ARDS

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Rad 4001 Diagnostic Radiology

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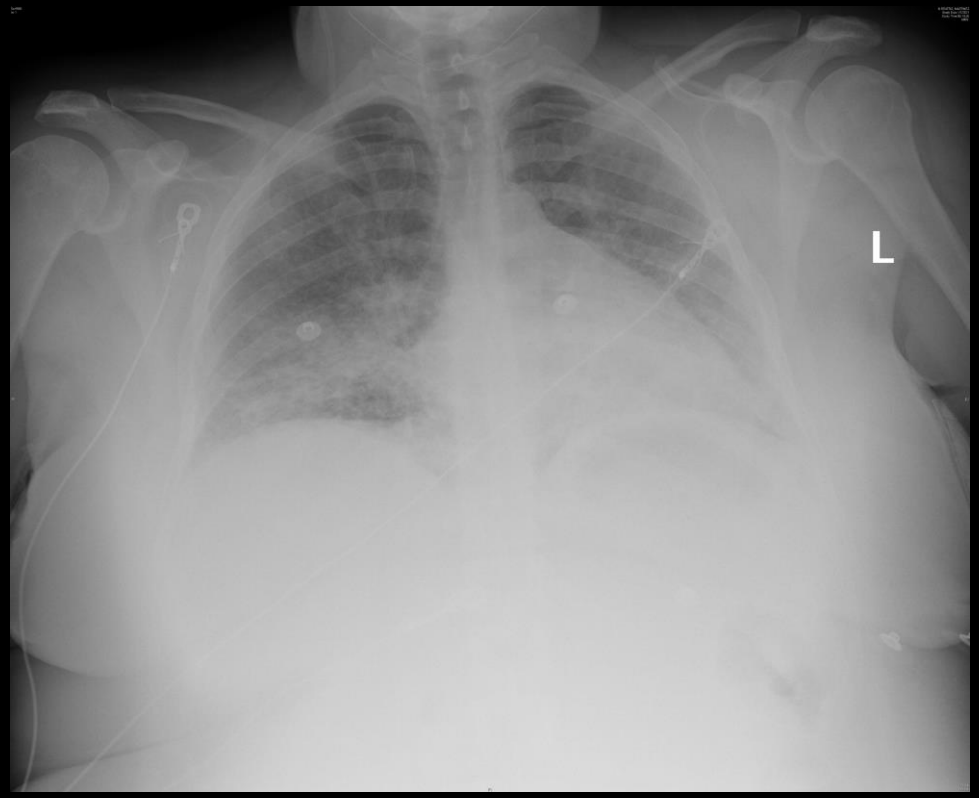
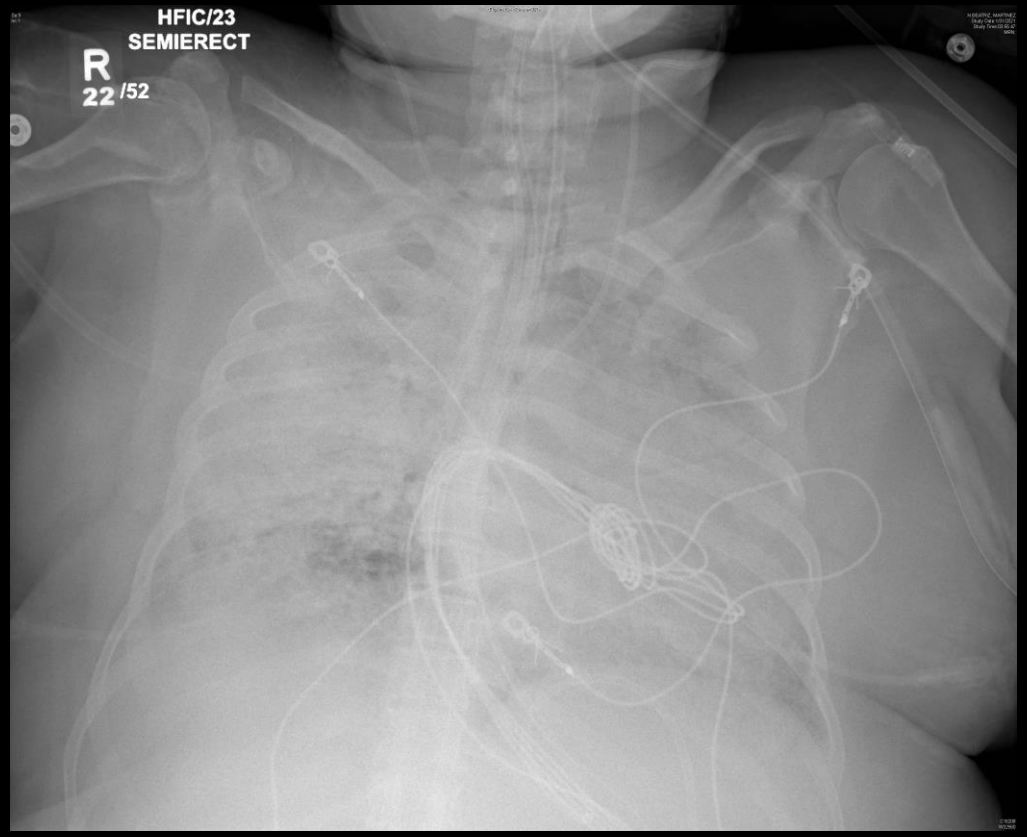
Clinical History

