Hepatic subcapsular hematoma in very low birth weight neonates

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Disclosures

- All authors have nothing to disclose.

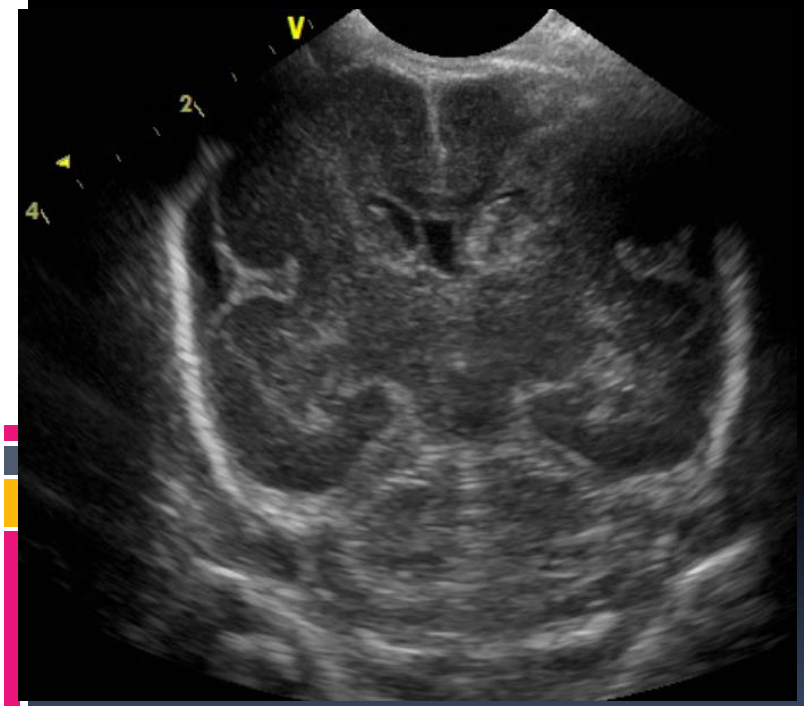
Objectives

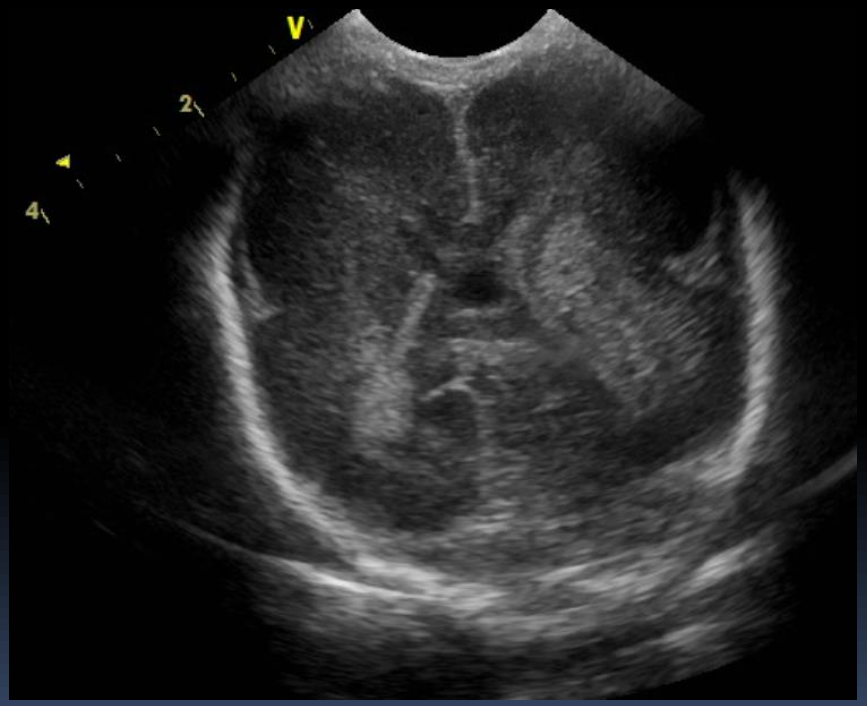
- Hepatic hematoma of the liver rarely occurs in neonates and the diagnosis is often missed or delayed.
  We describe the ultrasonographic and MR findings of hepatic subcapsular hematoma of the liver in preterm neonates with very low birth weight.

Patient no.1

- IUP 24+5weeks, 810g, c-sec, male (2014-03-21)
- preterm labor
- APGAR score 1min 2 point, 5min 5 point 10min 6 point.
- Heart rate <100, no respiratory effort

- 2014.03.24
- Brain US: initial Lt. GMH grade 3



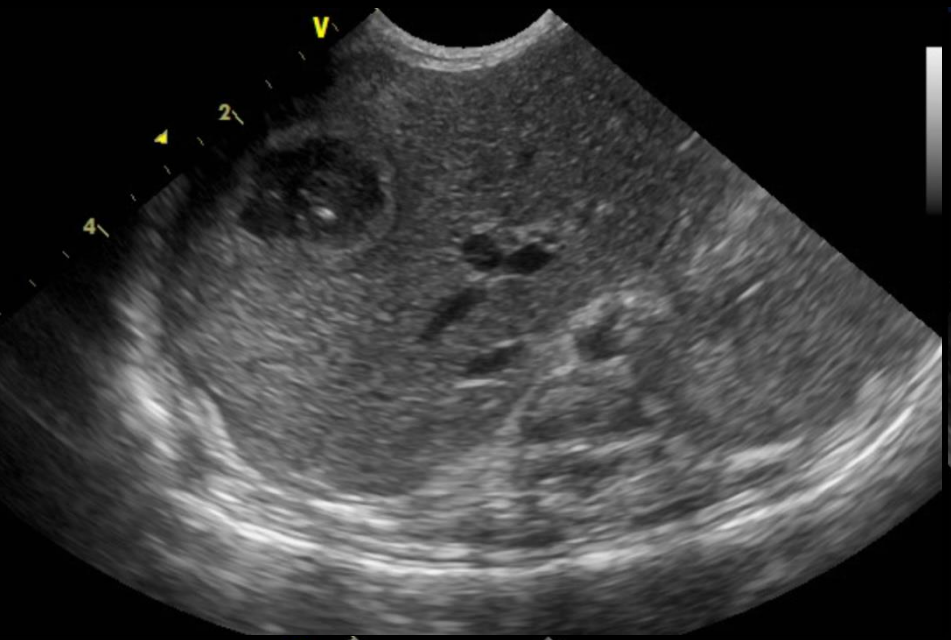


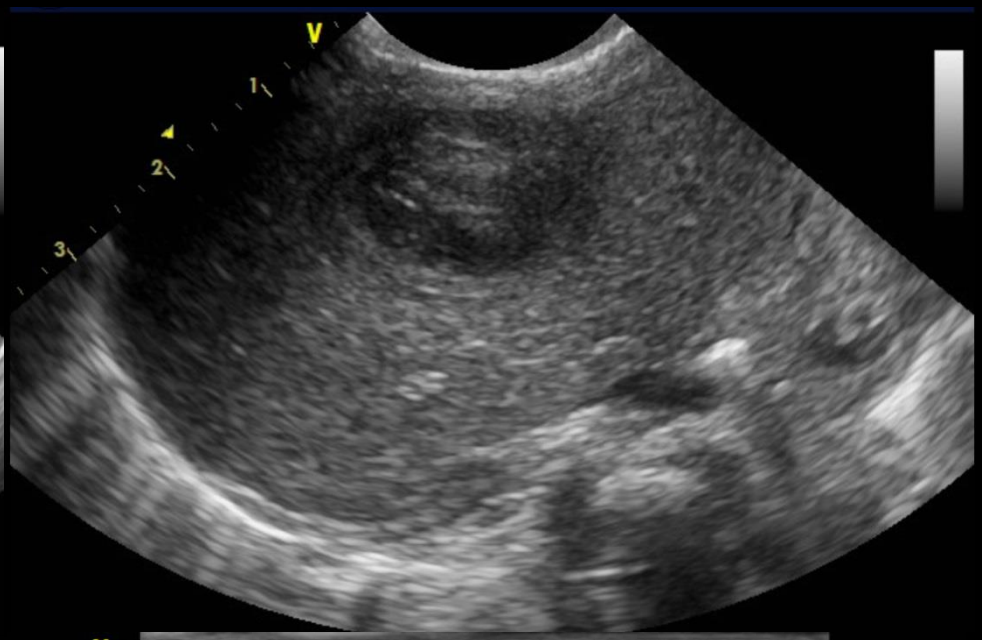
Patient no.1

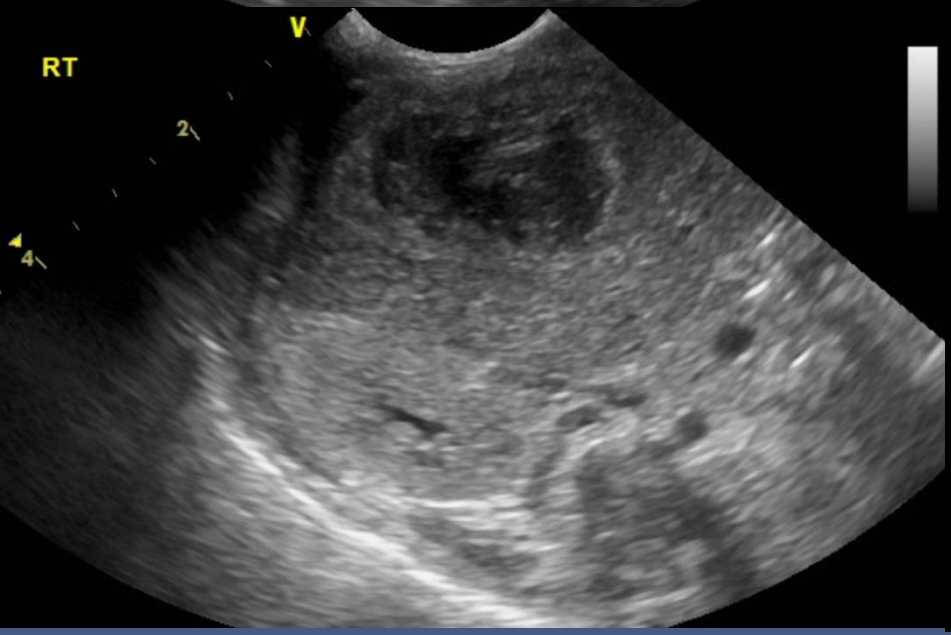
- s/p bowel perforation due to meconium plug (2014.04.16)

