Bilateral empyema with pyopericardium (Pleuropericardial disease)

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INTRODUCTION

- Complicated pneumonia increasing in recent times.
- Reason.
  - Increasing drug resistant organisms
  - Improper antibiotic use
  - Late referral
- Increasing need for surgical intervention

CASE SCENARIO

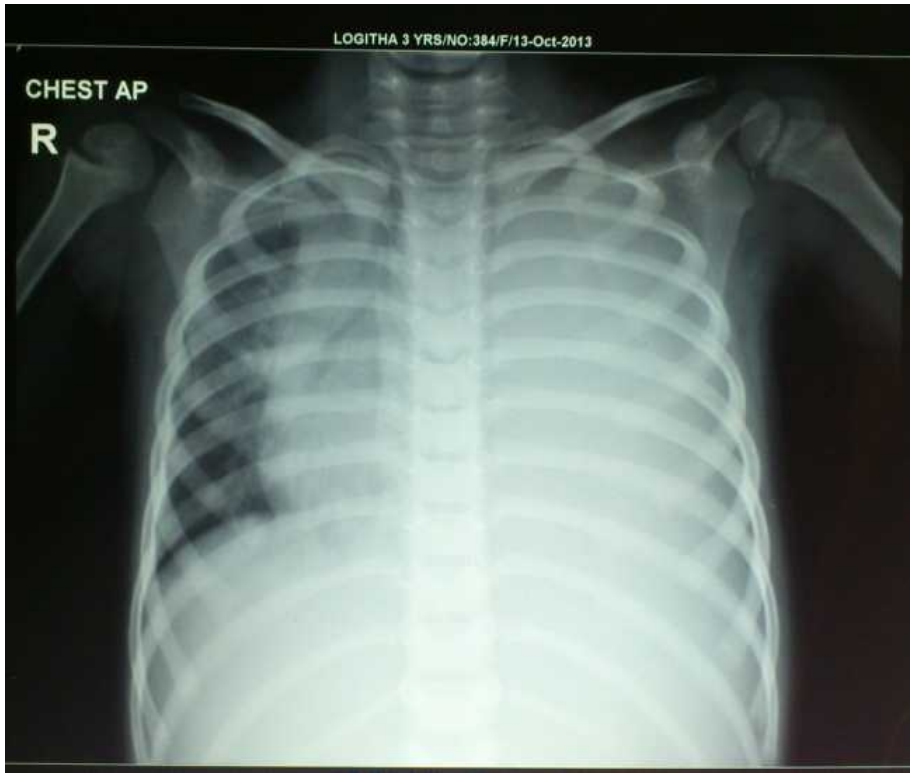
- 3 year 4 months old girl
- Fever- high grade & Wet cough 8 days /Increased work of breathing past 2 days
- Given 1 dose of i.m ceftriaxone & referred
- pneumococcal vaccine not given

