An unusual cause of pneumatocele
From Dr. N.C. Gowrishankar’s Unit
Pediatric Surgery and PICU

Dr. Shashi Ranjani
DNB PG
Mehta Children Hospital
• 13 year boy

• h/o RTA at 2.30 pm – boy was under the rear wheel of bus with his cycle – hit on the right side of the abdomen

• Got up, both he and his father were convinced that he was well, went home walking

• Abdominal pain and mild breathlessness since 7 pm

• CXR: - pneumothorax

• Referred to Mehta hospital
On admission (12 hrs later)

- Alert
- Tachypnoeic, laboured breathing + RR:46/ min
- SpO2 98% in room air
- Tachycardia + HR:160/ min
- BP – 110/ 70 mmHg
- Abrasions over the back of the abdomen. No contusion
- Reduced air entry on the right side
- Generalized abdominal tenderness+
- Mild abdominal distension +
- Admitted in PICU
Investigation

- Hb – 11.2g/ dl
- TC – 12,500 / cumm
- DC – P- 84 L -15 E -1
- INR – 1.45
- Urine R/E – WNL
- Electrolytes – WNL
- Amylase / lipase – WNL
- SGOT – 665
- SGPT – 756
- CPK – 662
Chest X-ray on admission

1. Artefact?
2. Traumatic rupture of diaphragm?
3. Inf associated pneumatocele?
4. Pre existing?
- USG abdomen - ascites, pleural fluid right, liver laceration right lobe
- CT Chest and abdomen
- Paediatric surgery - ICD was inserted
- Gastroenterologist opinion - taken
Pleural fluid analysis

- Cell count – 390
- Cell type – lymphocytic mesothelial cells +
- Protein – 4.5
- LDH – 830
- Triglycerides – 30
Treatment

- IVF
- Non invasive ventilation
- IV antibiotics
- Inj Vit K
- Incentive spirometry
- INV – SGOT – 38
  SGPT – 76
Pneumatoceles

- Are thin-walled, air-filled cysts that develop within the lung parenchyma

- Causes
  > infectious – Staph aureus, Strep pneumoniae, H influenza
  > non infectious – trauma, PPV, hydrocarbon ingestion
Traumatic pneumatocele

- Abnormal intra parenchymal collection of air resulting from traumatic disruption of the lung architecture
- Appear immediately or few hours after injury
- Mechanism
  > Pliable chest walls – allows greater transmission of Kinetic Energy to the lung parenchyma
  > Trauma lacerates the alveoli and interstitium and retraction of the elastic lung leaves a air filled cavities
  > Glottis closes at the time of trauma – air fails to exit – parenchyma bursts – cavity
Traumatic pneumatoceles - types

- **Type 1** - air-filled cavity with or without fluid
  - sudden compression of a pliable chest wall
  - air-containing lung ruptures.
- **Type 2** - air-containing cavity in a paravertebral location
  - compression of the more pliable lower chest wall
- **Type 3** - peripheral cavity or peripheral linear radiolucency close to the chest wall
  - fractured rib that has punctured the lung.
- **Type 4** - previously formed, firm pleuro-pulmonary adhesions
Traumatic pneumatocele - management

- Usually resolve with observation – within weeks to months

- Surgical intervention – tension pneumatocele, infection, cardiopulmonary compromise, fistula
Literature review

- Yang TC, Huang CH, Yu JW, Hsieh FC, Huang YF

- Department of Paediatrics, Yuan's General Hospital, Kaohsiung, Taiwan


- Reported traumatic pneumatocele in a 3 yr old boy with trauma
Take home message

- Traumatic pneumatocele is a rare complication of blunt trauma chest especially in children
- Should be considered in the differential diagnosis of cystic lesion complicating blunt chest trauma
- Usually benign and self limiting
- Clinical relevance
  - rarity
  - Can mislead physicians - unnecessary surgical intervention.
- ANY MAJOR TRAUMA ADMIT FOR OBSERVATION, EVEN IF HE LOOKS WELL
Team Managed the child

- PICU team: Dr. V.P. Anitha, Dr. S. Kamath
- Pediatric Surgeon: Dr. G. Nandhini
- Pediatrician: Dr. N.C.G