2014.05.19

2014.06.16

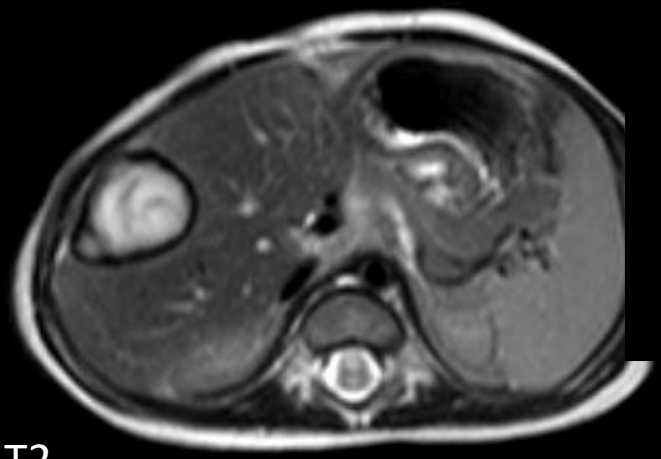






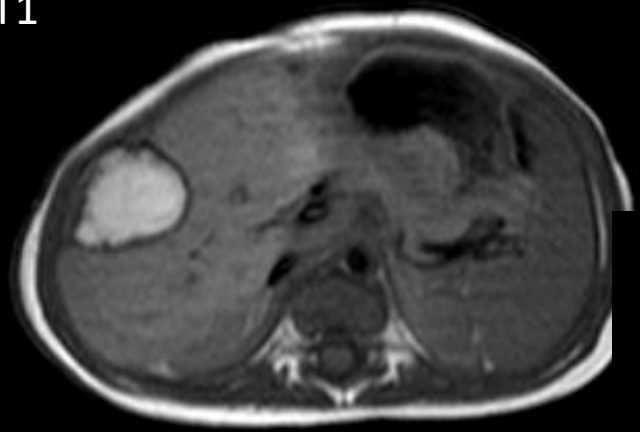
About 2.5cm hypoechoic lesion at Rt lobe subcapsular portion without interval size change for 2 months.

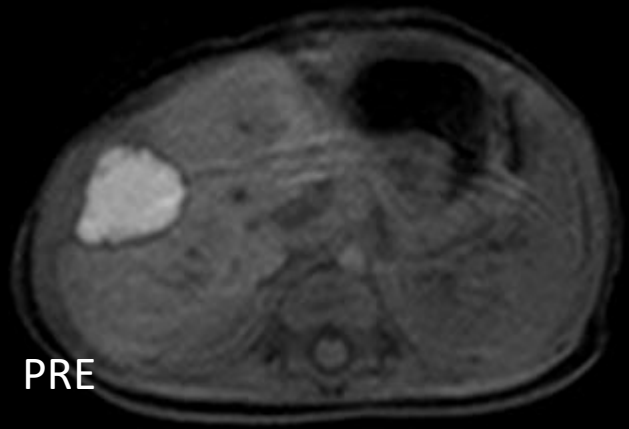
2014.06.20



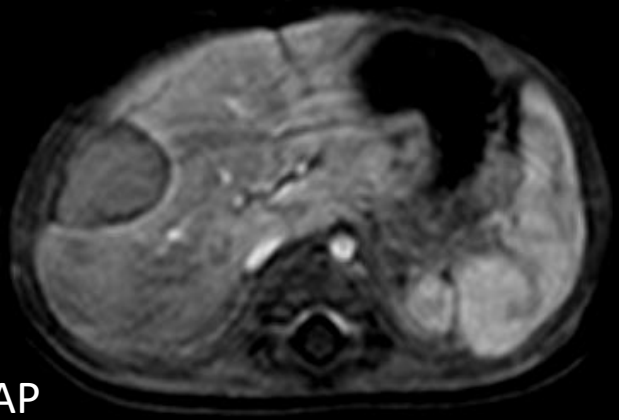
T2

T1

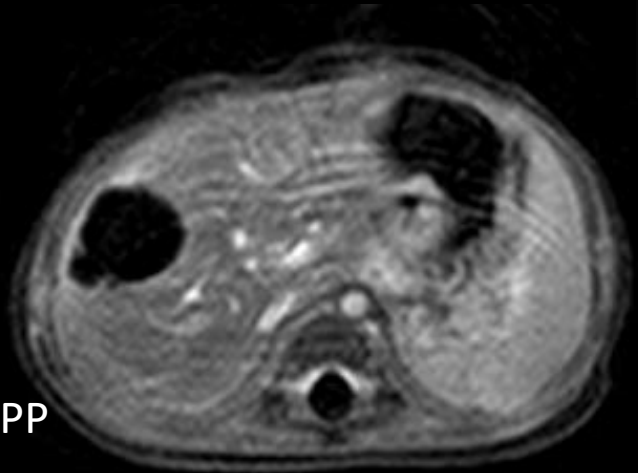




PRE

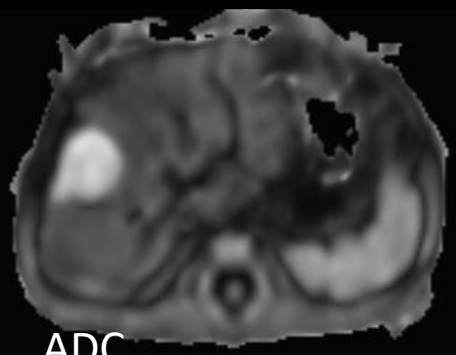


AP



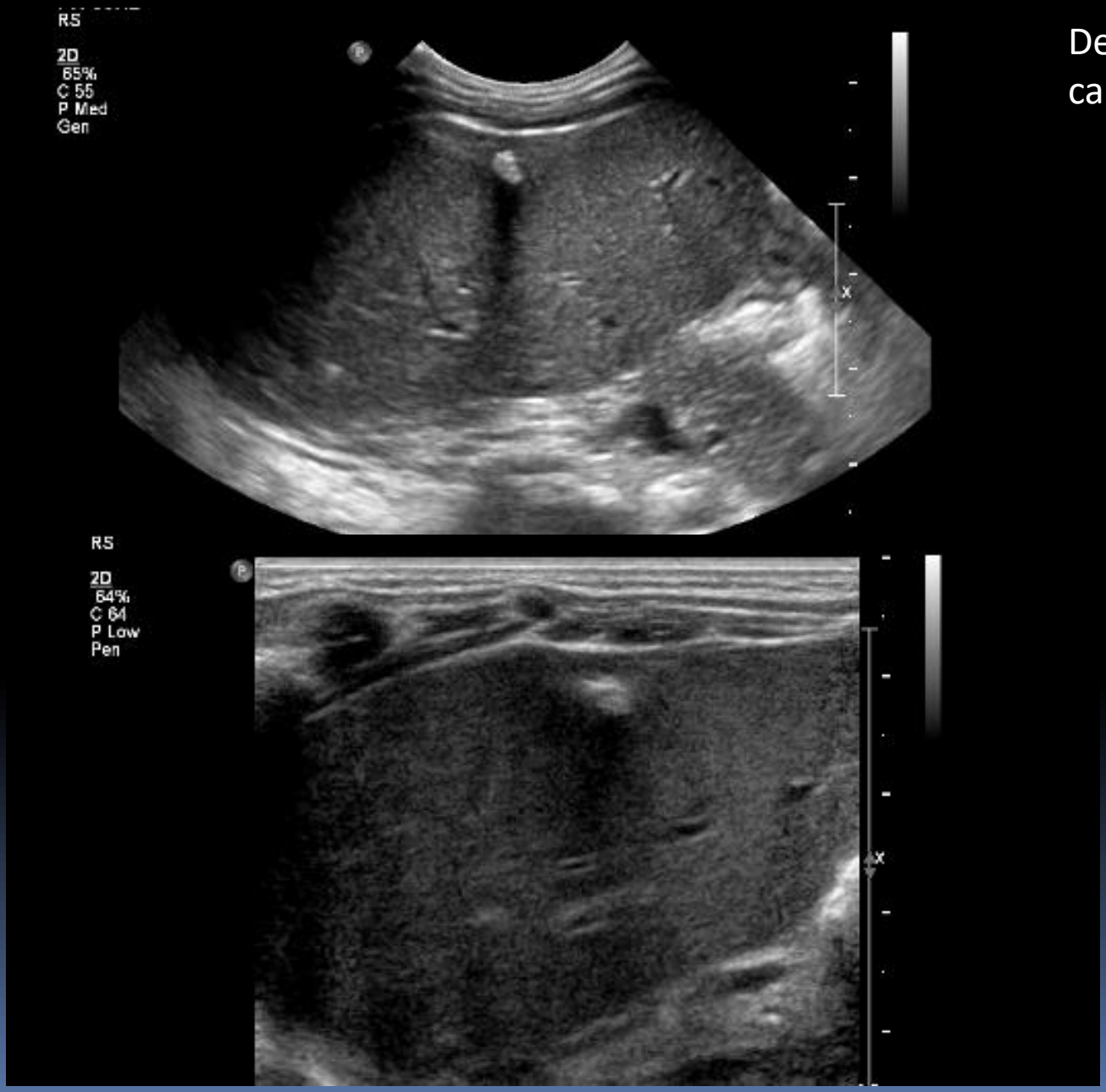
PP

DWI



ADC

2014.10.16

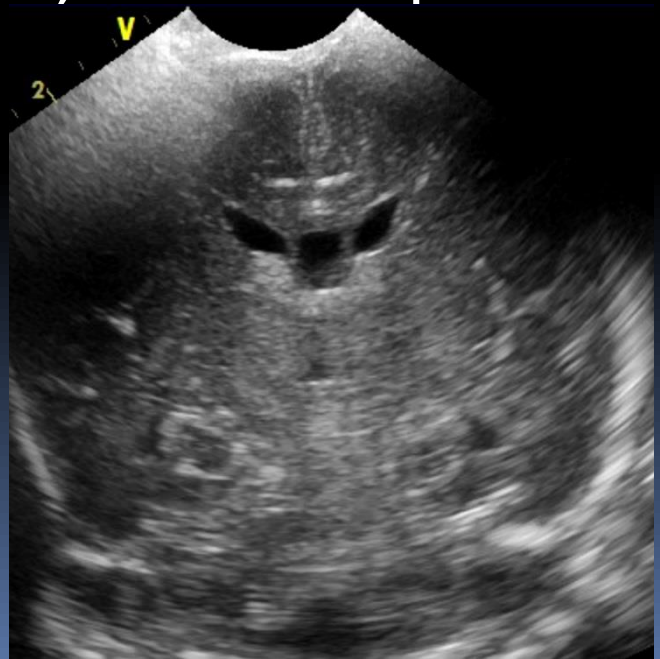


Decreased size with calcification after 5 months

Patient no 2.