- Quick summary of the history and physical exam with notable findings
  - 26 year old G2P1 female at 25 weeks p/w SOB and hypoxia after being discharged for pneumonia 2 wks prior
  - Patient was severely hypoxic at the second admission, intubated and shortly after V-V ECMO was placed to maintain sats > 85%
  - Hx covid 6 months prior and an episode of ARDS 1 ½ yrs prior attributed to COP which resolved with steroids, related to her 1st pregnancy
  - Hx Usher syndrome (congenital deafness & blindness)

Relevant Imaging

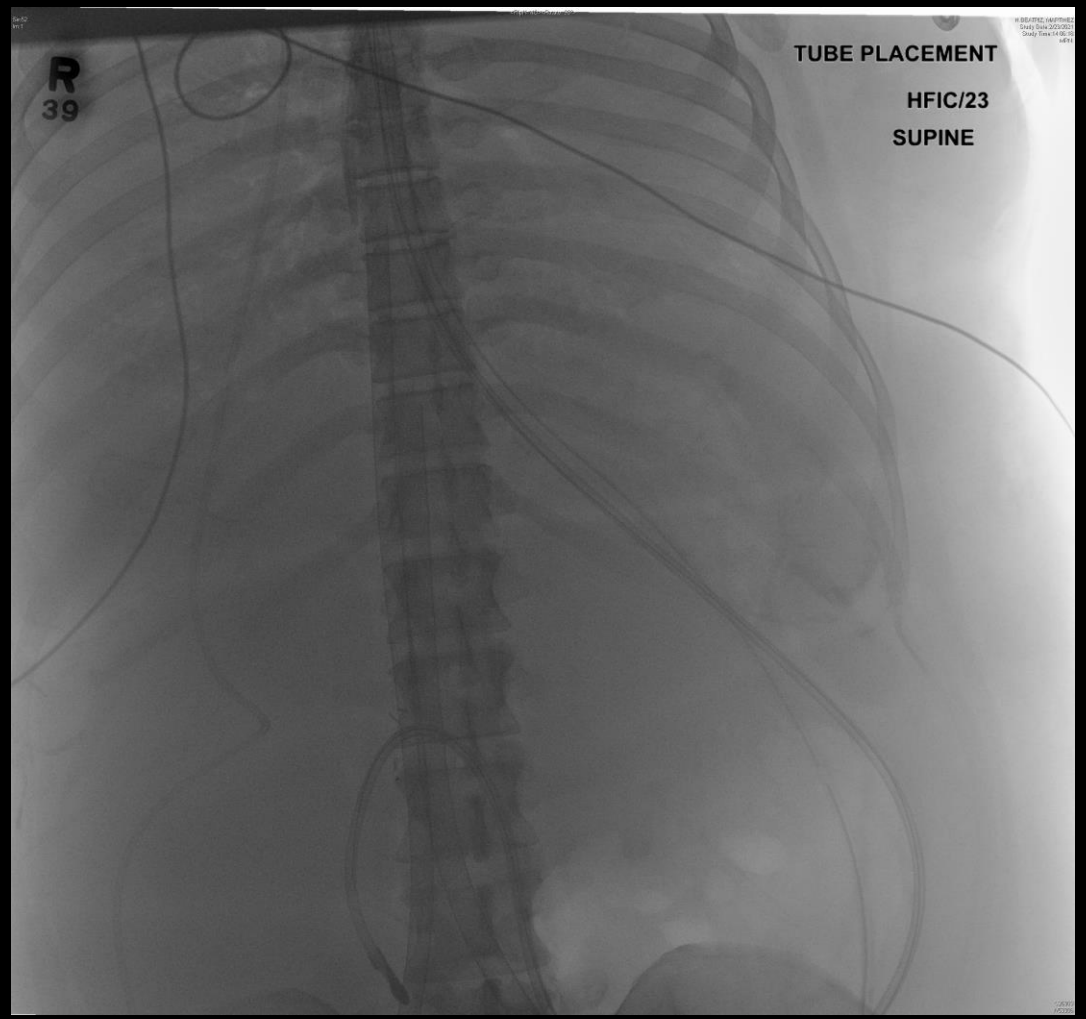


Initial CXR



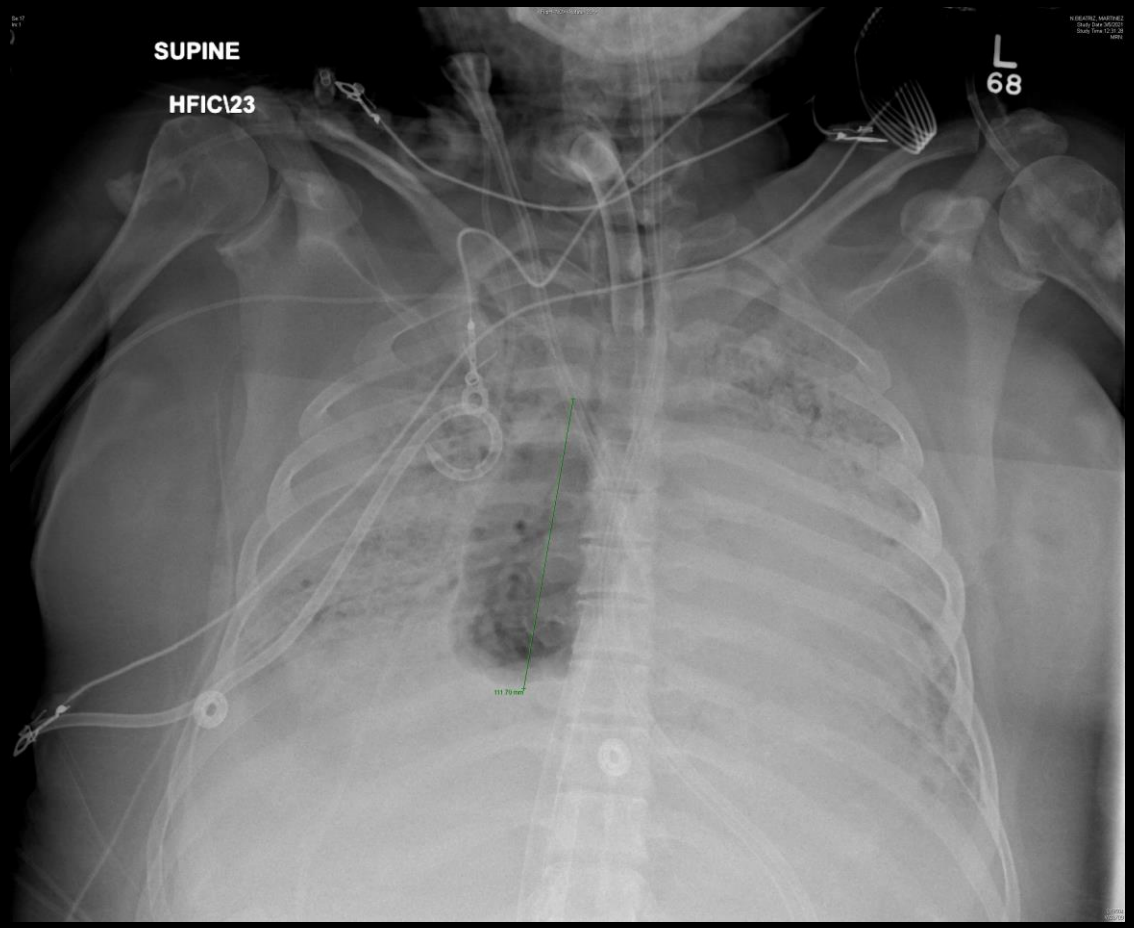
CXR at 1 wk

More relevant imaging

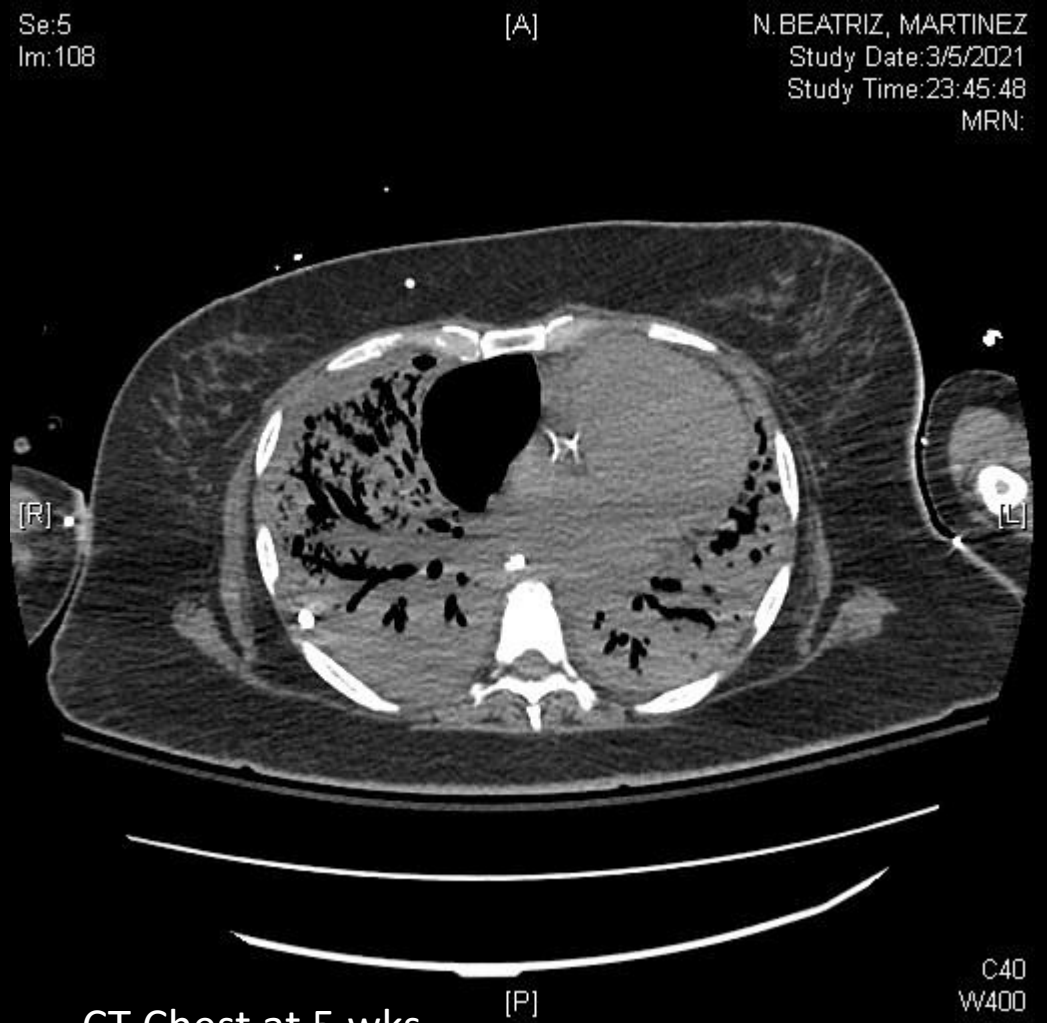


KUB (inverted) showing V-V ECMO cannulae in IVC

More relevant imaging



CXR at 5 wks



CT Chest at 5 wks

Highlight and summarize key imaging findings

- Progressive opacification of lung parenchyma ultimately causing complete white out of bilateral lungs
- Small areas of lucency that developed over time may represent blebs/bullae 2/2 prolonged ventilation
