# 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
- **$L_{PC}$** ABG-↓ $PaO_2$, CBC-↑ WCC, ↑ lactate
- **$U_{PC}$** B lines, hyperdynamic LV/RV, collapsible IVC

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

**$U_{PC}$** (point of care ultrasound) **$L_{PC}$** (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**
    - Decreased ability to protect airway
        - Neurologic deficits: stroke, dementia, Parkinson's disease
        - Loss of consciousness: alcohol, seizure, trauma, anesthesia, analgo-sedation
    - 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
    - Increased virulence of inoculum
        - Periodontosis, concurrent use of PPI/H2-Blocker, lung disease, immunosuppression, alcoholism, malnutrition

**DIFFERENTIAL DIAGNOSIS**

- If unwitnessed:
    - 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
    - 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
    - Consider early intubation if unable to protect the airway
        - Lung protective ventilation
- Treat distributive/septic shock as appropriate
    - Avoid fluid overload
- Removal of foreign material, if suspected
    - Bronchoscopy

**ONGOING TREATMENT**

- Assess dysphagia
    - 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

Acknowledgement: *Joseph C. Farmer, MD; Emir Festic, MD; Abbasali Akhoundi, MD; C. Schmickl, MD, MPH*

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