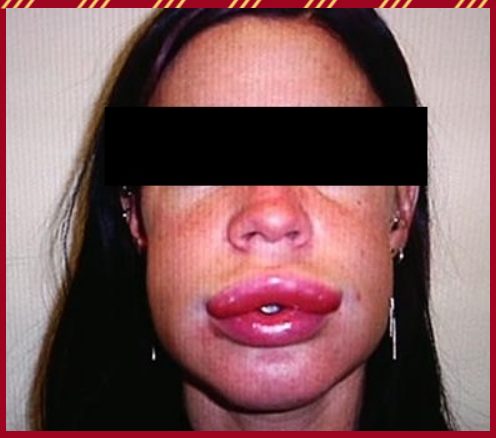
MARCH 2015 VOLUME #2 ISSUE 5

EM CASE OF THE WEEK

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE



Hereditary angioedema, although rare, can be seen in the ED with need for immediate intervention. Emergency medicine providers should keep HEA in their differential as they examine patients with edema.

Hereditary Angioedema (HEA)

A 77 year old Caucasian female with past medical history of hypertension, hypothyroid, and osteoathritis presents to the emergency department with chief complaint of unilateral facial swelling upon waking up in the morning. With further questioning, you ascertain that she has had multiple episodes of such swelling in the past, and that her allergist told her that, "she was missing 2 enzymes." It is determined in review of her records that she has been diagnosed with hereditary angioedema. Her vital signs are stable and she does not appear to be in any acute distress. Which of the following options is FALSE in regards to HEA?

A. HEA can cause swelling in many different body parts, including the hands, feet, arms, legs, face, throat, and genitals.

B. HEA attacks are often preceded by warning signs, such as fatigue, tingling, nausea, or flu-like symptoms, up to several days before swelling symptoms begin.

C. HEA episodes are most often associated with itchy, watery eyes and rhinorrhea.

D. Swelling in the intestines can sometimes cause misdiagnosis of HEA and can lead to unnecessary exploratory surgery.

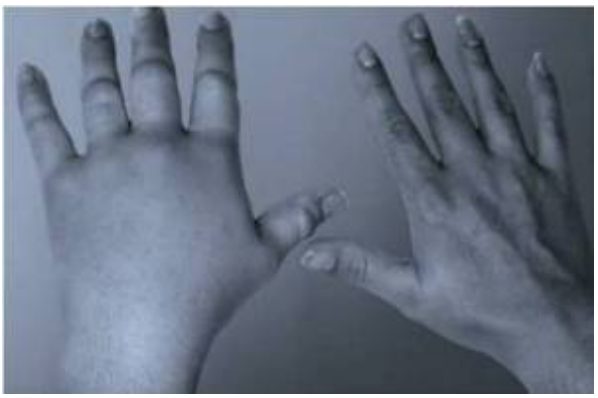
E. Often, one side of the body is more effected than the other in HEA attacks.

EM CASE OF THE MONTH

EM Case of the Month is a monthly "pop quiz" for ED staff. The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

Broward Health Medical Center
Department of Emergency Medicine
1625 SE 3rd Avenue
Fort Lauderdale, FL 33316



CLINICAL PEARLS:

- HEA is rare, however its effects can be deadly with laryngeal attacks. Providers should maintain a high vigilance for the need to intubate.
- Up to 25% of patients with HAE have no family history of the disease, thus, a negative family history should not be used to exclude HEA when clinical suspicion is high.
- HEA can cause swelling in many locations, including the hands, feet, arms, legs, face, throat, genitals, and intestines.
- Approximately one third of patients with undiagnosed Hereditary Angioedema (HAE) undergo unnecessary surgery during abdominal attacks because the symptoms mimic a surgical emergency.
- Individuals with angioedema should take special care to avoid known triggers. Prophylactic medications can also be prescribed to decrease the frequency of attacks.

