

# Aspirin Desensitization for Aspirin-Exacerbated Respiratory Disease (AERD)

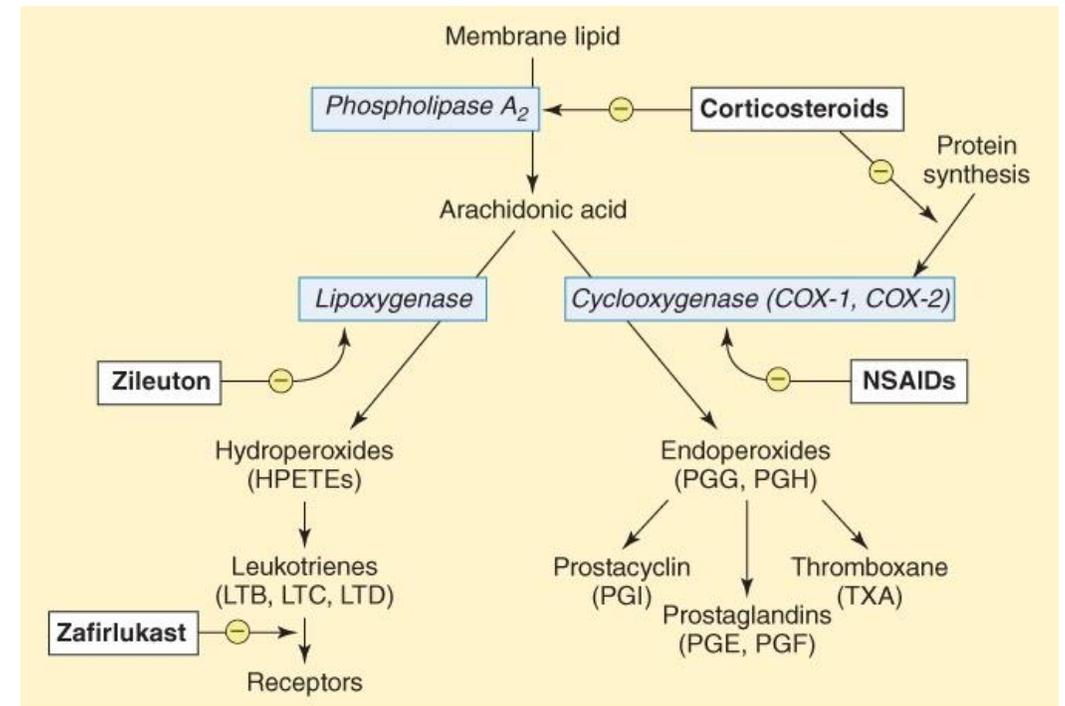
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# AERD - Description

- Also known as Samter's Triad
- Refers to the combination of:
  - Asthma
  - Chronic rhinosinusitis (CRS) with nasal polyposis (NP)
  - Acute reactions to aspirin and other COX-1 inhibiting NSAIDs
    - Causing upper and lower respiratory symptoms
- Prevalence:
  - 7% among patients with asthma
  - 15% among patients with severe asthma
  - 9-10% among patients with NP or CRS
  - Up to 30% of asthmatics with NP

- Pathophysiology: Not fully understood but involves dysregulation in arachidonic acid metabolism
  - **Overproduction of Leukotrienes**



# AERD - Clinical Features

- *Chronic upper and lower respiratory disease (CRS w/ NP, Asthma) and reaction to NSAIDs is an exacerbating factor.*
- Worsening of asthma and chronic sinusitis occurs even with NSAID avoidance
- Usually diagnosed in adulthood
- The 3 components tend to develop serially over years
- Acute exacerbation after ingestion of NSAID *typically begins 30 minutes to 3 hours after ingestion*
  - Dose-related: small doses produce milder symptoms; large doses produce more severe symptoms
  - Urticaria and/or angioedema occur in 15% of AERD patients.
  - (Similar symptoms may occur with high doses of acetaminophen)

# AERD - Diagnosis & Management

- **Diagnosis** made clinically; may require a diagnostic aspirin challenge
- **Management:** Medications, Surgery (polypectomy), *Aspirin Desensitization*
  - **Leukotriene modifying agents** (montelukast, zafirlukast, zileuton)
    - *Protect patients from severe exacerbations due to accidental NSAID exposure*
  - NSAID avoidance (unless patient has been desensitized to aspirin)
- **Aspirin Desensitization:** Induces one's ability to temporarily tolerate aspirin. After successful desensitization, the patient must continue aspirin/NSAID daily in order to maintain the desensitized state.
  - Indications:
    - Nasal polyposis that worsen or recur after surgery despite optimal medical management
    - Other conditions requiring daily use of NSAIDs (e.g. CAD, arthritis)
  - Reduces the expression of leukotrienes
  - Successful in majority of AERD patients

# Aspirin Desensitization

- If sinus surgery/polypectomy is required, schedule desensitization 2-4 weeks after surgery.

## Within 1-2 weeks prior to desensitization:

- FEV1 > 70% predicted (optimally)
- Start or continue leukotriene modifier and other asthma medications
- Systemic steroid burst if necessary

## Day of Procedure:

- Obtain informed consent, baseline vital signs and spirometry
- Vital Signs, FEV1 (or peak flow) and clinical assessment prior to each dose and with symptoms
- Treatment of reactions (ocular, nasal, laryngeal, bronchial, cutaneous): antihistamines, albuterol, epinephrine
- Lower resp. tract reaction: 15% decrease in the FEV1 from baseline FEV1
- After successful desensitization, start daily aspirin 650 mg twice daily
  - Taper over 6 months to 325 mg twice daily
- Subsequent desensitization is performed if aspirin is missed for more than 48 hours

## Protocol

Time	Aspirin dose
0	20.25 mg
1.5 hours	40.5 mg
3.5 hours	81 mg
5.5 hours	162 mg
7.5 hours	325 mg

- Most take 2 days. May adjust doses and extend dosing interval based on patient history and assessment.
- If reaction occurs, observe patient for at least 3 hours.
- When stabilized, repeat provoking dose; escalate if tolerated. (Provoking dose is usually 81 mg.)

# AERD - Summary

- AERD is a distinct and important subtype of asthma and polypoid sinus disease.
- Early identification is important given the increased morbidity and costs associated with asthma exacerbations and recurrent sinus surgeries.
- Benefits of Aspirin Desensitization followed by daily aspirin in AERD:
  - Decrease in nasal polyp formation, nasal congestion, sinus infections, sinus surgery, and need for systemic corticosteroids
  - Increase in asthma control and sense of smell
  - Effects on CRS symptoms are more dramatic than effects on asthma

## References

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