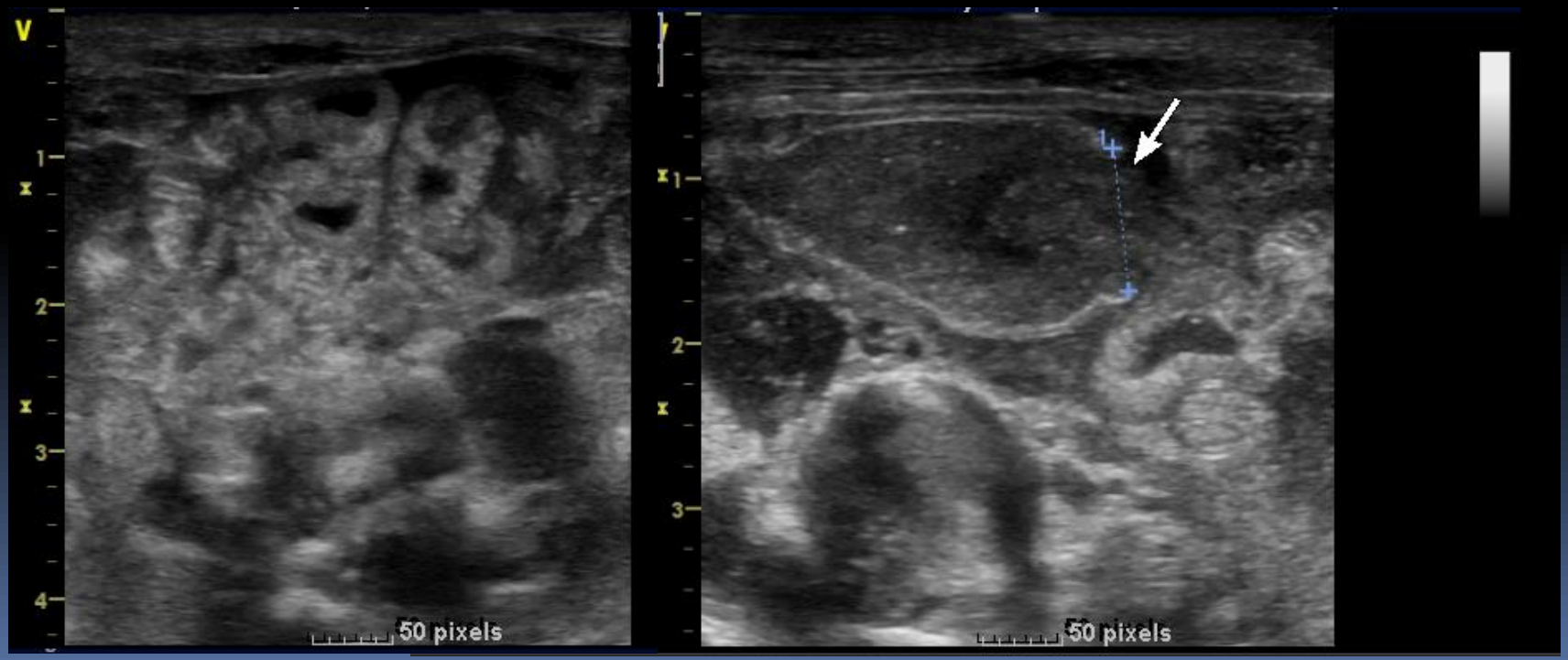
- IUP 28+4 weeks, 1.52kg, NSVD. male (2015-03-14)
- Preterm labor,
- APGAR 1min 3 point, 5 min 4 point
- hypotonicity, central cyanosis, no self-respiration at birth
- 2015.03.27 neuro US

Bilateral GMH grade 1

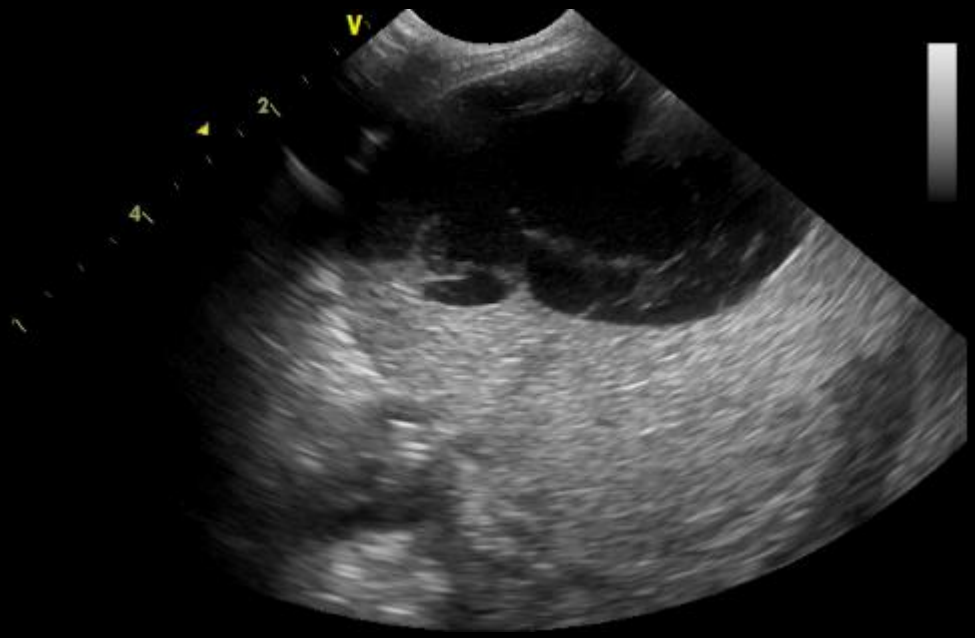


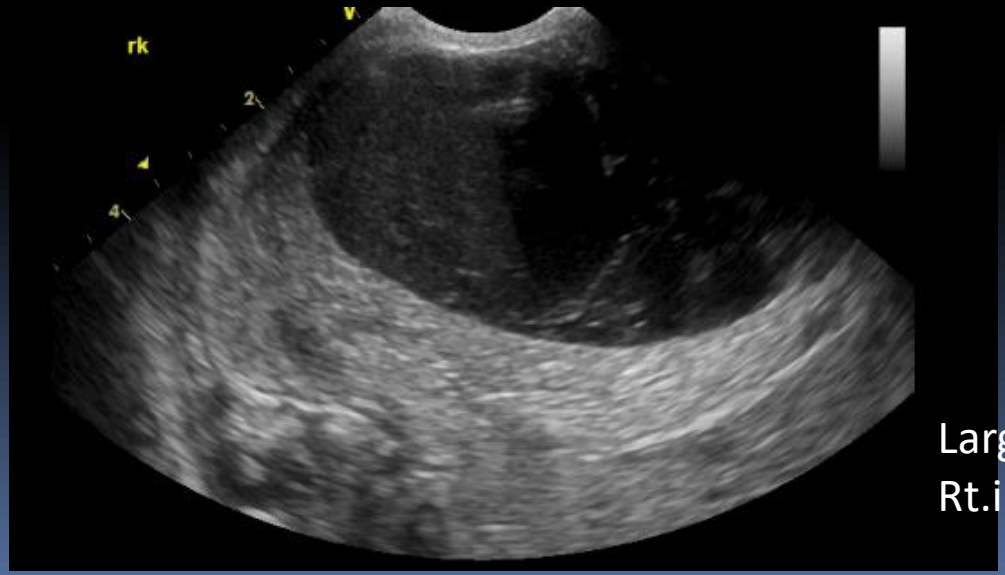
Patient no 2.

