ASPIRATION PNEUMONIA / PNEUMONITIS

(Last updated 07/23/2019; Reviewed by: Jalal Soleimani MD)

PRESENTING COMPLIANT: Difficulty breathing, coughing

FINDINGS

- **A** Check airway for possible debris/sputum/blood/food
- **B** ↑ RR, increased work of breathing
- **C** ↓ BP, ↑ HR
- **D** Variable altered
- **E** Cyanosis, wheezing, diffuse crackles on lung auscultation, ↑N temp
- **L<sub>PC</sub>** ABG-↓ PaO<sub>2</sub>, CBC-↑ WCC, ↑ lactate
- **U<sub>PC</sub>** B lines, hyperdynamic LV/RV, collapsible IVC

*V (verbal), P (pain), U (unconsciousness), D (delirious)

**U<sub>PC</sub>** (point of care ultrasound)  **L<sub>PC</sub>** (point of care labs)

**DEFINITION**

- Aspiration of gastric contents and aspiration of bacteria may cause chemical pneumonitis and aspiration pneumonia, respectively
  - Aspiration of large volume of inert fluids filling conducting airways (e.g. saline, barium, most water-based fluids, and gastric content with pH > 2.5) may cause pulmonary edema and aspiration of foreign bodies may cause airway obstruction

**OTHER HISTORY**

- **Stomach contents**
  - Acute (< 3h) dyspnea, tachypnea, tachycardia, cough, pink, frothy sputum
- **Bacteria**
  - Gradual onset pneumonia-like picture and purulent sputum
- **Inert fluid**
  - Acute dyspnea and pulmonary edema
- **Foreign body**
  - Signs of airway obstruction
    - Acute: wheezing, stridor, respiratory distress
    - Chronic: chronic cough, persistent wheezing, purulent sputum
    - If unilateral signs suspect deeper bronchial aspiration, may be accompanied with focal atelectasis
• **Predisposing conditions**
  o Decreased ability to protect airway
    ▪ Neurologic deficits: stroke, dementia, Parkinson’s disease
    ▪ Loss of consciousness: alcohol, seizure, trauma, anesthesia, analgo-sedation
  o Increased risk of regurgitation
    ▪ Esophageal dysfunction: strictures, neoplasms, diverticula, achalasia
    ▪ Increased gastric pressure: large-volume tube feeds, vomiting/gastroparesis, ileus, ascites, body habitus/obesity
    ▪ Recumbent position
    ▪ Radiation therapy to the head and neck
  o Increased virulence of inoculum
    ▪ Periodontosis, concurrent use of PPI/H2-Blocker, lung disease, immunosuppression, alcoholism, malnutrition

**DIFFERENTIAL DIAGNOSIS**
• If unwitnessed:
  o Pulmonary embolism, cardiac-related causes of acute pulmonary edema, asthma, inhalation injury, non-pulmonary sepsis with secondary acute respiratory insufficiency

**OTHER INVESTIGATIONS**
• Pulse oximetry, vital signs, chest x-ray/CT, ECHO, bronchoscopy

**THERAPEUTIC INTERVENTIONS**
• Consider tracheal suction if witnessed aspiration
• Antimicrobial therapy
  o Stop if no infiltrates on CXR after 24h; otherwise, continue for a total duration of 5-7 days
• Head of bed elevation at 30-45 degrees
• O2, positive pressure ventilation (CPAP, BIPAP), or high flow oxygen via nasal cannula
  o Consider early intubation if unable to protect the airway
    ▪ Lung protective ventilation
• Treat distributive/septic shock as appropriate
  o Avoid fluid overload
• Removal of foreign material, if suspected
  o Bronchoscopy

**ONGOING TREATMENT**
• Assess dysphagia
  o e.g. bedside swallow test (decrease in SpO2 > 2% after swallowing 10cc of water + clinical dysphagia) or video fluoroscopic swallow study
• Head of bed elevation at 30-45 degrees
• If dysphagia, consider using thickened fluids or tube feeding

REFERENCES & ACKNOWLEDGMENTS

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