ER

- 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



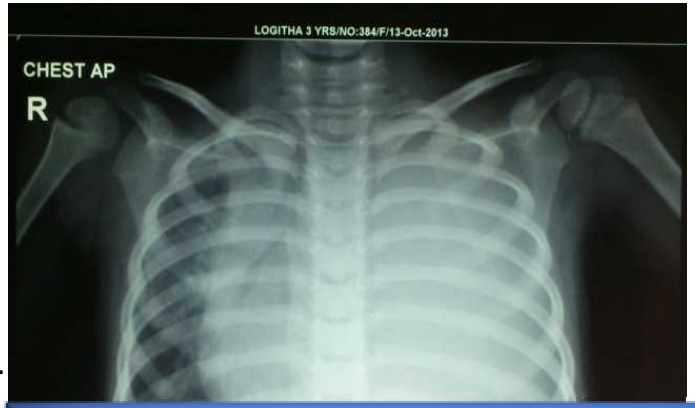
INITIAL WORK-UP

- 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**

1



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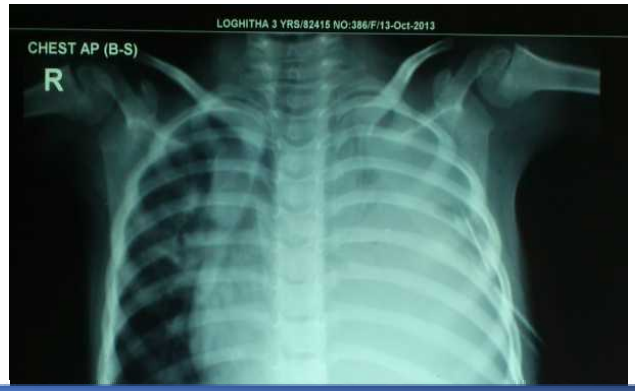
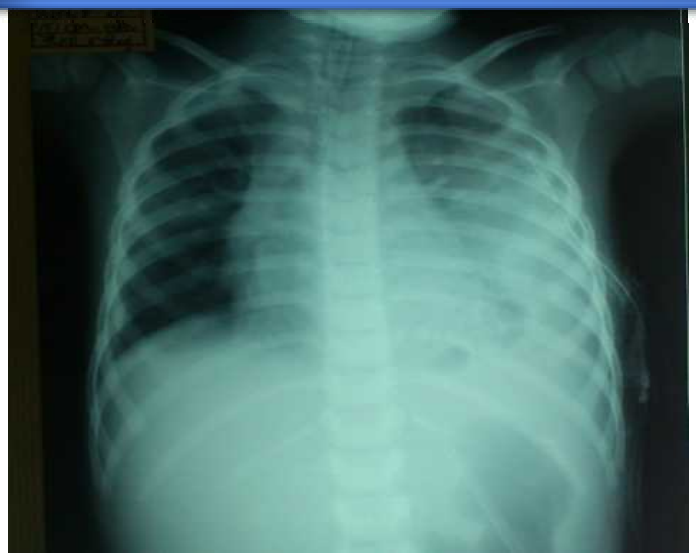


- D3- worsened respiratory distress WOB, requiring FiO2 >60%,
- severe retractions, respiratory muscle fatigue child was intubated
- & ventilated.

- X-ray- right side pleural effusion & ICD inserted on right side
- After Rt sided ICD frank Purulent fluid +