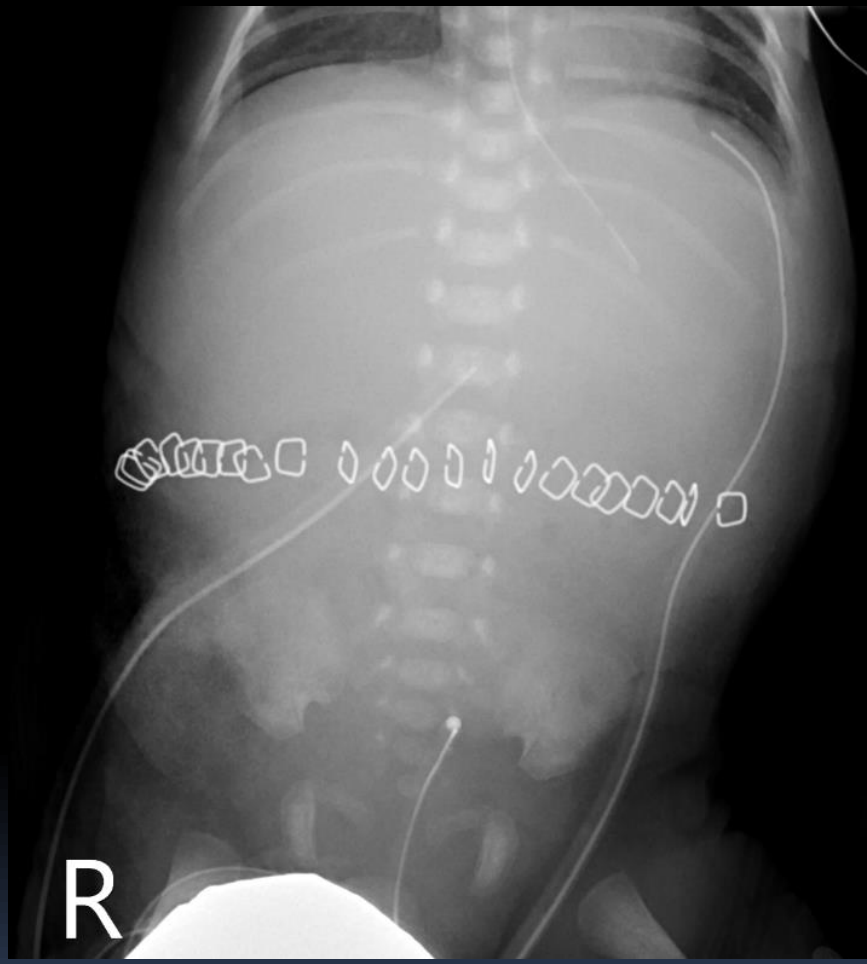
- s/p segmental resection of small bowel due to necrotizing enterocolitis and perforation at distal ileum (2015-03-30)



2015.03.31

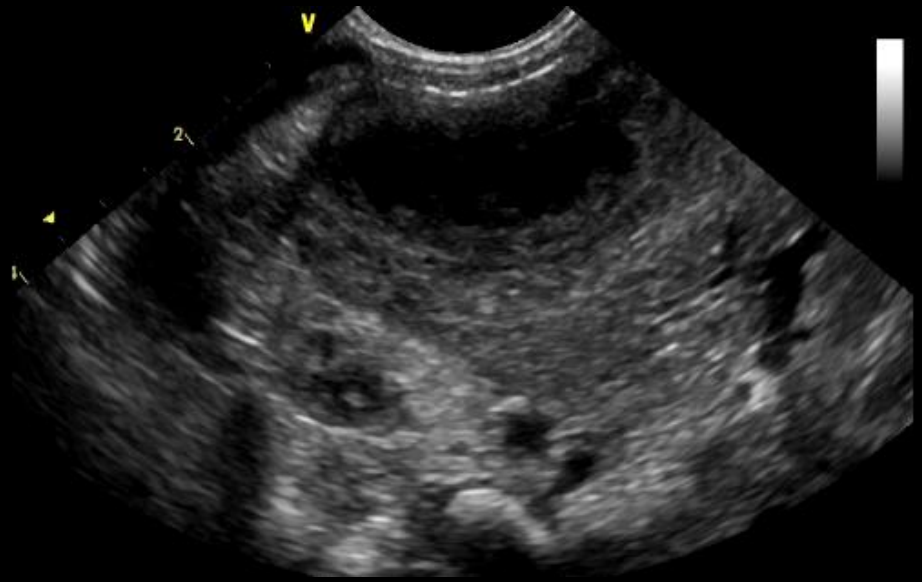




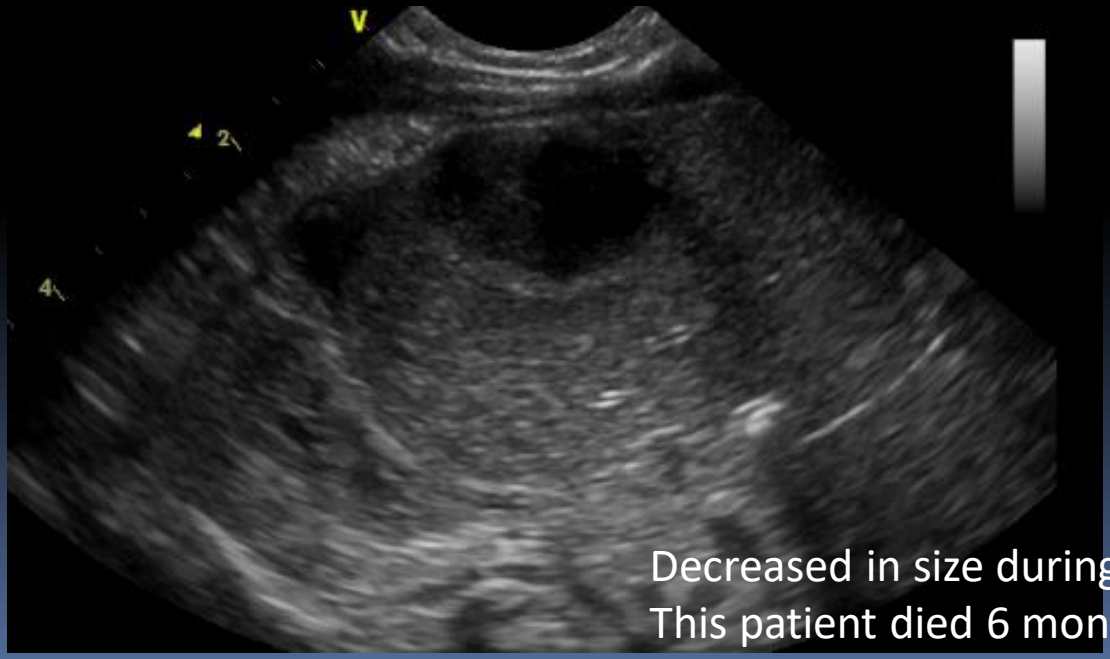


Large hypoechoic lesion with internal debris at Rt.inferior border of liver.(6cm)

2015.04.27



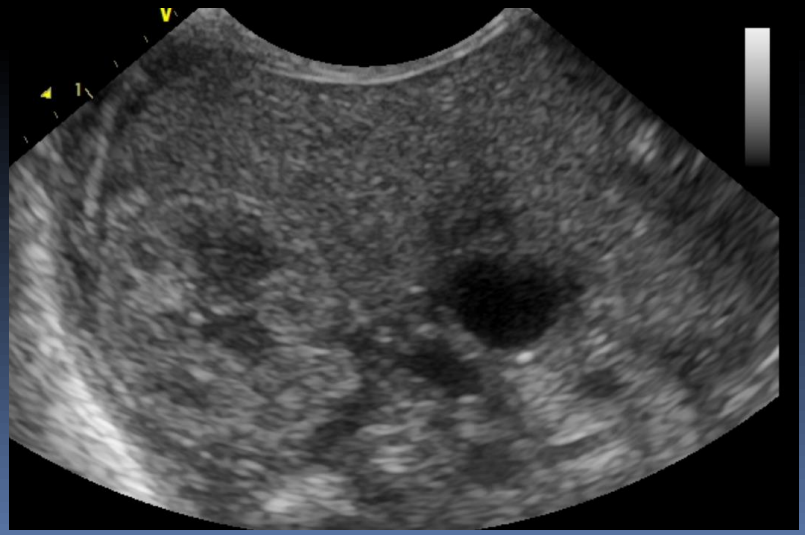
2015.06.03



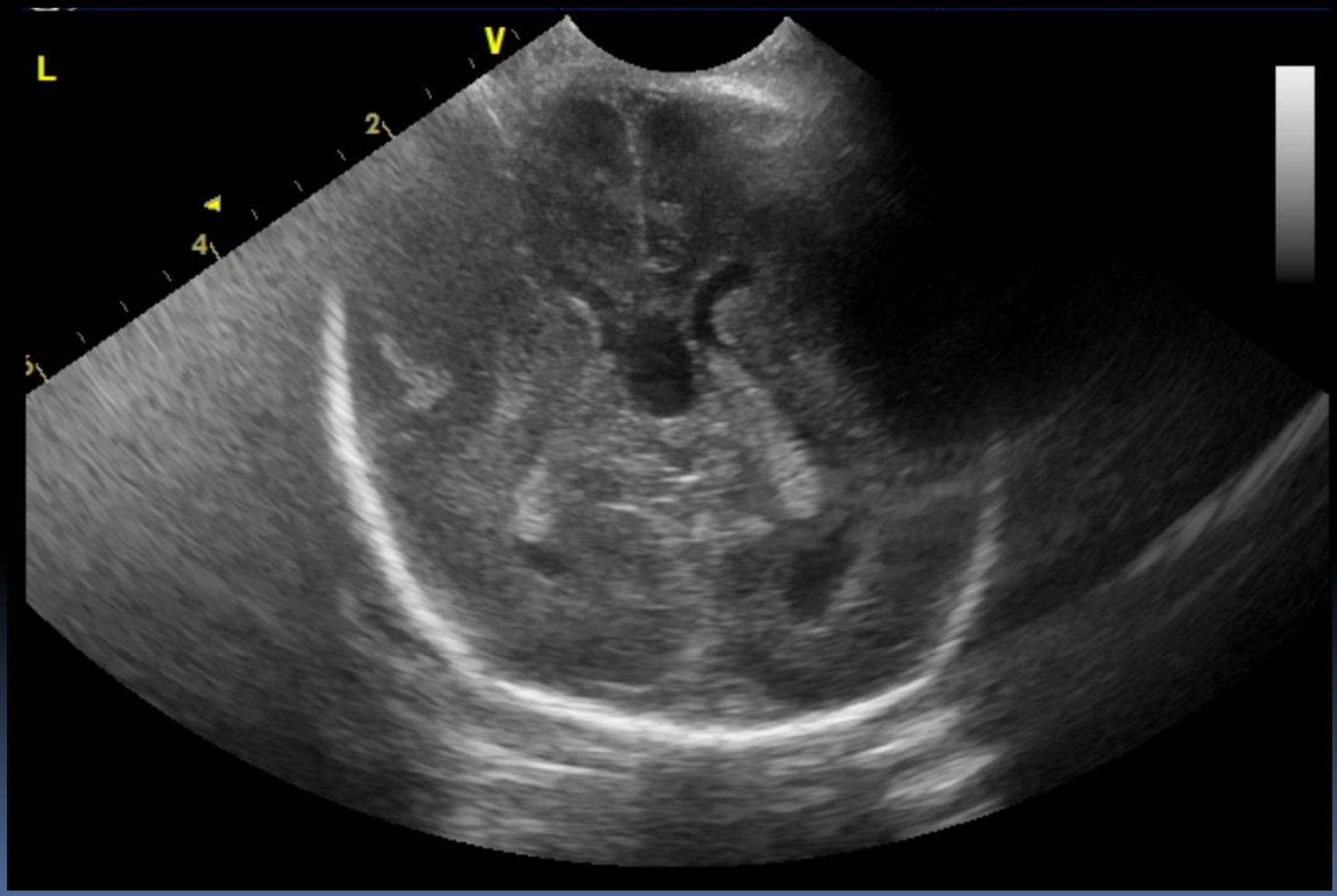
Decreased in size during follow up US
This patient died 6 months later due to sepsis.