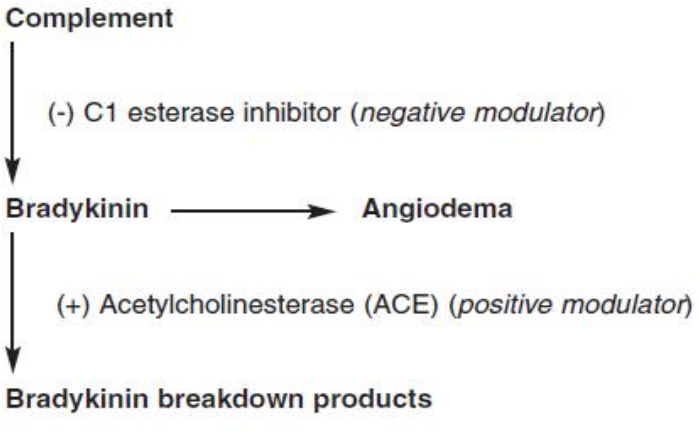
Hereditary Angioedema

The correct answer is C. Itchy, watery eyes and rhinorrhea are more often associated with allergic angioedema, which is precipitated by mast cell degranulation and histamine release.

Introduction:
Although rare, with reportedly only 1 case per 10-50,000 population in the US, hereditary angioedema can have severe or even fatal results. Some research even suggests that in patients with undiagnosed HAE, mortality has been reported as high as 30% as a result of a laryngeal edema and closed airway. Patients with HAE typically first manifest symptoms during the second decade of life.

Pathophysiology:
– Type I HAE is the most common form (85%), caused by **decreased production** of C1 esterase inhibitor (C1 INH), and has autosomal-dominant inheritance.
– Type II HAE has **functionally impaired** C1 INH and autosomal-dominant inheritance.
– Type III (HAE-FXII) involves mutations in coagulation factor XII gene (occurs more frequently in women)

Figure 2. Bradykinin Pathway



For a list of educational lectures, grand rounds, workshops, and didactics please visit

http://www.BrowardER.com

and click on the "Conference" link. All are welcome to attend!

Pathophysiology (cont.):
Angioedema is also a serious side effect of the usage of ACE inhibitors (e.g. Lisinopril). Bradykinin is normally metabolized by Angiotensin Converting Enzyme (ACE), thus its inhibition can lead to bradykinin accumulation and consequently, angioedema. ACE inhibitors should be avoided in anyone with a history of angioedema.

Triggers:
Attacks of HAE are triggered by prolonged mechanical pressure, cold, heat, trauma, emotional stress, menses, illness, oral contraceptive use, and alcohol consumption

Diagnosis:
In recurrent AE without a clear etiology and without urticaria, consider ordering serum C4 level for determination. A C4 level below 50% suggests the diagnosis. If C4 levels are low, a quantitative and functional measurement of C1INH activity is performed. A normal C4 level during an acute episode essentially rules out HAE. Upon discharge, the patient should follow up with an immunologist who can perform C1INH testing.

Treatment:
General Measures- Intubation if airway is threatened. Tracheostomy if progressive laryngeal edema prevents endotracheal intubation
Acute HAE treatment:
– C1 INH concentrate (*Berinert, Cinryze*)
– Ecallantide: a kallikrein inhibitor (*Kalbitor*)
– Icatibant: A bradykinin receptor-2 antagonist (*Firazyr*)
– FFP has shown some success if C1 INH concentrate is not available.

***NOTE*: Antihistamines and glucocorticoids typically do not benefit HAE patients. Epinephrine can offer transient stabilization/improvement in laryngeal AE, but is not sufficient for full treatment.**

Prognosis:
Symptoms often resolve in hours to 2–4 days. Patients with HAE have an average of 20 attacks/year; each may last 3–5 days. Prophylaxis can decrease the frequency of events and number of missed days of school or work.

Resources:
1. Atkinson et al. Hereditary Angioedema: Pathogenesis and Diagnosis. UpToDate. 2014
2. Medscape- Hereditary Angioedema. http://emedicine.medscape.com/article/135604-overview
3. Berkes, T and Martin, M. *Angioedema*. The 5-Minute Clinical Consult. 2013
3. US Hereditary Angioedema Association. www.haea.org
4. American Academy of Emergency Medicine: *Clinical Practice Guideline: Initial Evaluation and Management of Patients Presenting with Acute Urticaria or Angioedema*

This month's case was prepared by Leila Gaudet. Leila is a fourth year NSU medical student who is applying to Internal Medicine with interests in academic medicine.