

Eye Disorders

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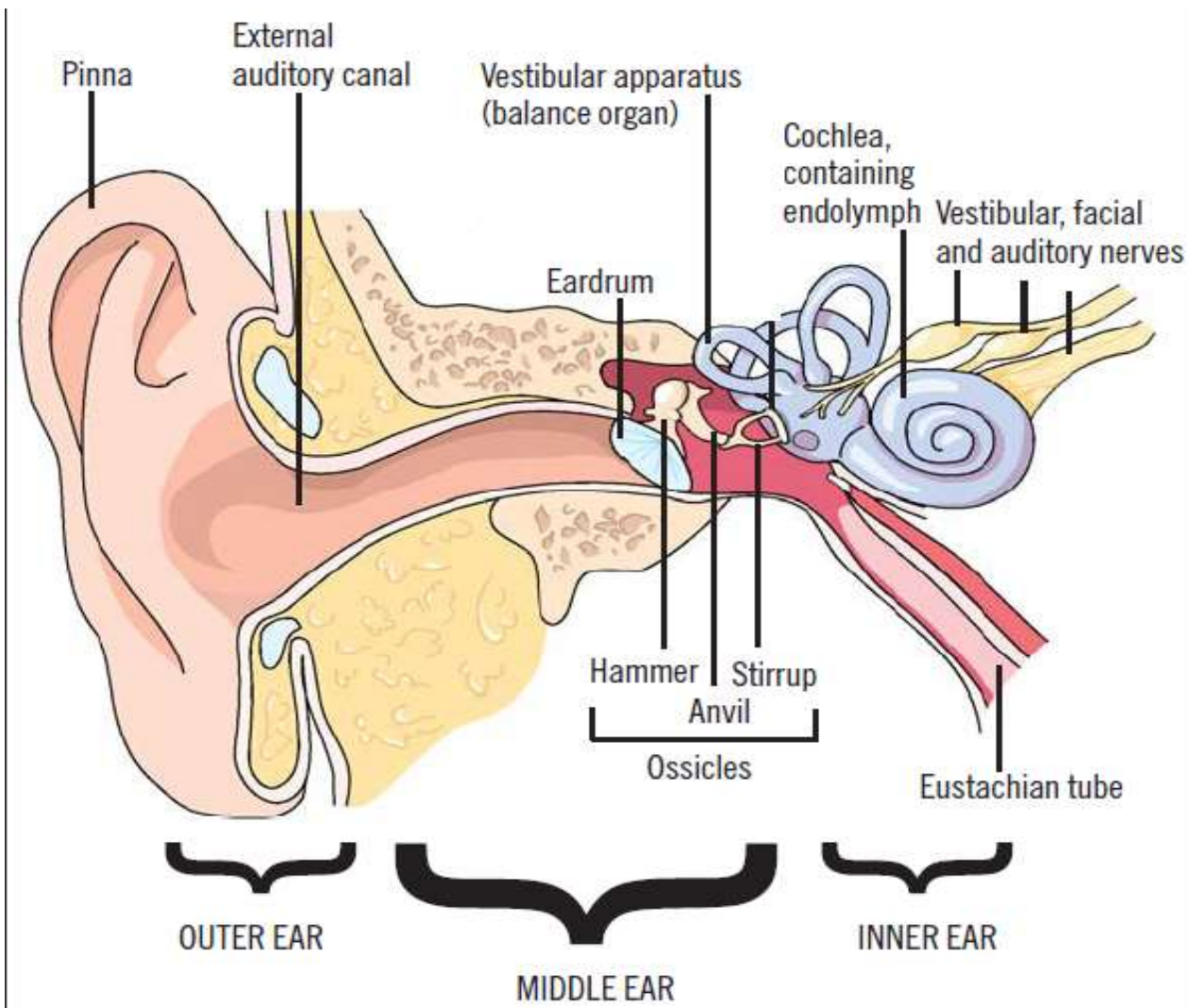
Ear Conditions

Background

Currently, community pharmacists can only offer help to patients with conditions that affect the **external ear** and this lecture therefore concentrates on external ear problems.

General overview of ear anatomy

The external ear consists of the auricle (also called the pinna) and the **External Auditory Canal (EAC)** (see the Figure), and is closed by the tympanic membrane (**eardrum**), which separates the external ear from the middle ear .



Ear Wax Impaction

Background

1-Ear wax is produced in the ear canal by the ceruminous glands .Cerumen **lubricates the canal, traps dust and foreign materials**, and provides a waxy, **water proof barrier to the entry of pathogens**. It also contains various **antimicrobial** substances such as lysozymes , and it has an **acidic pH which aids in the inhibition of bacterial and fungal growth** .

2-The debris-laden cerumen slowly migrates outward with jaw movements (such as chewing and talking). This migration serves as a process of self-cleaning .

3-Ear wax is by far the **commonest external ear problem** that pharmacists encounter and is the most common ear problem in the general population . The high number of presentations may be due to patient **misconception that ear wax needs to be removed** .

4-Additionally, a number of patient groups appear to be more prone to ear wax impaction than the general population , for example, individuals **with abnormally narrow** ear canal and/or excessive hair growth in the canal are predisposed to impacted cerumen. These physiologic anomalies disrupt the normal migration of cerumen to the outer EAC. Individuals who have who **wear hearing aids, ear plugs,**often suffer from impacted cerumen. Such devices worn in the ear can inhibit the migration of cerumen, causing wax buildup. Frequent removal and proper cleaning of ear devices may help prevent wax buildup .The **elderly are more susceptible to impacted cerumen.** This population secretes drier cerumen, which is more difficult to expel from the ear .