Patient no 3.

- IUP 25+3 weeks, 650g, c-sec, male (2018-03-08)
- preterm labor
- APGAR 1min 5 point, 5 min 3 point.
- Hypotonicity, central cyanosis, no self repiration at birth
- BP fluctuation, oliguria (2018.03.12)

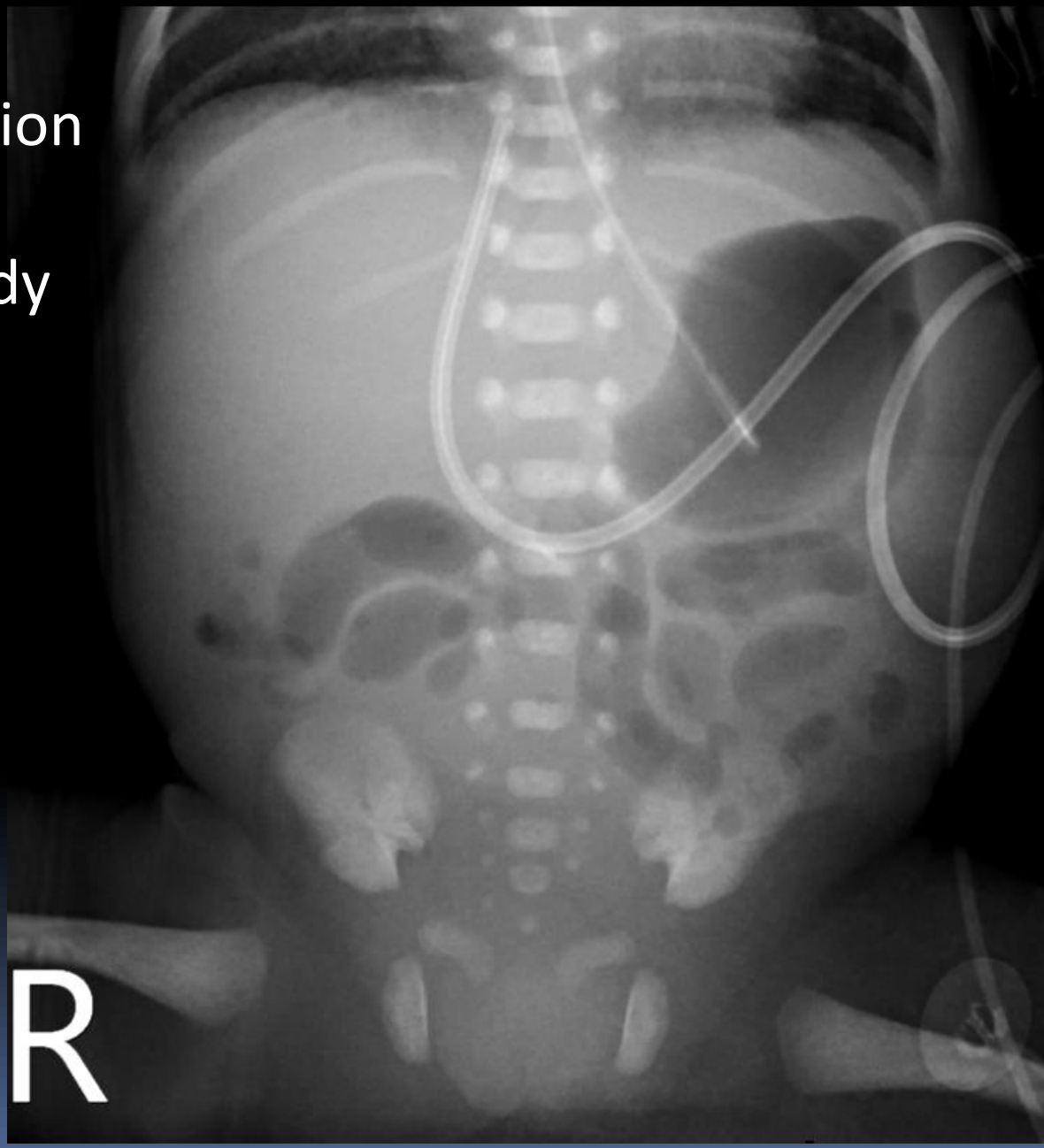


2018.03.12
Initial neuro US: Bilateral GMH grade 1

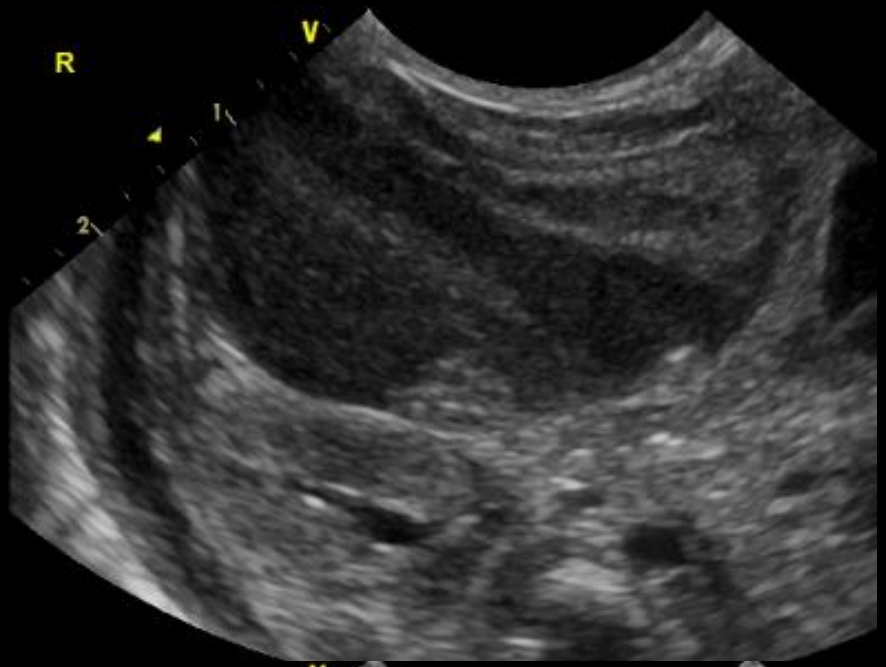


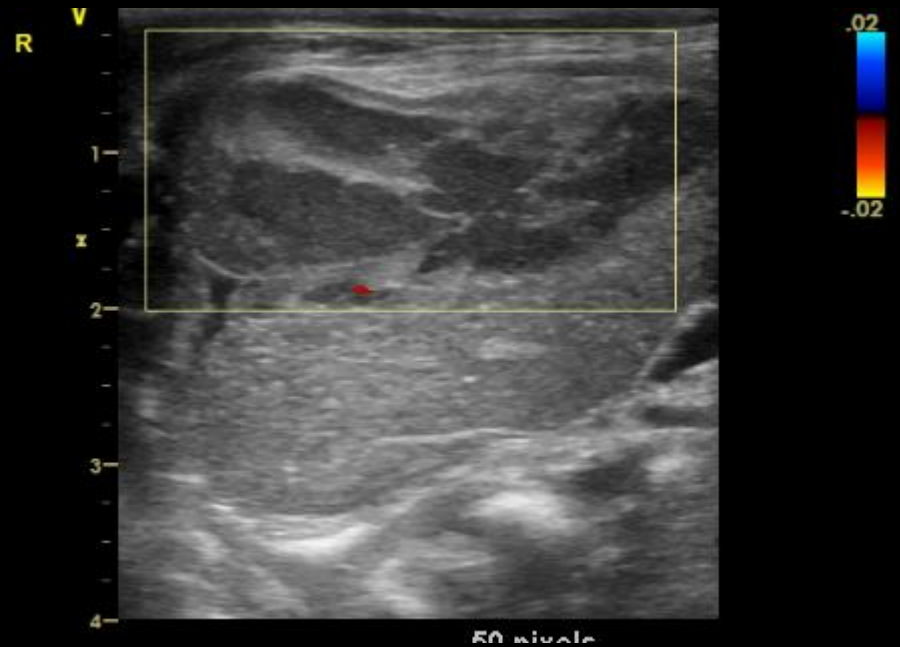
2018.03.13

s/p PD catheter insertion status (2018.03.13)
Chief complaint: bloody PD fluid.



