

# Aspirin Exacerbated Respiratory Disease (AERD)

## Overview

- Aspirin-exacerbated respiratory disease (AERD), also known as Samter's Triad.
- Chronic medical condition that consists of three clinical features: asthma, sinus disease with recurrent nasal polyps, and sensitivity to aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) that inhibit an enzyme called cyclooxygenase-1.
- This sensitivity usually manifests as respiratory reactions occur upon ingesting, inhaling or topical use of an NSAID.
- The exact cause of the reactions is not known.
- Approximately 7% of all adults with asthma and 14% of all adults with severe asthma have AERD. And 30% of adults with asthma and nasal polyps have AERD which is around 1.2 million to 1.6 million people in the United States with AERD.
- AERD can develop quite suddenly in adulthood, usually between the ages of 20 and 50, and there is no clearly-understood trigger that causes the disease.

## Symptoms

- People with AERD usually have asthma, nasal congestion and recurrent nasal polyps.
- Symptoms often do not respond sufficiently to conventional treatments.
- Many people experience chronic sinus infections and a loss of sense of smell is common.
- A characteristic feature of AERD is that people develop respiratory reactions to aspirin and other NSAIDs.
- These reactions classically involve both upper respiratory symptoms (increased nasal congestion, frontal headache or sinus pain, and sneezing) as well as lower respiratory symptoms (cough, wheezing, chest tightness), but they can also induce skin flushing, rash, abdominal pain and occasionally vomiting.
- It has been noted that about 75% of all people with AERD develop mild-to-moderate respiratory reactions when they drink alcohol. These reactions are not always specific to just one type of alcohol and often occur after consuming less than one glass of alcohol.

## Diagnosis

- The diagnosis of AERD is a clinical one.
- There is no one specific test or blood result that alone can be used to diagnose the disease.
- The symptom triad of asthma plus nasal polyps plus respiratory reactions to NSAIDs is considered diagnostic for AERD.



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- However, for people whose history of possible reaction to an NSAID is not clear, it is often helpful to do a formal aspirin challenge to confirm the diagnosis. This can be done either as an oral challenge, or as a combination of an intranasal and oral challenge, and the procedure is done in a hospital or clinic with an experienced doctor and medical team.
- People with AERD have high numbers of eosinophils, a type of immune cell that is involved in inflammation, in their nasal polyps.
- They often have elevated levels of eosinophils in their blood.
- Though the presence of an elevated eosinophil level is not required as part of the diagnosis, it can be a helpful additional insight.



## Treatment

- People with AERD who have not been desensitized to aspirin should avoid all NSAIDs in order to prevent reactions.
- Even with the complete avoidance of NSAIDs, people will continue to have symptoms of asthma, nasal congestion and recurrent polyps.
- Acetaminophen is usually safely tolerated at low doses (up to 500mg at a time or below 1000 mg).
- Most people with AERD will need to use daily medications to control their symptoms: inhaled corticosteroids for asthma, intranasal steroid sprays or steroid sinus rinses can help to control the nasal symptoms, and nasal polyps can also be treated with steroids injected directly into the polyps.
- Biologic medications such as mepolizumab, omalizumab, dupilumab, reslizumab and benralizumab may also be of benefit. These biologic medications are approved for treatment in severe asthma but have not been specifically studied in the treatment of AERD.
- Several non-steroid medications are also available, specifically medications that inhibit the production of leukotrienes (zileuton) or block the function of leukotrienes (Montelukast and Zafirlukast) and can help to treat some of the symptoms.
- Despite intensive medical therapy, the need for surgical removal of nasal polyps in AERD is very common, though unfortunately the rate of recurrence of nasal polyps after surgery is high.
- Aspirin desensitization in order to initiate daily high-dose aspirin therapy can also be used as a steroid-sparing treatment in some patients.
- In people with AERD, an aspirin desensitization procedure can be performed by administering gradually increasing doses of aspirin in a hospital or clinic that specializes in such treatment.
- The goal of aspirin desensitization is to have the person begin long-term daily aspirin therapy, which in many people can decrease the regrowth of nasal polyps and reduce the need for corticosteroid medications.