ANAPHYLAXIS

(Last updated 08/12/2019; Reviewed by: Svetlana Herasevich, MD)

PRESENTING COMPLAINTS: Skin rash, difficulty breathing, hypotension

FINDINGS

- **A** Airway swelling (lips, tongue, uvula)
- **B** ↑ RR, ↑ work of breathing, wheezing, stridor
- **C** ↓ BP, ↑ HR
- **D** normal to variable altered
- **E** Skin and mucosal (urticarial) rash, flushing; angioedema
- **L_{PC}** ABG-PO2 ↓
- **U_{PC}** 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)

OTHER HISTORY

- **Predisposing Conditions**
  - Known exposure
- **Symptoms**
  - Hypotension, dizziness, collapsing, skin rash, flushing, airway swelling (lips, tongue, uvula), wheezing, stridor, hypoxemia, nausea, vomiting, diarrhea

DIFFERENTIAL DIAGNOSIS

- Hereditary or acquired angioedema (i.e. ACE inhibitors), generalized urticarial, acute asthma exacerbation, vasovagal syncope, panic attack/acute anxiety

OTHER INVESTIGATIONS

- History
  - Known allergy and exposure
- Serum or plasma tryptase
  - Informative if serum or plasma were obtained within 15 min to 3 hours of start of symptoms
- Plasma histamine
  - Elevates in 5-15 minutes of the onset, and returns to baseline by 60 minutes

THERAPEUTIC INTERVENTIONS

- **Immediate management**
  - Basic life support

    - Epinephrine immediately with auto-injector: 0.3 mg IM or 0.1 mg IV to be repeated if persistent hypotension
    - IV fluids: crystalloids (30 ml/kg bolus)
    - Airway management: intubate early if angioedema suspected; **do not wait**
    - Adjunctive treatment
        - Corticosteroids for late-phase response (e.g. Methylprednisone 1mg/kg IV)
        - H1 and H2 antihistamine (e.g. diphenhydramine 50 mg IV plus ranitidine 50 mg IV)
- **Other considerations**
    - Remove allergen, if known (e.g. medication infusion, food)
    - Epinephrine IV drip, if persistent shock
        - Caution with IV bolus
        - Consider **intraosseous** access
    - Glucagon (1-5 mg IV) if patient on beta blocker
    - Bronchodilator treatment with albuterol nebulization

ONGOING TREATMENT

- For at least 24 hours:
    - Watch for recurrence or protracted case
    - Consider measuring serum or plasma tryptase in doubt (e.g. sudden vasoplegic shock)
    - Consider measuring C4 and a C1 inhibitor antigenic level
        - For bradykinin mediated, non-allergen associated hereditary or acquired angioedema

CAUTION

- Epinephrine
- Antihistamines and steroids are not effective in bradykinin mediated angioedema
    - Consider fresh frozen plasma or, if available, C1 inhibitor concentrate, icatibant, or ecallantide

REFERENCES & ACKNOWLEDGMENTS

Acknowledgement: *Benjamin Bonneton, MD; Philippe R Bauer, MD; Guillaume Thiery, MD; Perliveh Carrera, MD*

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