2018.03.13

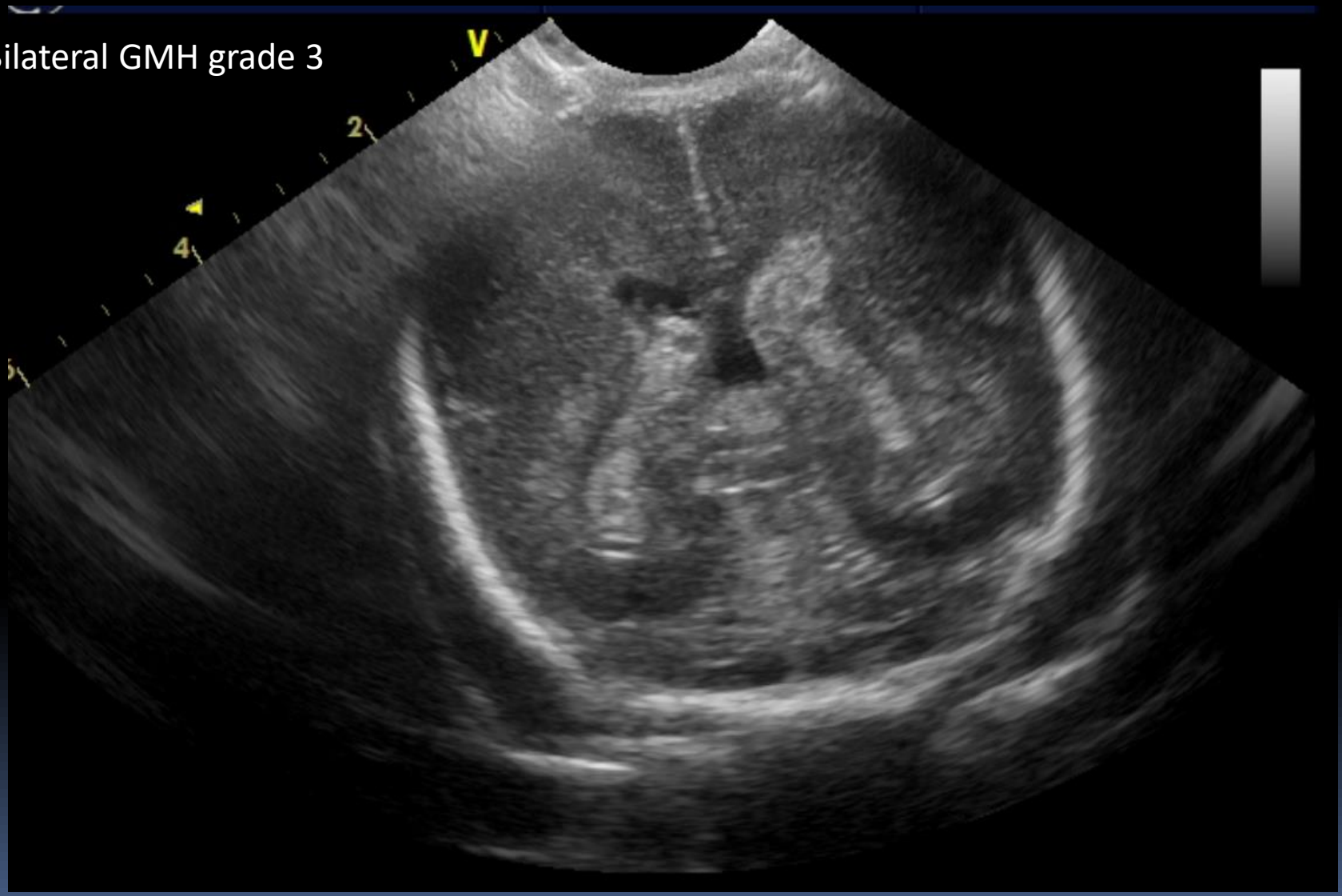




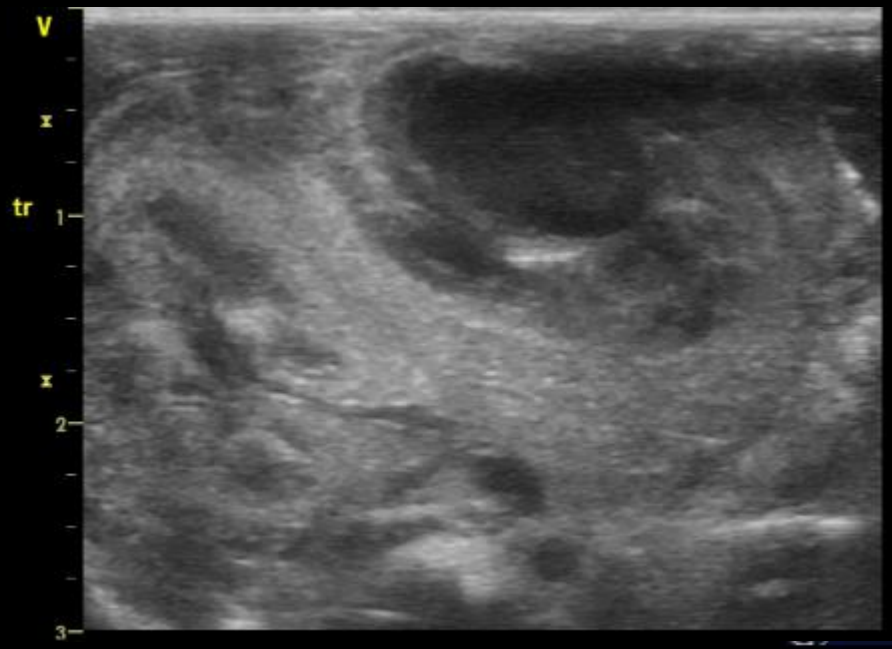
Newly developed heterogenous lesion (3.3x4.6cm) from liver dome to Rt lower abdomen, suggesting hematoma. Another small lesion (0.7cm) at S8 subcapsular area.