4



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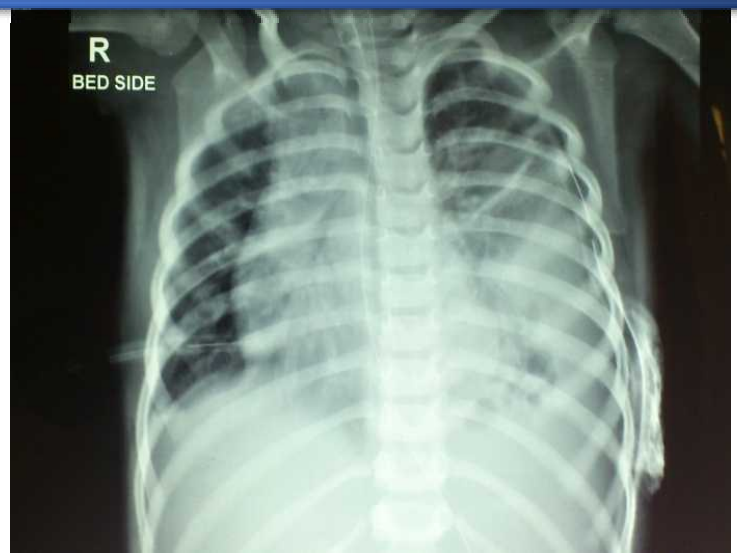
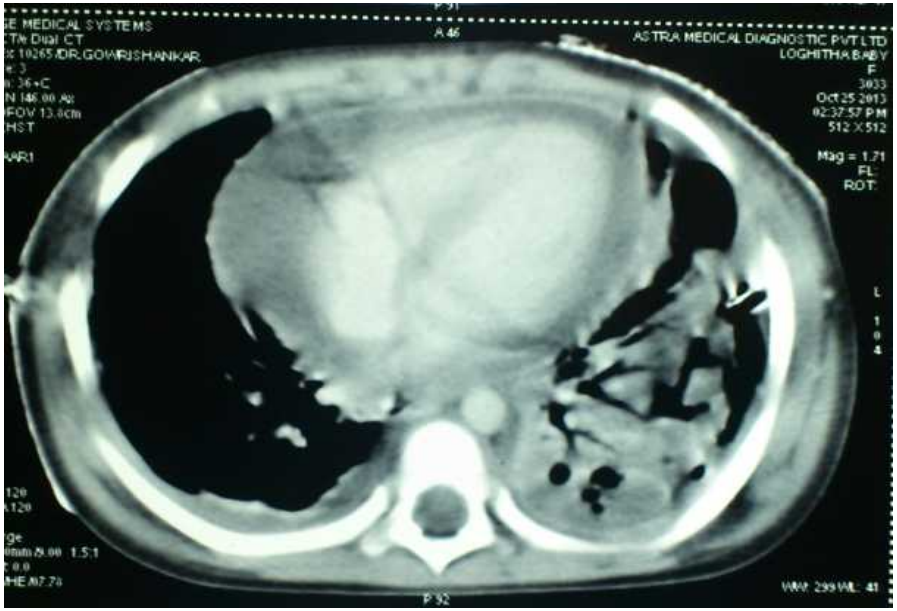
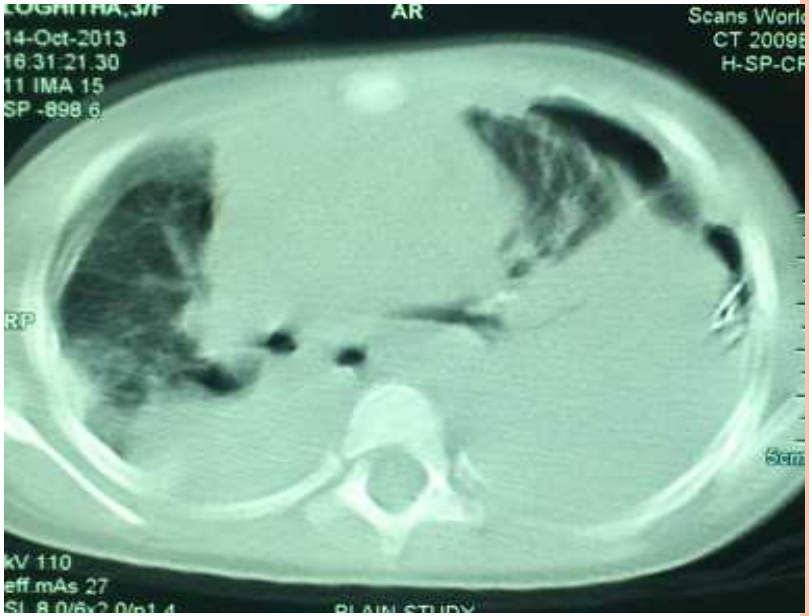


- **ECHO** –Thin rim of pericardial fluid.
- Fever + / tachypnea+ / poor expansion of left lung + / oxygen to maintain SpO2 +
- **Bronchopleural fistula++ left side**
- CT scan- **B/L pleural thickening, necrotic focus in LLL.**


