BILATERAL EMPYEMA WITH PYOPERICARDIUM (PLEUROPERICARDIAL DISEASE)

Mehta Children’s Hospital
Dr NC Gowrishankar
Dr. Prasad
Dr. Nandhini G
Dr. Nikhil DNB PG
INTRODUCTION

- Complicated pneumonia increasing in recent times.

- Reason.
  - Increasing drug resistant organisms
  - Improper antibiotic use
  - Late referral

- Increasing need for surgical intervention
CASE SCENARIO

- 3 year 4 months old girl
- Fever - high grade & Wet cough 8 days /Increased work of breathing past 2 days
- Given 1 dose of i.m ceftriaxone & referred
- Pneumococcal vaccine not given
• Drowsy, Exhausted, Febrile

• RR 68/ min / fullness of chest on left side / ICR, SCR, SSR & Nasal Flaring +/ SpO2- 78% @ RA & 99% @ 4 L/min

• HR- 178/ min P- +++/++ / BP- 100/70 mmHg

• RS- percussion stony dull / AE in left Hemithorax & right infrascapular region.

• CVS- pericardial rub +

• Liver span 9 cm / splenomegaly +
PICU

- X-ray chest done with basic inv-blood c&s/LFT/RFT
- O2 by venturi 40%
- IVF
- Pleural tap – pus sent for analysis
- i.v. antibiotics Xone and Cloxacillin
- ICD -150 ml pus
INITIAL WORK-UP

- TC – 7900,
- Poly 28 lymph 70 E2
- Platelets 3.3 lakh
- CRP + ve (113)
- Procalcitonin 16.34
- ESR- 75 mm/hr
- Electrolytes, RFT – N
- SGOT/SGPT =710 / 245
- USG Chest –pleural fluid left- Underlying left lung could not be seen. minimal fluid on right side
**PLEURAL FLUID**

- Cells- 450, P42,L55
- Protein – 5.5
- Sugar - <10
- LDH - 1786 ; Serum 868
- Exudate
- Gram stain – polymorphs 3+, gram positive cocci 3+
- Culture sensivity **HEAVY GROWTH OF STREP PNEUMONIAE**
• D3- worsened respiratory distress WOB, requiring FiO2 >60%, severe retractions, respiratory muscle fatigue child was intubated & ventilated.

• X-ray- right side pleural effusion & ICD inserted on right side
• After Rt sided ICD frank Purulent fluid +
• **ECHO** – Thin rim of pericardial fluid.

• Fever + / tachypnea+ / poor expansion of left lung + / oxygen to maintain SpO2 +

• **Bronchopleural fistula++ left side**

• **CT scan** - B/L pleural thickening, necrotic focus in LLL.
D10

- persistent air leak
- Persistent large volume pus drainage 250 ml/day – ICD
- Fever+
- Resp distress+
- O2 requirement ++
- Hypoproteinemia – alb 2g%
- Hepatomegaly +++

- Repeat ECHO moderate pericardial effusion

- Planned VATS/ Decortication
PRE OP DIAGNOSIS - LEFT EMPYEMA /
PERICARDIAL EFFUSION/ LEFT LOWER LOBE NECROSIS

POST OP DIAGNOSIS - LEFT
DECORTICORTION / LEFT WINDOW PERICARDIECTOMY /
SEGMENTAL RESECTION LEFT LOWER LOBE
Post op day 4

Post op day 7
• Transfusion with FFP in view of hypoalbuminemia & PRBC for Anemia.

• Pericardial fluid which was drained during surgery was sterile.

• Bronchoscopy- to R/O any intra-luminal pathology (pus collection)- normal study

• Gradually tapered over from oxygen on nasal prongs.
• Had persistent tachycardia and evaluation by cardiologist revealed suspicious vegetation on anterior leaflet of mitral valve.

• Work-up for endocarditis was done serial 3 blood cultures came out to be negative.

• Repeat ECHO NORMAL.

• Last CRP 14 (113) / TC 6600 / ESR 65 mm/hr
• Blood culture sterile
• SaO2 97% (RA)
• Albumin 3.5 g%
INVASIVE PNEUMOCOCCAL DISEASE
B/L EMPYEMA
NECROTISING PNEUMONIA –left lower lobe
BRONCHOPLEURAL FISTULA- left
PYOPERICARDIUM
HYPOPROTEINEMIA
ANEMIA

• Child discharged
FOLLOW UP
DISCUSSION

PLEUROPERICARDIAL EFFUSIONS

- Pericardial cavity involvement in PPE
  - Difficult to recognise clinically
  - Less commonly recognised by CXR
  - Less often given importance even when CT done
When to suspect PCE

An increased occurrence with left-sided parapneumonic effusions
Symptomatic for a longer time before hospitalization.

Significantly higher
- Serum WBC counts
- Pleural fluid WBC counts
- Pleural fluid neutrophil counts

Patients with PCE more likely to need VATS or open thoracotomy
**PERICARDIAL EFFUSION (PCE)**

- Sympathetic PCE secondary to an adjacent infectious process

- Direct inflammation of the pericardium—severity of pneumonia and infected pleural fluid

- Involvement of common lymphatic channels in left hemithorax draining left pleural cavity and pericardial space by inflammatory process.

- Drainage of pericardial lymphatic vessels directed toward tracheobronchial nodes and less frequently toward prepericardial nodes.
LIFE IS PRICELESS BUT …..

- Cost of life for this child
- 32 days hospital stay
  - 18 days ICU stay
  - 10 days Post op
  - 4 days general ward
- 4.25 lakhs
- From where did the child get highly invasive bug
PEARLS

- PPE especially left sided – look for pericardial involvement

- When child does not respond in the usual way think of complication setting in

- Look for features of tamponade – symptoms are minimal – detection by echo is needed
PEARLS

- Good interaction with pediatric surgeon always needed.

- Sub-xiphoid pericardial drainage of pericardial effusion in emergency but reaccumulation common needing surgical intervention.

- **Rule out** immune deficiency states in these children.
References

Jon E. Roberts et al., Association Between Parapneumonic Effusion and Pericardial Effusion in a Pediatric Cohort. *Pediatrics* 2008;122;e1231

Donnelly LF et al., The yield of CT of children who have complicated pneumonia and non contributory chest radiography. American j radiol 1998:170(6);1627-1631.
THANK YOU