- Development of pneumothorax in the anterior medial mediastinum w/ possible bronchopleural fistula (probably also due to ruptured bleb/bulla)
- Dense opacification w/ prominent air bronchograms on the CT scan

Differential Diagnosis

- Causes for ARDS:
  - Pneumonia (pt cx did grow a number of iatrogenic MDR organisms after prolonged ventilation) – viral, bacterial, idiopathic etc
  - Sepsis
  - Pancreatitis
  - Trauma
  - TRALI
  - Toxic inhalation, near drowning

Discussion

- Given previous episodes of PNA and ARDS (one related to pregnancy) it was thought that the patient had some genetic or autoimmune susceptibility to ARDS
- ANA, ANCA etc were all negative on initial testing
- It was mentioned in path report that Usher syndrome may be associated w/ ciliary dyskinesia which would explain her predisposition
- Further workup could include additional rheumatological workup, biopsy

Treatment

- Patient was mechanically intubated on V-V ECMO for an extended ICU stay
- She also got inhaled NO, sedation, intermittent pressors
- Steroid course for possible COP was ineffective
- Baby was delivered by emergent C-section at 26 wks after patient decompensated
- Unfortunately she showed no recovery of lung function and family ultimately opted to withdraw life support

Final Diagnosis

- Severe ARDS 2/2 pneumonia

ACR appropriateness Criteria

- We got at least 1 CXR every day for this patient who was in the ICU for 2 months with a stable (bad, but stable) clinical picture most of the time
- ACR says daily CXR “may be appropriate” in that situation
- I don’t think we needed as many CXR as we got, but I will probably do the same thing when I am a resident because I feel like it is expected and I don’t need to make the ICU any more stressful than it already is

Take Home Points / Teaching points

- ARDS diagnosis requires correlation between imaging and clinical findings
- Need to determine and treat underlying cause while supporting ventilation/saturations mechanically
- Not all lucency in ARDS = improvement
- Daily CXR probably not indicated in stable ICU patients

References

- UpToDate-ARDS
- Radiopaedia-ARDS
- ACR appropriateness criteria for ICU patients


Questions?