GE MEDICAL SYSTEMS
CTe Dual CT
ASTRA MEDICAL DIAGNOSTIC PVT LTD
LOGHITHA BABY
F
Oct 25 2013
512 X 512
Mag = 1.71
FL
ROT
P 92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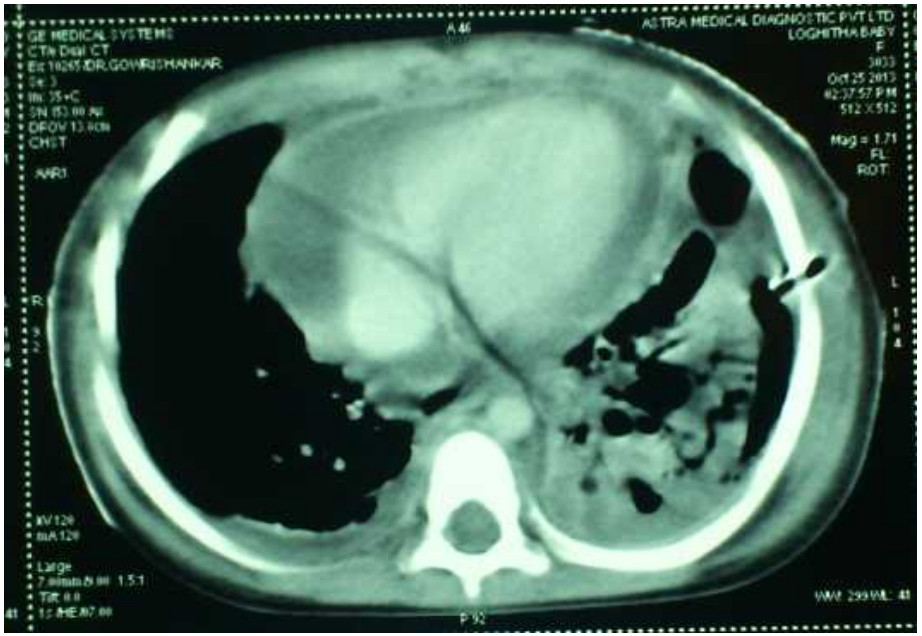
PLAIN STUDY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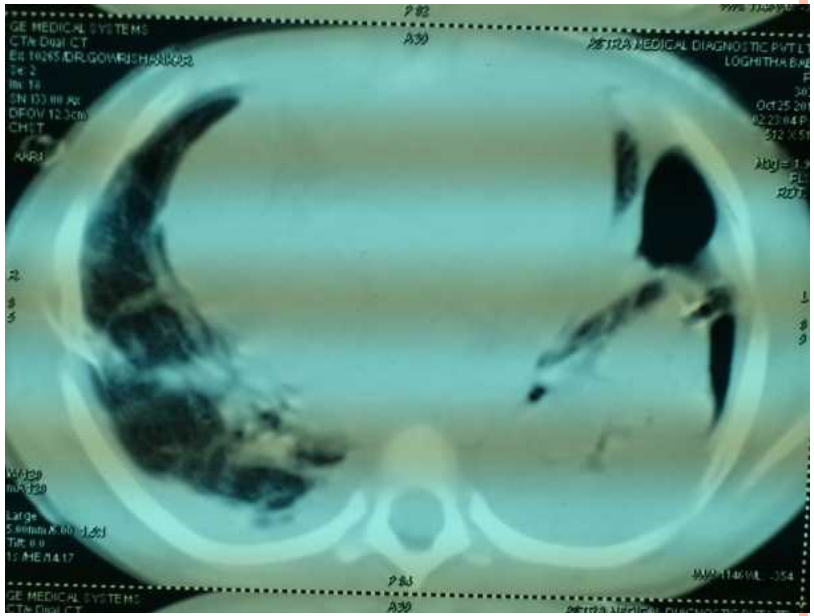
