An unusual cause of pneumatocoele

From Dr.N.C.Gowrishankar's Unit
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- 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
- Pediatr Neonatol. 2010 Apr;51(2):135-8.
- 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