Patient Assessment with Ear Wax Impaction

1-Course of symptoms:

The most common symptoms of impacted cerumen are a sense of **fullness** or **pressure** in the ear and a **gradual hearing loss** .

2-Associated symptoms

Dizziness and **tinnitus** indicates an **inner ear problem** and should be **referred**. Ear wax impaction rarely causes tinnitus, vertigo or true pain .

3-History of trauma

Check if the person has recently tried to clean the ears. This often leads to wax impaction . Attempting to remove cerumen by means of cotton-tipped applicators, finger nails, or other such objects **can force the cerumen into the inner half of the EAC** where it becomes hardened and compacted over time. **Hardened cerumen generally does not cling to cotton-tipped applicators**, and using them may **force the cerumen plug further into the canal** . Trauma might also lead to **discharge from the ear canal**. These cases are probably best referred .

4-Use of medicines

If a patient has used an appropriate OTC medication correctly (**OTC medication failure**) this would necessitate referral for further investigation and possibly **ear-syringing** (with warm water) .

5- Foreign bodies:

Symptoms can mimic ear wax impaction but, over time, **discharge** and **pain** is observed. *Children* are the most likely age group to present with foreign body in the ear canal and suspected cases need referral .

Treatment Goals

The goal of treating excessive/impacted cerumen **is to soften and remove** it using proper methods. Proper treatment should eliminate temporary hearing loss and other symptoms .

Nonpharmacologic Therapy

1-Ear wax should be removed only when it has migrated to the **outermost portion** of the EAC. The only recommended nonpharmacologic method of removing cerumen is to **wash cloth draped over a finger**. use a **wet, wrung-out** Making this procedure part of **daily aural hygiene** can **prevent impacted cerumen**(if physiologic abnormalities or physical devices are not the cause of the impaction). **This method is not effective once cerumen becomes impacted.**

Pharmacologic Therapy (Cerumenolytics)

Although agents used to soften ear wax **have limited evidence of efficacy**, they are **very safe**. They can be given **to all patient groups**, do not interact with any medicines and can be used in children .

1-Docusate ((dioctyl sodium sulpho-succinate) (Dewax ®)

The manufacturers of Dewax® recommend that adults and children use **enough ear drops to fill the affected ear on not more than two consecutive nights.**

2-Sodium bicarbonate

This product should be instilled **two to three times a day for up to 3 days.**

Dangerous and/or Ineffective Earwax Removal Methods

A-Healthy ears need no cleaning beyond the use of a soapy wash cloth used to wash the outer rim of the ear during the daily shower. The common use of cotton-tipped swabs to remove ear wax is ineffective and potentially dangerous, increasing the risk of eardrum perforation .

Water-Clogged Ears

Some patients are more prone to retaining water because of the shape of their ear canals or the presence of excessive cerumen. Excessive moisture in the ears can result from hot humid climates, sweating, swimming, bathing,.....Therefore, simple attempts to remove water by mechanical manipulation may be insufficient .

Clinical Presentation of Water-Clogged Ears

A feeling of **wetness or fullness in the ear**, accompanied by **gradual hearing loss**, can occur after exposure to any of the etiologic factors. The trapped moisture can compromise the natural defenses of the EAC, causing **tissue maceration** that, in turn, can lead to **itching, pain, inflammation**, or infection .

Treatment of Water-Clogged Ears

A-Nonpharmacologic Therapy

1-Tilting the affected ear downward and gently manipulating the auricle can expel excessive water from the ear. This procedure should be performed after swimming or bathing, or during periods of excessive sweating, especially by persons who are prone to developing this disorder

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2-Using a blow-dryer on a low setting around (not directly into) the ear immediately after swimming or bathing may help dry the ear canal .

B-Pharmacologic Therapy

FDA has approved only isopropyl alcohol 95% in anhydrous glycerin 5% as a safe and effective ear-drying aid. In addition, a 50:50 mixture of acetic acid 5% and isopropyl alcohol 95% has also commonly been recommended to help dry water-clogged ears.

Ear-drying agents, which are recommended for use in adults and children ages 12 years and older, may be used whenever ears are exposed to water.

Medical referral is necessary if symptoms persist after several days of simultaneous use of ear-drying agents and prevention of exposure of ears to water. Symptoms of infection also require medical referral .

1-Isopropyl Alcohol in Anhydrous Glycerin

Alcohol is highly miscible with water and **acts as a drying agent**. In concentrations greater than 70%, it is also an effective skin disinfectant. Glycerin has been used in pharmaceutical preparations for its solvent, emollient, or hygroscopic properties. Combined with alcohol, glycerin provides a product that reduces moisture in the ear **without over-drying**.

2-Acetic Acid

The **acetic acid** in a 50:50 mixture of (acetic acid 5% and isopropyl alcohol 95%) has **bactericidal and antifungal properties**. Species of *Pseudomonas*, and *Candida*, and are particularly sensitive to this agent.

As discussed previously, alcohol is highly miscible with water, and helps remove water from the ear.

Repeated **use can cause over drying of the canal**.

The solution may sting or burn slightly, especially if the skin is abraded.

Further reading

1-They have very few side effects, which appear to be limited to local irritation when first administered.

They might, for a short while, increase deafness and the patient should be warned about this possibility .

2-Other products are

A-Cerumol® (peanut oil 57.3%)

B-Earex® (Arachis - peanut oil - 33.3% and camphor oil 33.33%)

C-Peroxide-based products (Exterol® and Otex® ; urea hydrogen peroxide 5% (also called Carbamide peroxide))

Thank You