



## HAEMOPTYSIS

### Causes

- 30% no dx
- systemic circulation = bronchial vessels (most)
- pulm circulation = alveolar capillaries

### BATTLE CAMP

Bronchitis, **Bronchiectasis**, Coagulopathy, CCF  
 Aspergilloma, **AVM**, Alveolar Autoimmune eg SLE, Aorta  
**Tumour eg SCC**, Mitral Stenosis/CHD  
**TB**, Pneumonia  
 Lung abscess  
 Emboli

### Mx Massive Haemoptysis

Should be called **'life-threatening'** haemoptysis

- 2% of all haemoptysis/high mortality
- **COD asphyxia > exsanguination**
- Airway manoeuvres - intubate using large tube for bronch
  1. Intubate good lung, use large tube for bronch or
  2. Intubate bad lung, Salinger IDC to block, then intubate good lung
  3. Double lumen ETT via fiberoptic
- **Damage Control Resus** incl locate bleeding, MTP/TXA
- Don't move pt (some say bad lung down)

### Definitive Mx

- Definitive Mx mostly for Systemic Circulation issues
  - Bronch: flex for localisation, rigid for too much bleeding
  - Angio & Embolisation
  - Surgery
- Pulmonary issues mostly autoimmune ∴ high dose **steroids**

## PLEURAL EFFUSION

	Transudate	Exudate
<b>Pathophys</b>	Hydrostatic/Oncotic	Local Δs
<b>Appearance</b>	Clear	Cloudy
<b>SG</b>	< 1.012	> 1.020
<b>Protein</b>	< 2.5 g/dL	> 2.9 g/dL
<b>Protein Ratio</b>	< 0.5	<b>&gt; 0.5</b>
<b>Albumin Ratio</b>	> 1.2	< 1.2
<b>LDH Ratio</b>	< 0.6 or 2/3 upper limit normal	<b>&gt; 0.6 or 2/3 upper limit normal</b>
<b>Chol</b>	< 45 mg/dL	> 45 mg/dL

### Light's criteria

- Diagnose **exudate**
- Protein ratio > 0.5
- LDH ratio > 0.6 or > 2/3 upper limit
- **≥ 1 = 98% sens, 80% spec**

### Causes

#### Transudate

- Hydrostatic
  - CCF
  - Atelectasis
- Oncotic
  - Cirrhosis
  - Low Alb
- Constrictive pericarditis
- SVC obstruction
- Nephrotic syndrome
- Peritoneal dialysis

#### Exudate

- Infection: pneumonia, TB
- Iatrogenic: drugs, oesophageal perforation, enteral feeds
- Inflammatory: pancreatitis, PE, XRT, ARDS, Sarcoid
- Malignancy
- CT disease: SLE, Wegners, Rheumatoid
- Endocrine: hypothyroid, ovarian hyperstimulation

### Empyema

- pH < 7.2
- **Low Glc**
- Other components same as exudate

## OTHER LISTS

### DDx Mediastinal Shift

- Aspirated FB
- PTX
- Aortic Dissection/Aneurysm
- Haemothorax

### Aspirated FB Signs & Symptoms

#### History

- Sudden onset
- Choking episode

#### Upper Airway

- Stridor
- Dysphonia
- Drooling
- Asymmetric cx movt

#### Lower Airway

- Wheeze: localised, monomorphic
- Hyperinflation
- Persistent cough
- Recurrent pneumonia

## ARDS

### Berlin Definition

- Onset ≤ 1 week
- Bilateral opacities consistent with pulm oedema
- P : F < 300 mmHg (min 5 cmH<sub>2</sub>O PEEP)
- No cardiac failure, fluid overload (consider echo if no cause)

### Severity

	P : F	Mortality	
<b>Mild</b>	200-300	27%	P : F = PaO <sub>2</sub> /FiO <sub>2</sub> on PEEP ≥ 5 cmH <sub>2</sub> O
<b>Moderate</b>	100-200	32%	
<b>Severe</b>	<100	45%	

### Clinical Course

1. **Exudative** D1-7
2. **Proliferative**: D7-21
3. **Fibrotic or Recovery**: W3-4, recovery usually rapid

### Causes

Same as causes of non-cardiogenic pulmonary oedema: NOT CARDIAC

- Near drowning
- O<sub>2</sub> incl post-intubation, **Others**: fat embolism, **pancreatitis**
- **Trauma, TRALI/MTP**
- CNS (neurogenic)
- Allergy, alveolitis, **aspiration**, airway (laryngospasm)
- Renal failure, **Reperfusion**
- Drugs
- Inhaled toxins, infection (**pneumonia or sepsis**), ICC
- **Altitude (HAPE)**
- **Cutaneous**