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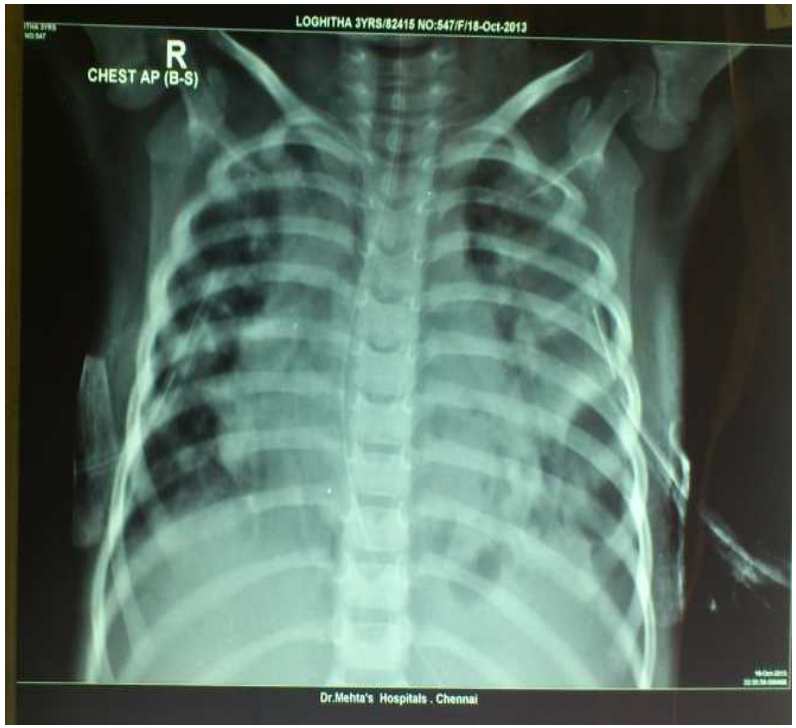
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CHEST AP (B-S)
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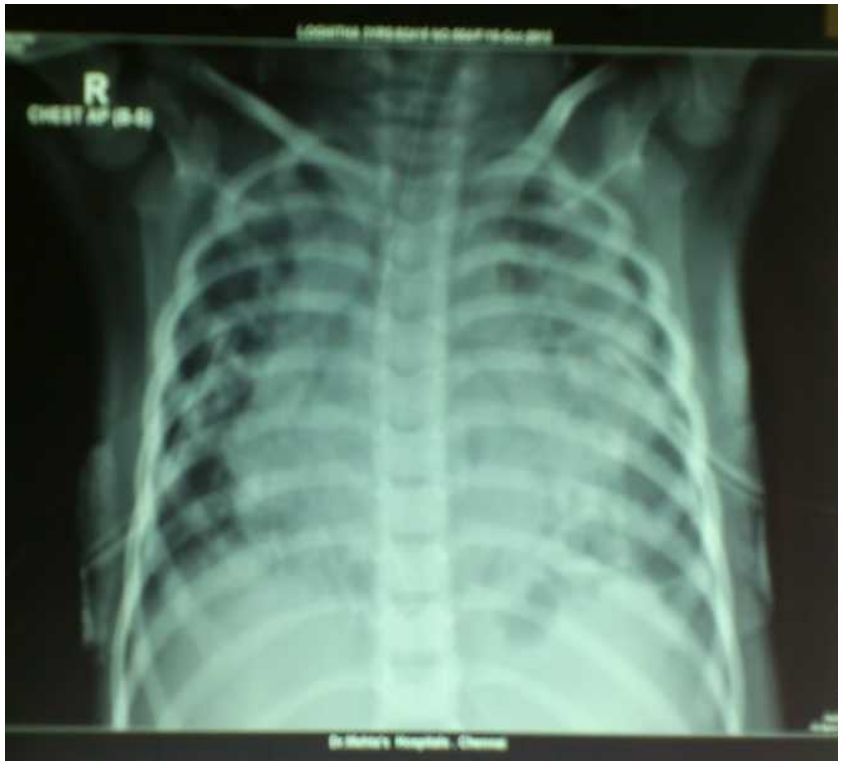
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CHEST AP (B-S)