2018.03.15

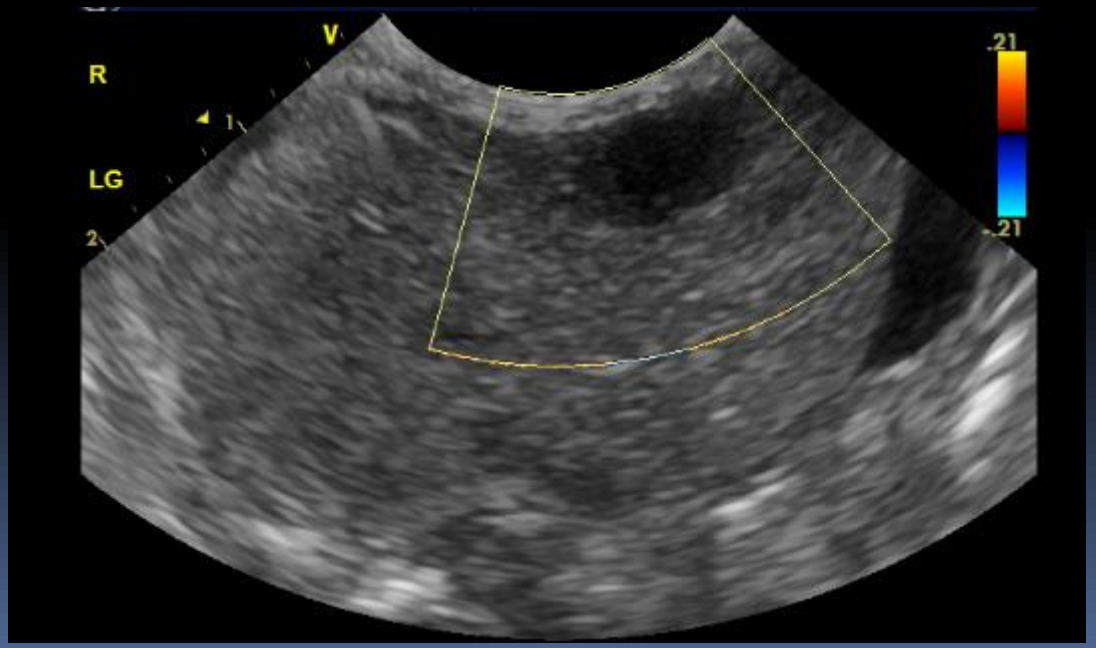
Bilateral GMH grade 3



2018.03.27



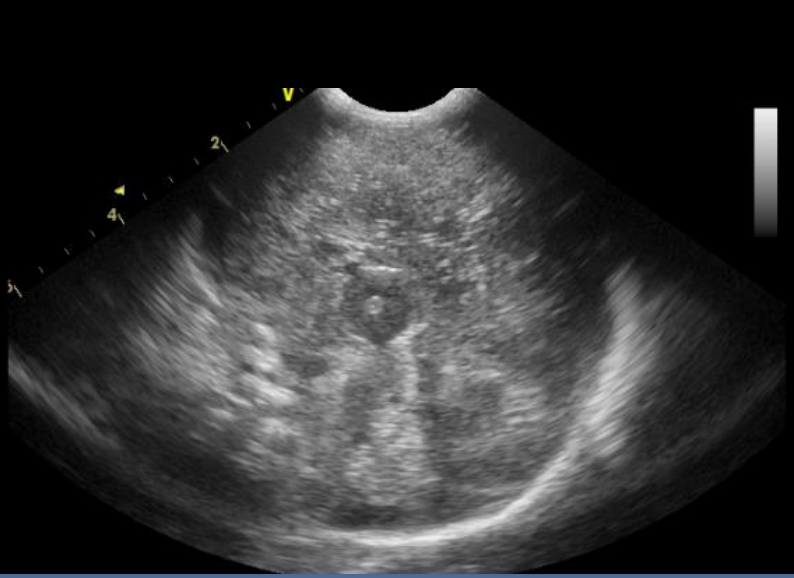
2018.04.02



Decreased in size during follow up US

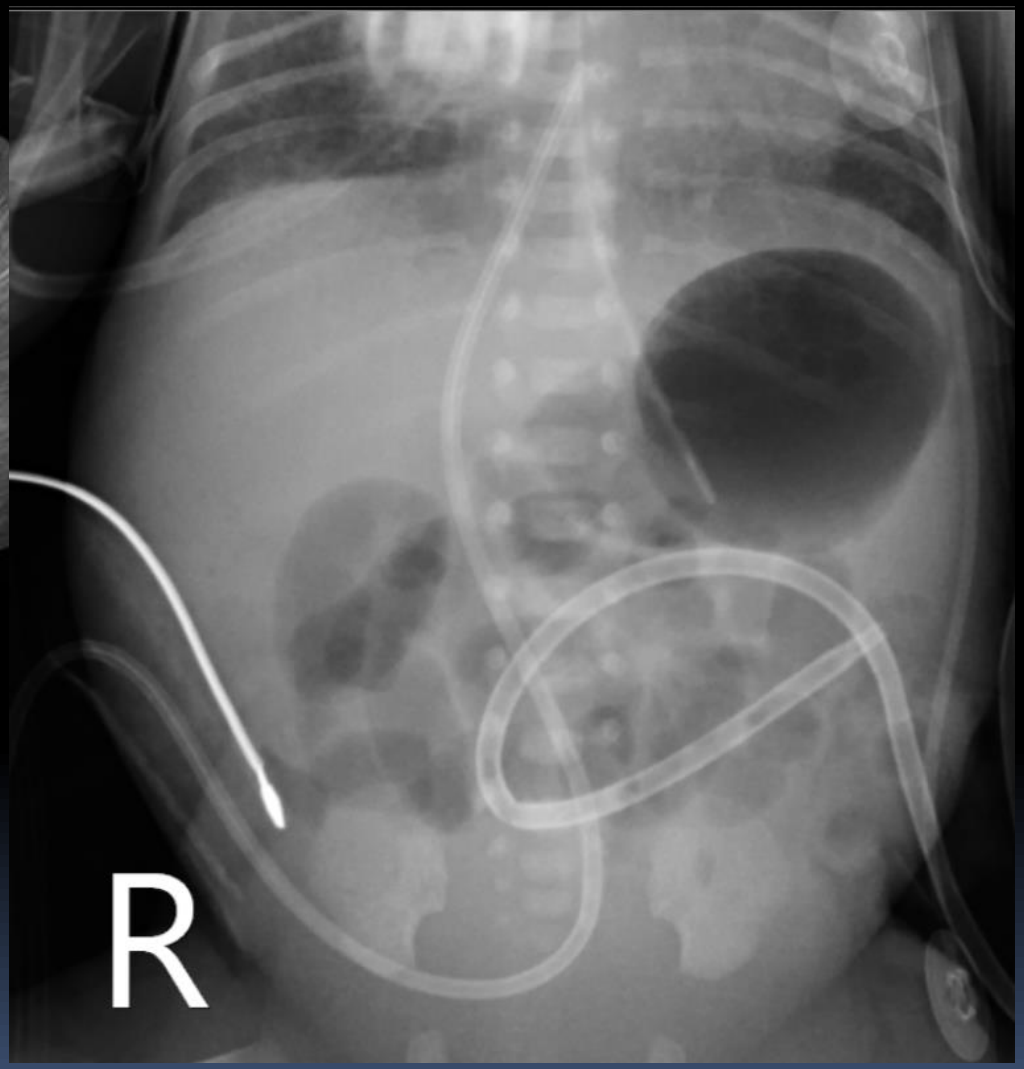
Patient 4

- IUP 27+3week, 700g, C-sec, female (2018-04-18)
- Diabetic mother
- Ventriculomegaly on prenatal ultrasound
- APGAR 1min 3 point, 5 min 6 point
- Initial neuro ultrasound : agenesis of corpus callosum.

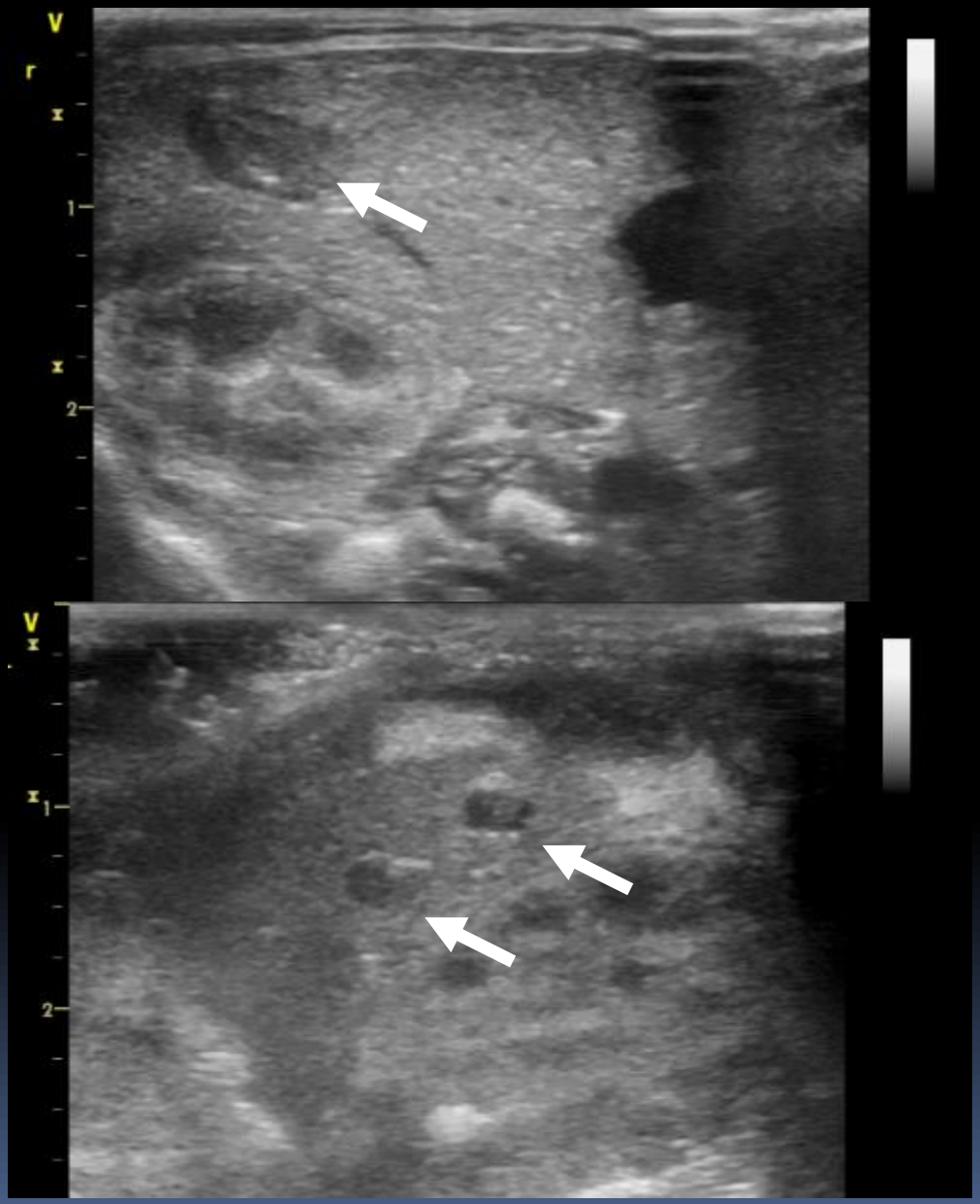


2018.04.22

Clinical history – development of metabolic acidosis



2018.04.26

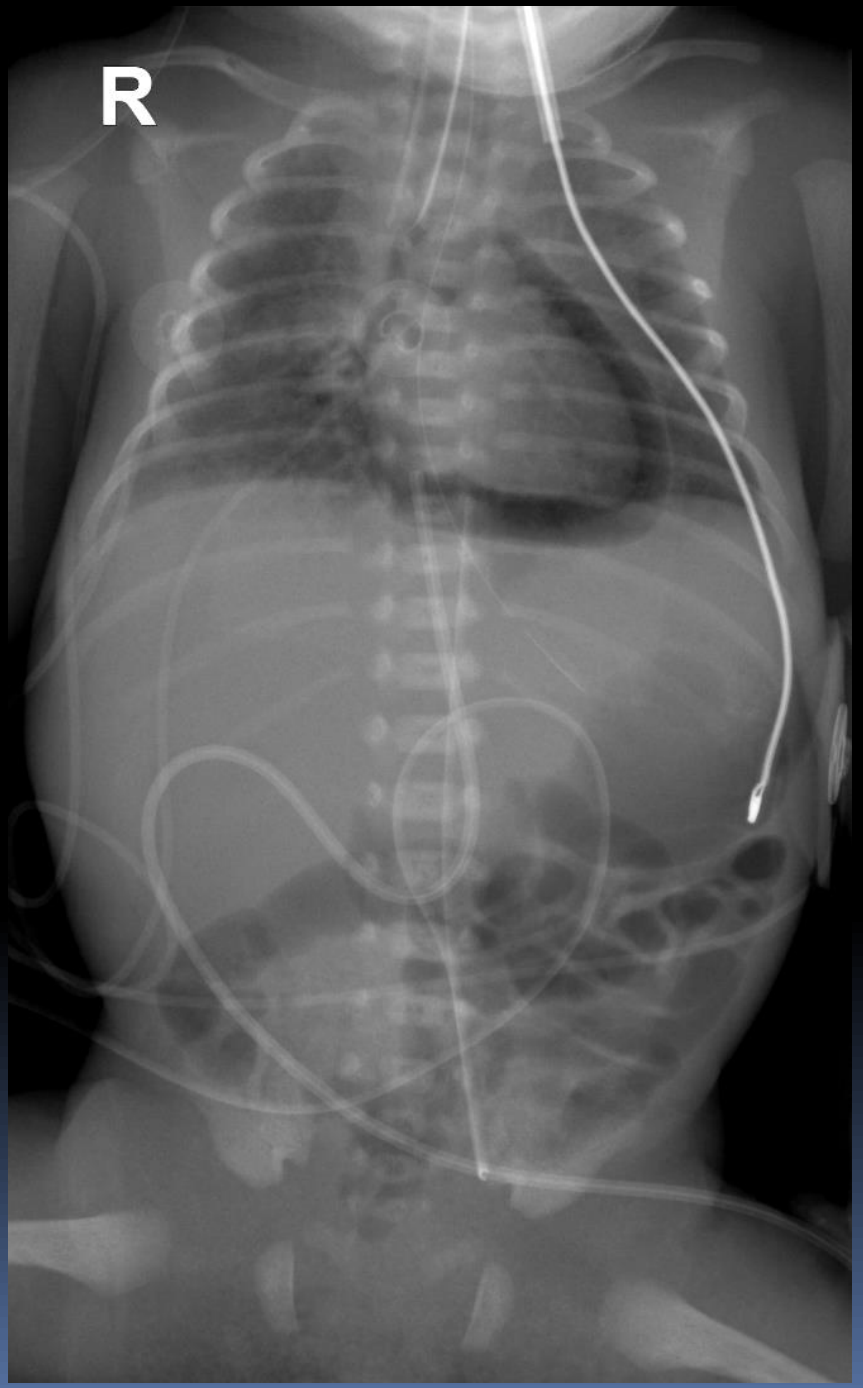


Tiny hypoechoic lesions at Rt lobe subcapsular portion.
All measuring less than 1cm.