### Management

- Underlying cause
- **Lung protective ventilation**
- Aim PaO<sub>2</sub> > 60 mmHg, SaO<sub>2</sub> > 90%
- Prone ventilation
- Recruitment manoeuvres
- Inhaled **iNO**
- Inhaled **PGI<sub>2</sub>**
- **Surfactant** replacement
- **Glucocorticoids**

## PAEDIATRIC-SPECIFIC

### Bronchiolitis

- Clinical dx
- **No meds or Ix are routine**; Mx = support feeding ± O<sub>2</sub>
- Viral LRTI < 12m old: peak d2-3 of 7-10d illness
- Cough for weeks after

### Risk Factors for Progression

- < 10w adjusted
- ATSI
- Immunodeficient
- Chronic lung disease
- Chronic neuro disease
- CHD

### Severity

	Mild	Mod	Severe
<b>Behaviour</b>	Normal	Irritable	Lethargy
<b>RR</b>	Normal	↑	Marked ↑ or ↓
<b>Acc Musc</b>	Mild	Mod	Marked
<b>SaO<sub>2</sub></b>	> 92%RA	90-92%RA	<90%RA
<b>Apnoeas</b>	None	Brief	Fq or prolong
<b>Feeding</b>	Normal	↓	Unable

### Management

- No Ix: consider if **clinical concern eg septic, murmur**
- **Nasal saline** drops when feeding (gentle suction as well)
- No indication for Rx (not even b-agonists with fx atopy)
- Cornerstone are
  1. **Minimal handling**
  2. **Regular/comfort feeding ± NG**
  3. **O<sub>2</sub> support**

	Mild	Mod	Severe
<b>Admission</b>	DC, OPD if RF	Admit	PICU
<b>Obs</b>	≥ 2	q1-2hr	Continuous
<b>Hydration</b>	Fq feeds	NG if inadequate/unable	
<b>O<sub>2</sub> Req</b>	Nil	<b>SaO<sub>2</sub> &gt; 90%</b>	
<b>Resp Supp</b>	Nil	<b>NPO<sub>2</sub> → HFNC → CPAP</b>	

### Brief Unexplained Event: BRUE

- Marked Δ **breathing, colour, tone OR LOC**
- Replaces **ALTE** (apparent life threatening event)
- Diagnosis of exclusion: probably exaggerated airway reflexes in setting of feeding, reflux, airway secretions

### Definition

- 1 < 12m
- 2 < 1min (usually 20-30s)
- 3 ≥ 1 of the following:
  - Central cyanosis or pallor
  - Breathing: absent, ↓ or irregular
  - Marked Δ tone
  - ALOC
- 4 Back to normal baseline
- 5 No identifiable condition

### DDx

- Phys response eg laryngospasm, gagging
- NAI: shaken baby, OD, munchausen, int suffocation
- Infection: Pertussis, sepsis, pneumonia, meningitis
- Airway obstruction: congenital, infection, hypotonia
- Abdo: intussusception, hernia, torsion
- Metabolic: ↓ glc, Ca, K, inborn errors
- Cardiac: congenital, arrhythmia, vascular ring, ↑ QT
- Resp: Inhaled FB
- Toxins
- Neuro: HI, seizure, infection, congenital malformation

### Low Risk

- > 60 days old (~ 9 wks)
- ≥ 32/40 birth & ≥ 45 wks corrected
- No CPR done by trained professional
- 1st event
- < 1min

### Mx

- Low risk = DC → GP/OPD FU
- FBC, UEC, BSL
- NP viral & **pertussis**
- ECG esp QT

### Croup

- Uncommon < 6m, rare < 3m
- DDx: **epiglottitis, tracheitis, FB**
- viral inflammation
- worse night 2,3

### Management

- **Minimal handling**
- Mild: **dexamethasone** 0.15 mg/kg
- Severe: **dexamethasone** 0.60 mg/kg
- **adrenaline** neb 5mg

### Severity

	Mild	Mod	Sev
<b>Behaviour</b>	Normal	Irritable	Lethargy
<b>Stridor</b>	Upset	Some	Rest
<b>RR</b>	Normal	Some	Marked ↑ or ↓
<b>O<sub>2</sub></b>	None	None	Req