D10

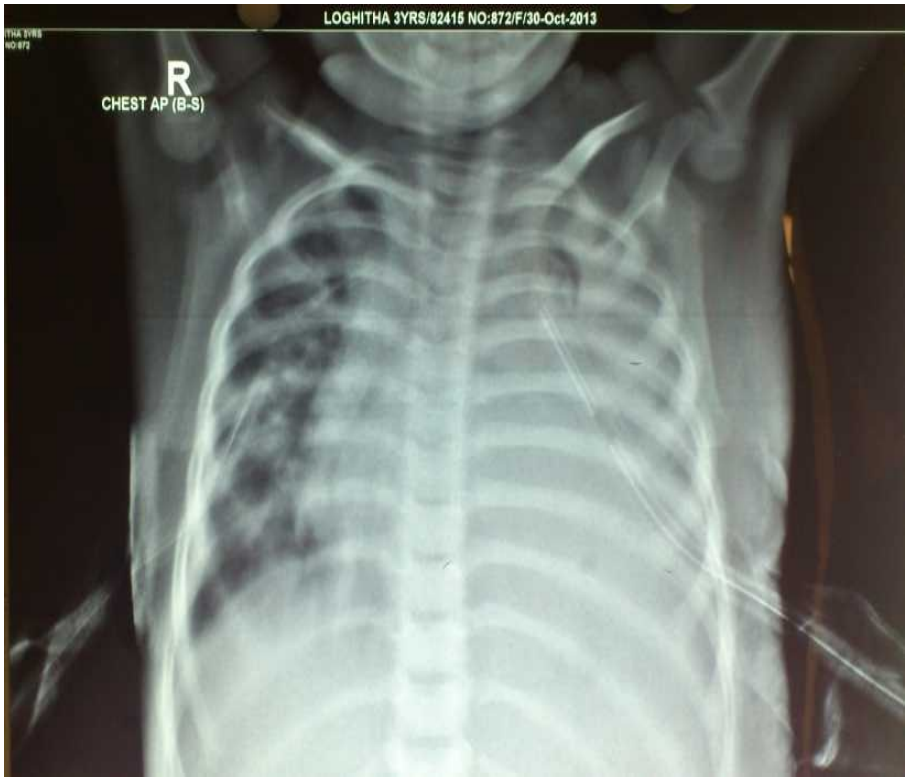
- persistent air leak
- Persistent large volume pus drainage 250 ml/day –ICD
- Fever+
- Resp distress+
- O2 requriement ++
- Hypoproteinemia – alb 2g%
- Hepatomegaly +++

