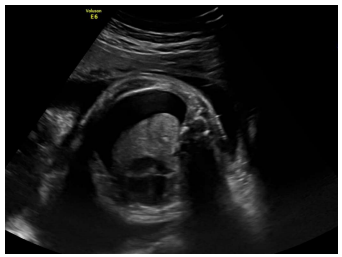
- Prenatal labs: B+, negative TORCH titers, low risk male on cell free DNA
- 20 weeks: Outside sono with normal anatomy and an EFW of 343 grams (75%tile).
- 28 weeks: High Risk OB Clinic consult
  - US: isolated moderate size (4.3x1.3x1.0cm^3) right pleural effusion with normal anatomy
  - Echo: moderate to large right pleural effusion with normal anatomy, rhythm and function
- Weekly surveillance with progressive poly (AFI 26.2cm to 46.1cm) but stable effusion (7.2x5.7x2.4cm3).
- 31 weeks: Skin edema developed
  - Recommend: genetics, betamethasone, amniocentesis (declined), thoracocentesis
- 32.4 weeks: Presentation to Labor and Delivery after PPROM
- 32.6 weeks: Delivery of male via primary CS with Apgars 4/6/8 and birth weight 2450 gram
  - Intubated and transferred to NICU
  - Negative postnatal chromosome analysis and COVID-19 test
- Now extubated with no further pleural fluid accumulation.
- VATS and biopsy revealing acute/subacute lung injury and acute fibrinous pleuritis – likely congenital chylothorax verses lymphangiectasia

Conclusion

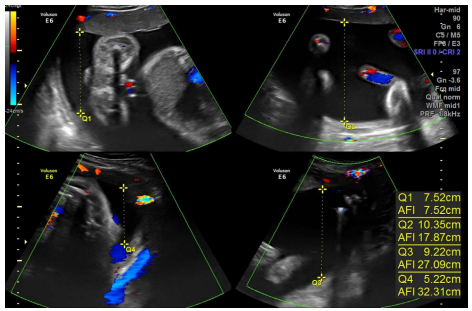
- Isolated fluid collections can be challenging
- The progression from unilateral pleural effusion to skin edema (hydrops) suggests a secondary cause.
- Antenatal etiology was unclear with negative workup.
- Drainage of large pleural effusions prior to delivery is recommended
- The survival and good prognosis of this case can be attributed to a few factors.
  1. No chromosomal or structural anomalies on sono is associated with better outcomes.
  2. Late onset of hydrops is a good prognostic factor.
  3. NIHF with polyhydramnios has a lower risk of IUFD but a higher risk of preterm birth.
- COVID-19 prior to development of pleural effusion.
  - There have been cases of newborns developing pleural effusions secondary to COVID-19 myocarditis or pneumonia.
  - It is important to continue to understand the effects of COVID-19 in-utero

Ultrasound Images

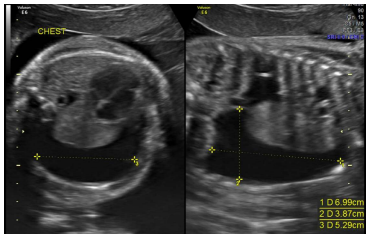


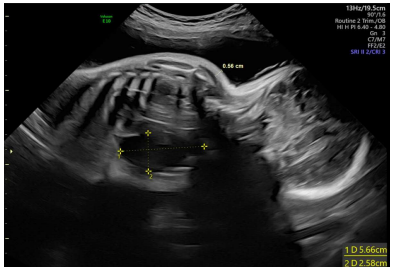


Initial consult sono at 28.3 weeks

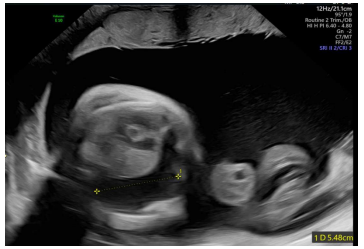


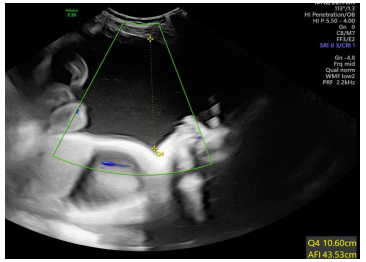
Follow up visit sono at 29.3 weeks



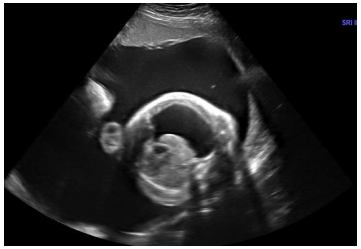


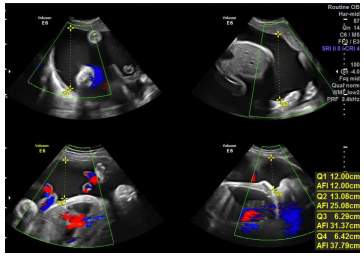
Follow up visit sono at 30.3 weeks





Follow up visit sono at 31.4 weeks





Sono before delivery at 32.5 weeks