UPPER AIRWAY OBSTRUCTION

(*Last updated 03/22/2019; Reviewers: Yongfang Zhou, MM*)

PRESENTING COMPLAINT: Dyspnea, stridor, hoarseness

FINDINGS

- A Check airway (suspected site of obstruction), swelling, secretions
- **B** ↑RR, ↑work of breathing, dyspnea, poor air movement, accessory muscle use
- **C** ↑HR, tachycardia, hypertension, and pulsus paradoxus
- **D** Variable altered (V,P,U,D)*
- **E** Swelling, edema, bleeding (examination of mouth/pharynx/epiglotis/tonsillar), cyanosis, secretions, hemoptysis, neck swelling, rash, foreign body, trauma, physical exam: Caution with throat exam with tongue blade/speculum if epiglottitis suspected, examination of mouth/pharynx for edema
- **Lpc** ABG, ↓PaO_2, ↑$PaCO_2$, SpO_2
- **Upc** Narrowing of the airways

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

Upc (point of care ultrasound) **Lpc** (point of care labs)

OTHER HISTORY

Symptoms: Agitation, confusion, drooling**,** hemoptysis, dysphagia, odynophagia, drooling, and swelling of the neck or face. Dyspnea is typically exacerbated by exercise, and in the case of certain diseases, +/- cyanosis.

Predisposing Conditions: Foreign body, allergic reaction, angioedema, infection (epiglottitis, croup, peritonsillar abscess), cancer, vocal cord dysfunction, loss of consciousness (LOC), trauma, bleeding/hematoma, inhalation/thermal injury, cartilage disorders or tracheobronchomalacia, recent intubation/extubation/tracheostomy tube placement

DIFFERENTIAL DIAGNOSIS

Asthma/COPD, PE, pneumonia, pneumothorax, tracheomalacia, bronchiolitis in children

OTHER INVESTIGATIONS

- **Imaging/Visualization** (if severe airway compromise or unresponsive or hypoxemic patients, secure airway emergently with endotracheal intubation, video laryngoscope or fiberoptic if trauma/neck stabilization or surgical airway (emergent tracheostomy/cricothyrotomy backup needed to secure airway):
    - Emergent Bronchoscopy/Laryngoscopy

- X-ray (lateral X rays of neck, Chest X ray) after clinical stabilization and secure airway.
- CT scan on neck after clinical stabilization, secure airway.

- **Cultures:** Throat (+/- blood) if infection suspected.
- **Labs:** carboxyhemoglobin (in case of burns), Toxicology screen (if altered mental status), ECG, $ETCO_2$ monitor if available

THERAPEUTIC INTERVENTIONS

- **General:**
  - Suction, chin lift
  - Supplemental oxygen
  - **If severe airway compromise or rapid progression or hypoxemia or unresponsive patient:**
    - **Secure airway with Endotracheal Intubation- fiberoptic** (if not possible: cricothyrotomy/tracheotomy, surgery/ENT back up needed)
    - Low threshold for intubation with burns/thermal injury to airway
    - Emergent **Bronchoplasty**, applies mostly for lower tracheo-bronchial lesions: dilation +/- stent (preferably with rigid bronchoscope) for obstructive lesions
    - Correct coagulopathy in bleeding and trauma
    - Corticosteroids are indicated for airway edema caused by either infection or inflammation/ allergy
    - Head of the bed elevation, consider diuretics to decrease airway edema and facilitate extubation
- **Specific to etiology:**
  - **Foreign body:**
    - **Complete obstruction:** Up to 5 back blows (<1 year) or Heimlich maneuver (> 1 year)
    - **Partial obstruction:** Laryngoscopy/ Magill forceps
  - Allergy/Anaphylaxis: Stop inciting agent; epinephrine (1 mg/mL intramuscular (IM)
  - injection. Administer 0.3 to 0.5 mg in the mid-outer thigh should we talk about Epipen here), albuterol mobilization, methylprednisolone or Dexamethasone, large-bore IV-access (fluid resuscitation if hypotension); consider diphenhydramine, H1 blockers
  - Hereditary or acquired Angioedema (bradykinin mechanism): Stop ACE inhibitor,
  - consider FFP or bradykinin-targeting therapies

- Infection: Antimicrobial therapy; source control (e.g. abscess drainage)
- Obstructive lesions: Bronchoplasty +/- stenting, surgery
- LOC: Intubation, head-tilt-chin-lift or jaw-thrust (if risk of c-spine injury) maneuver.

Consult: Recommend Emergent consult ENT/ Anesthesia / Surgery/ Pediatrics

ONGOING TREATMENT

Further Treatment:

- **Allergic reactions:** Monitor for signs of anaphylaxis (hypotension) monitor for second phase reaction or recurrence
- **Infection:** Adjust antibiotics based on cultures, corticosteroids

CAUTIONS

Possible Complications: Death/ brain damage due to hypoxia, cardiac arrest from hypoxemia, aggravation of cervical spine injury by head-tilt-chin-lift maneuver (use jaw thrust maneuver instead)

REFERENCES & ACKNOWLEDGMENTS

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