**EM Basic- Croup**

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**Diagnosis**

-Clinical diagnosis based on barking cough

 -Accompanied by URI symptoms- cough, runny nose, fever

**Differential Diagnosis**

**Aspirated foreign body­-** always a consideration in kids- consider if very sudden onset (one second fine, the next with difficulty breathing)

**Epiglottitis-** Much less common with modern vaccinations- look toxic, have a lot of difficulty breathing, lots more drooling

**Retropharyngeal abscess-** may present similarly to epiglottitis but usually not as sick- may not want to move head or neck 2/2 pain

**Bacterial tracheitis-** also appears very sick, purulent sputum is the hallmark

**Cause of croup**- Para-influenza virus type 1 and 2 (75% of cases)

**Imaging**

**X-ray**- can consider it if diagnosis is in doubt- can be helpful to rule out the other conditions on the differential above

 -Classically reveals the steeple sign (below)

 -Tintinalli’s says this may be absent in up to 50% of cases

http://emedicine.medscape.com/article/407964-overview

**Labs-** Not necessary unless you are considering other diagnoses

PEARL: Avoid agitating these patients as much as possible- this includes lab draws- don’t do them or obtain IV access unless you absolutely need it

**Classification of Croup**

**-Mild-** No stridor at rest, classic cough

**-Moderate-** stridor at rest, some retractions and/or decreased air intake

**-Severe-** Stridor at rest, cyanosis at agitation, decreased air intake

**-Impending respiratory failure-** altered level of consciousness, cyanosis at rest, markedly decreased air intake

**Wesley Croup Score-**  more useful as an epidemiologic tool but not usually useful clinically- can use to differentiate mild from moderate croup

**Treatment**

**Dexamethasone (aka Decadron)**

 -Given to all patients with croup, improves outcomes and

decreases ED returns

-0.6 mg/kg PO or IM, max of 10mg

 -Newer studies showing that 0.15 mg/kg may be just as

effective with less vomiting

 -Go with least invasive route possible

 -If tolerating PO, mix IV version with juice and give it PO

PEARL: In general, most kids with mild croup may be better on arrival to the ED due to exposure to the cold night air which is easier for them to breathe

**Inhaled Epinephrine (racemic or regular)**

 **-ONLY FOR KIDS WITH STRIDOR AT REST**

-Stridor with agitation is ok-

-If stridor resolves with rest, do not need racemic epi

-No difference in outcomes with racemic versus non-racemic epi

 -Racemic epi- 0.5ml of 2.25% solution diluted in 2-3 ml of Saline

 -Regular epi- 1:1,000 concentration (or 1 mg/ml)- 5ml diluted in

2-5 mL of saline

-Can be given every 2 hours as needed

**Oxygen and Heliox**

-Oxygen for all hypoxemic patients

 -Heli-ox- helium oxygen mixture for severe croup- reduces work

of breathing due to less air turbulence

**Albuterol**

 **-**Avoid- can worsen symptoms- not a lot of asthma in this agre

group

**Intubation**

 -Severe croup that does not respond to other treatment

 -Use one size smaller ET tube than you would normally use due to

airway swelling

**Disposition**

-Children with persistent stridor at rest, tachypnea, retractions, or hypoxia or if needing more than 2 rounds of inhaled epi= admit

 -Consider cardiac monitoring if needing multiple doses of epi

**Discharge criteria**

-3 h since last epinephrine

-Nontoxic appearance

-Able to take fluids well

-Caretaker able to recognize change in child's condition and has adequate transportation to return if necessary

References:

1. Mapelli E, Sabhaney V. Stridor and Drooling in Infants and Children. In: Tintinalli JE, Stapczynski J, Ma O, Yealy DM, Meckler GD, Cline DM. eds. Tintinalli’s Emergency Medicine: A Comprehensive Study Guide, 8e. New York, NY: McGraw-Hill; 2016. http://accessmedicine.mhmedical.com/content.aspx?bookid=1658&Sectionid=109406485. Accessed April 12, 2016.

2. Bjornson C, Russell K, Vandermeer B, Klassen TP, Johnson DW. Nebulized Epinephrine for croup in children. PubMed 2013. Available at: www.pubmed.gov. Accessed April 8, 2016.

3. Weber JE, Chudnofsky CR, Younger JG, et al. A Randomized Comparison of Helium–Oxygen Mixture (Heliox) and Racemic Epinephrine for the Treatment of Moderate to Severe Croup. Pediatrics 2001;107(6). Available at: http://pediatrics.aappublications.org/content/107/6/e9. Accessed April 8, 2016.

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