# ANGIOEDEMA

## Introduction

**Urticaria** consists of circumscribed lesions consisting of raised areas of erythema and edema of the *superficial dermis*, (see separate guidelines).

When the condition is more marked, the *subdermal tissues* and mucosal surfaces are involved and the condition is known as **angioedema.** The difference is merely one of degree.

Urticaria and angioedema can occur together in the same patient at the same time or they may occur separately.

Angioedema can involve many areas of the body, but the most serious manifestation will be involvement of the oropharyngeal and tongue mucosal surfaces. In severe cases this may lead to death by airway obstruction.

## Pathophysiology

Angioedema involves vessels in the layers of the skin *below* the dermis, while urticaria involves vessels within the *superficial* dermis. [1]

There is an inflammatory response mediated by vasoactive mediators, including:

- Histamine
- Serotonin
- Kinins (such as bradykinin).

The subdermal source of angioedema results in regions of well demarcated, localized, *non-pitting* edema.

Urticaria is localized to the superficial portion of the dermis and consists of circumscribed wheals with raised erythematous borders and central blanching. These may coalesce to form larger wheals.

These conditions can occur together or separately.

Recurrent episodes of one or both conditions for less than 6 weeks duration are considered acute, whereas attacks lasting longer than 6 weeks are considered chronic.

Angioedema, (with or without urticaria), can be caused by:

1. Allergic reactions:

   This may be part of:

   - A true *anaphylactic* reaction.
   - An *anaphylactoid* reaction. This may be due to a drug reaction.

2. Hereditary:

   - Hereditary angioedema (HAE) is a rare genetic autosomal dominant disorder characterized by a C1 esterase inhibitor deficiency.
   - Associated urticaria is not a feature of HAE. [2]

3. Drug induced:

   - In particular **ACE inhibitors and to a lesser extent ACE II receptor blockers.**

4. Idiopathic:

   - No cause is found.

*Complications:*

Oropharyngeal complications include:

- Dysphonia.
- Dysphagia
- Airway compromise, which may be lethal.

## Clinical Features

Clinical features include:

1. Airway compromise:

   - This is the most immediate and serious manifestation of angioedema.
   - Oropharyngeal involvement can range from mild edema of the uvula to extreme edema leading to airway compromise, as shown above.

2. Angioedema may be part of a wider systemic anaphylactic or anaphylactoid reaction, including:

    - Hypotension, wheezing, and erythematous generalized rash.

2 GIT involvement:

    - Angioedema of the intestine may cause abdominal pain.

3. Other cutaneous involvement:

    - Other single or multiple regions of skin may be involved including the face, periorbital region, lips, dorsa of feet and hands, and genitalia.

    - Individual lesions resolve over hours to several days.

*Important points of history:*

1. Symptoms:

    - The timing of onset and the rapidity of symptom development.

2. Has there been any recent local trauma or surgery or dental work?

    - Angioedematous lesions may be precipitated by trauma including surgery or dental work.

3. Allergies:

    - Especially of past anaphylactic reactions.

4. Medications:

    - In particular **ACE inhibitors and to a lesser extent ACE II receptor blockers.**

5. Past history:

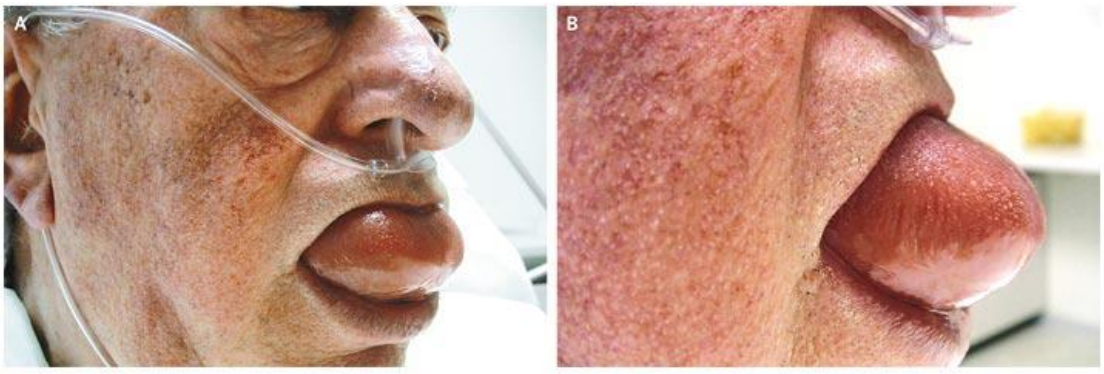
    - Previous episodes, including whether or not a specific diagnosis of HAE has been made.

6. Family history:

    - There may be a family history of HAE.

*Important points of examination:*

1. Airway and respiratory assessment:
    - Check vital signs
    - Oxygen saturation
    - Drooling
    - Stridor
    - Ability to talk
    - Paradoxical respiration in extreme cases.
2. Other features of anaphylaxis:
    - Hypotension, wheezing and generalized rash.




*Severe angioedema of the tongue leading to airway compromise, (NEJM July 20 2006)*

**Investigations**

1. C1 esterase inhibitor levels:
    - Levels of C1 esterase inhibitor are undetectable during attacks but may be normal or low at other times. [2]
2. Complement levels.
3. Lateral neck radiology:
    - This may assist in some cases in assessing the degree of airway obstruction.

## Management

1. Airway:

   The most immediate concern will be the airway and respiratory status:

   - Oxygen may be provided by nasal prongs, even if the oropharynx is severely obstructed.
   - In extreme case an emergency needle cricothyroidotomy or other surgical airway may be necessary. It not immediately required the equipment to do this should be readily at hand.
   - All cause should have IV access
   - Patients should be closely observed in a monitored cube.

2. Nebulised adrenaline:

   - 4 mls of 1:1000 nebulized adrenaline may give some benefit towards airway improvement.

3. Antihistamines:

   - IM/ IV phenergan.

5. Steroids:

   - IV dexamethasone 10mg.

6. Cases of diagnosed hereditary angioedema: [2]

   - Infusion of C1 esterase inhibitor concentrate, if available, may halt or prevent acute severe attacks.
   - Fresh frozen plasma may be used if specific C1 esterase inhibitor concentrate is not available.
   - Systemic corticosteroids and antihistamines are of little benefit in this form of angioedema.

7. Angioedema caused by ACE inhibitors:

   - Angioedema is a contraindication to the future use of ACE inhibitors
   - Angiotensin II receptor blockers may also cause angioedema.

A small percentage of patients experiencing angioedema with an ACE inhibitor will also experience this complication with an angiotensin II receptor blocker.

- ACE inhibitor should never be used in patients with C1 esterase inhibitor deficiency.

8. Referrals:

- Patients should be referred to an allergist on discharge.

*Disposition considerations:*

All patients with airway compromise must be admitted and observed closely for further airway compromise.

Patients should be discussed with ICU. Admission to ICU will be necessary in severe cases. Mild cases may be appropriate for a period of observation in SSU

*References*

1. Dodds N, Angioedema, Emergency/ Allergy/ eMedicine Website, April 2005

2. Dermatology Therapeutic Guidelines, 2nd ed 2004

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