- Repeat ECHO moderate pericardial effusion

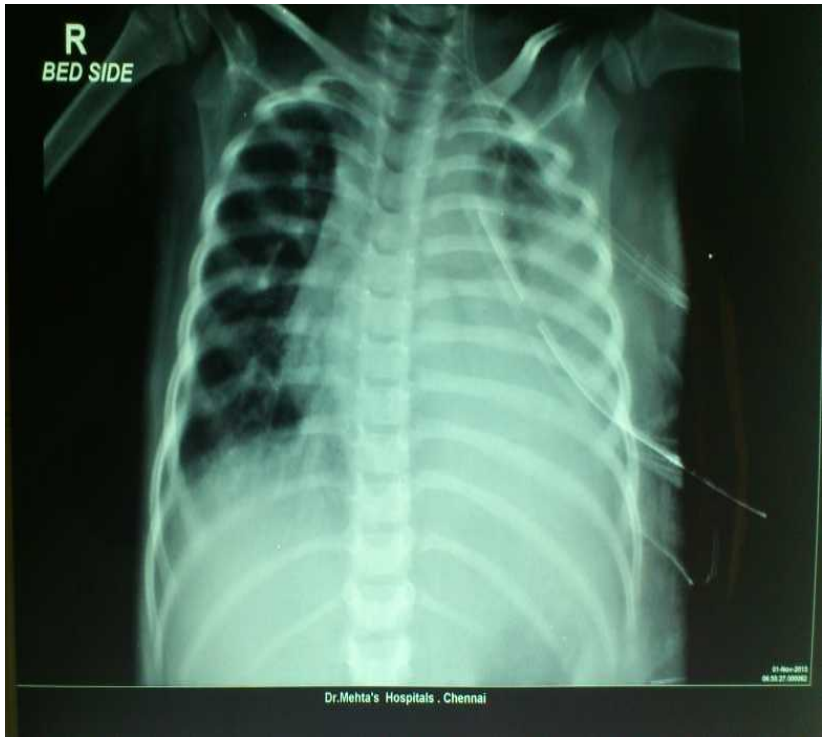
- Planned VATS/ Decortication

- **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

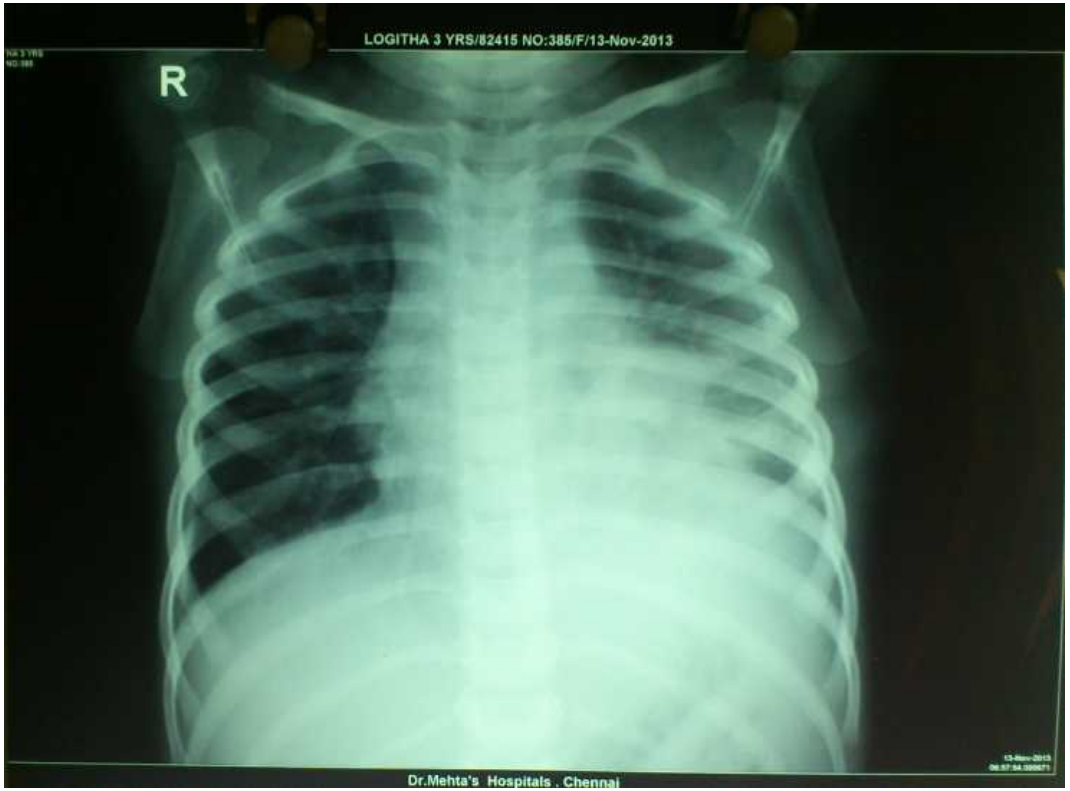
- Transfusion with FFP in view of hypoalbuminemia & PRBC for Anemia.
- Pericardial fluid which was drained during surgery was sterile.
- Bronchoscopy- to R/O any intra-luminal pathology (pus collection)- normal study
- Gradually tapered over from oxygen on nasal prongs.