Patient 5

- History: IUP 27+0weeks, 1.06kg, NSVD, female
- Born at outside hospital
- APGAR 1min 4 point, 5 min 6 point

- On Day 3, pneumopericardium and cardiac tamponade was developed.
- Cardiac pulmonary resuscitation (CPR) for 20mins and return of spontaneous circulation(ROSC)



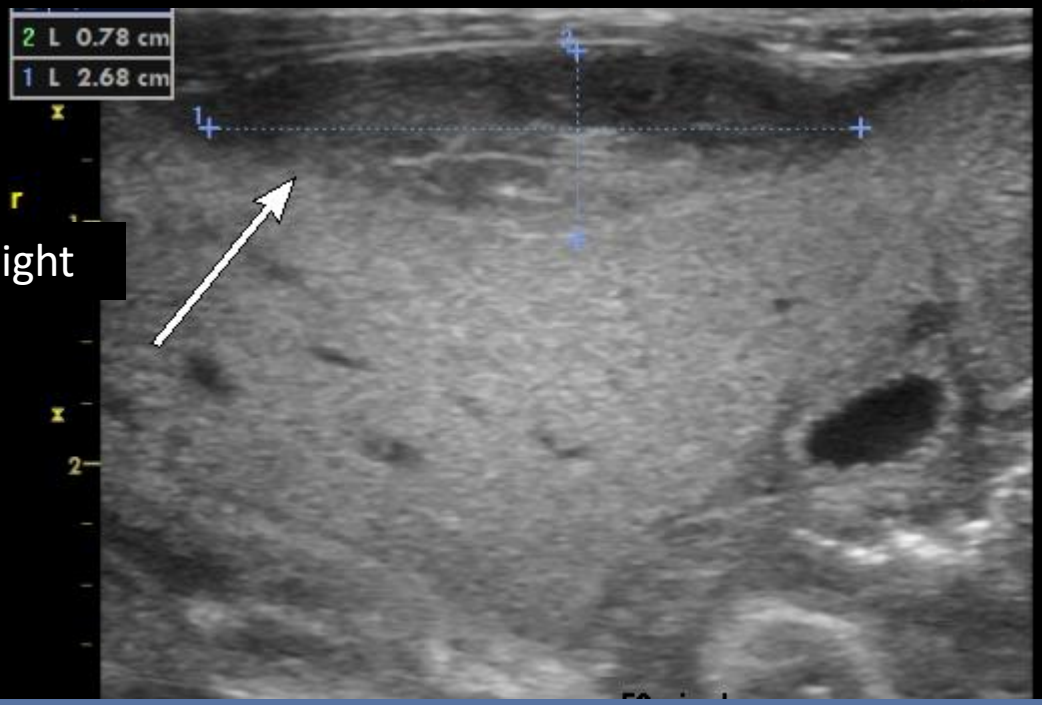
2018.10.10, day 3 outside hospital

Bilateral GMH grade 3.

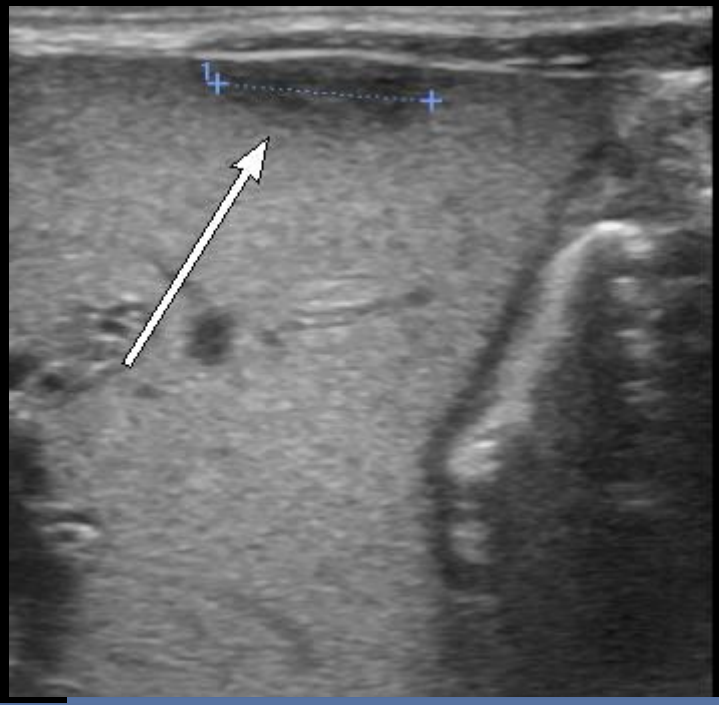
2018.10.31, outside

Decreased size of heterogenously hypoechoic lesion at subcapsular portion of liver Lt lobe .
No interval change of heterogenously hypoechoic lesion at subcapsular portion of liver Rt lobe.

2018.11.12



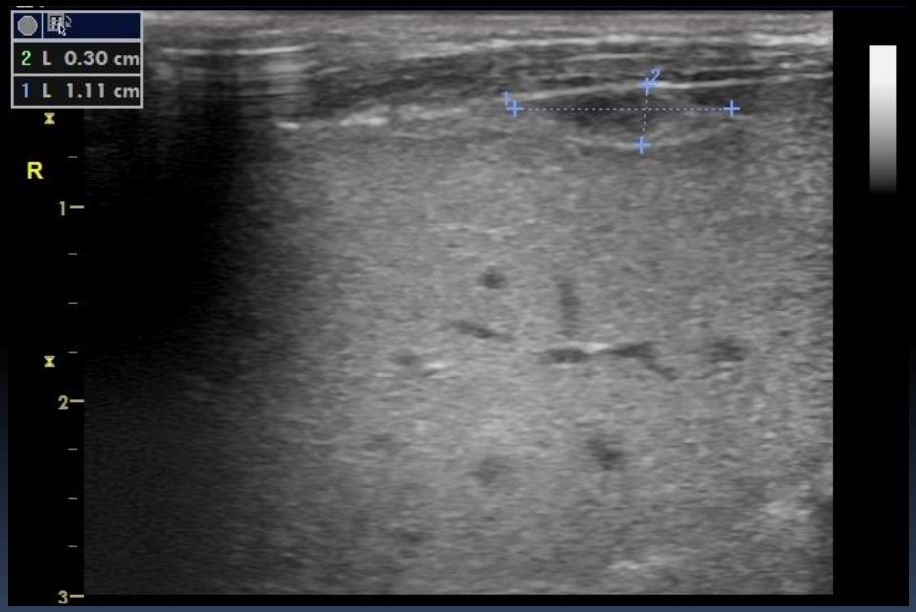
Right



Left

2018.12.07

Decreased size of heterogenously hypoechoic lesion at subcapsular portion of liver Lt lobe and Rt lobe.



Hepatic subcapsular hematoma

- Subcasular hematoma of the liver is collecting of blood under the Glisson capsule,
  - In adults, it is likely to occur following blunt abdominal trauma.
- This should be distinguished from an intrahepatic hematoma, where bleeding is less extensive and occurs within the liver parenchyma.
- Etiology
  - Traumatic labor, coagulopathies, prematurity, very low birth weight, hypoxia, sepsis, pneumothorax and umblical venous catheterization.
  - Most reported cases are preterm with very low birth weight and condition is extremely rare in term healthy neonates.

Hepatic subcapsular hematoma

- In previous study of 755 perinatal autopsies, hepatic subcapsular hematomas were found in 52 (6.9%) cases, including 31 stillborn fetuses and 21 liveborn infants.
  - Sepsis was associated with 62% of the cases with hepatic subcapsular hematomas and with 25% of the comparison group (P =.0001).
  - Cerebral germinal matrix hemorrhages were present in 35% of the cases with hematomas and in 14% of the comparison group (P =.0001)

Pediatr Dev Pathol. 1999 May-Jun;2(3):215-20.

Hepatic subcapsular hematoma

- Hepatic subcapsular hematoma should be considered in all very low birth weight newborns with unexplained hypovolemia or anemia.
- Acute massive bleeds can present in the immediate neonatal period with hypovolemia and shock.
- Slowly progressing hematoma may manifest with pallor, jaundice, irritability or respiratory distress

Hepatic subcapsular hematoma

- Early detection of a subcapsular hematoma is important in an infant delivered via normal vaginal delivery with no significant clinical symtoms due to the difficulty of recognition of liver laceration.
- If a large amount of peritoneal bleeding progresses the bleeding maybe fatal.

Hepatic subcapsular hematoma

- Abdominal ultrasound shows non-specific findings and intrahepatic hematoma can suggest different diagnosis such as a liver abscess or hepatic mass.
- A follow up US is helpful to confirm the diagnosis of subcapsular hematoma by identifying the lesion with decreased size.

Hepatic subcapsular hematoma

- Treatment
  - Mainly conservative including blood transfusion, correction of coagulopathies and avoiding excessive handling of the baby.
- Conservative treatment is initially performed because of a great extent of subcapsular hematoma is naturally absorbed

Take home points for Hepatic subcapsular hematoma

- Preterm with very low birth weight patient
- With hemodynamically unstable situation
  - surgery, oliguria, metabolic acidosis, post CPR status, sepsis.
  - Germinal matrix hemorrhage are most likely associated.
- US for diagnosis and follow up
- Conservative treatment
- Subcapsular hematoma is naturally absorbed without definite sequelae.

Reference

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Thank you
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Severance