- 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.**

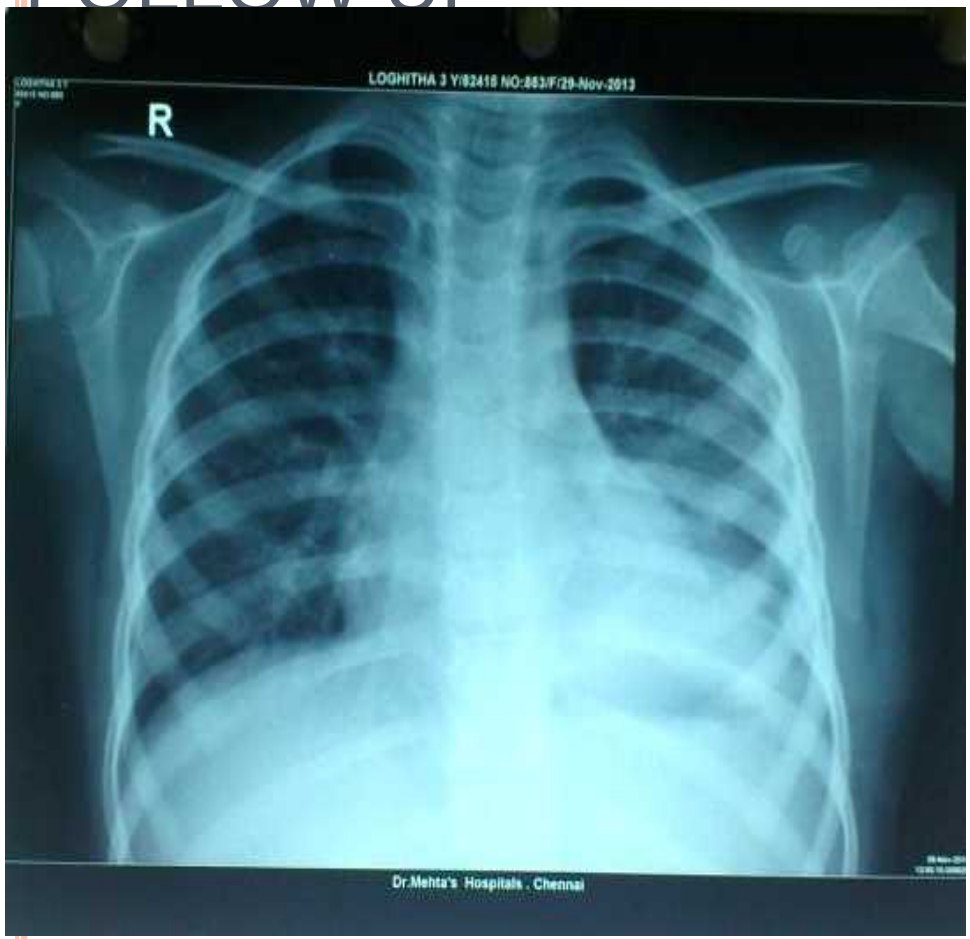
- **Last CRP 14 (113) / TC 6600 / ESR 65 mm/hr**
- **Blood culture sterile**
- **SaO2 97% (RA)**
- **Albumin 3.5 g%**



- Child discharged

INVASIVE PNEUMOCOCCAL DISEASE
B/L EMPYEMA
NECROTISING PNEUMONIA –left lower lobe
BRONCHOPLEURAL FISTULA- left
PYOPERICARDIUM
HYPOPROTEINEMIA
ANEMIA

FOLLOW UP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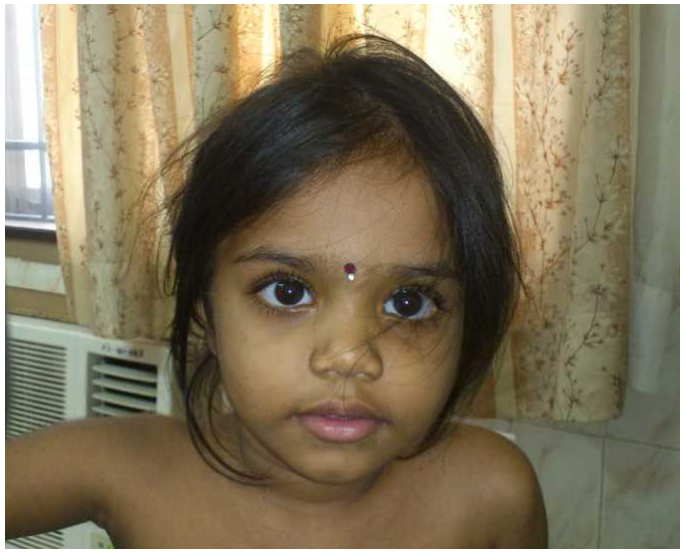

DISCUSSION

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