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Review Article

Geriatric Otorhinolaryngology

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Abstract

This is an emerging subspecialty of geriatric medicine which focuses on the unique needs of elderly person. In 1909, the term geriatrics was proposed by Dr. Ignatz Leo Nascher from New York who is known as the "Father" of geriatrics. In 2007, the American Geriatric Society (AGS) established eight domains---Cognitive & behavioral disorders; Medication management; Self care capacity; Falls, balance & gait disorders; Atypical presentation of disease; Palliative care; Hospital care for elders, Healthcare planning and promotion. The elderly are physiologically different from younger adults, with an expected, but variable decline of almost all organ systems.

In 2010, The American Society of Geriatric Otolaryngology (ASGO) under the leadership of its first president, Jerome C. Goldstein mentioned that 15% outpatient otolaryngology visits were from patients over the age of 65 years. Most common diagnoses in patients of this age group are Hearing loss, Certain ear disorders—mainly tinnitus, non suppurative otitis media / eustachian tube disorders, vertiginous syndromes and vestibular disorders. Other common disorders include dysphonia and dysphagia in the elderly. Presbystasis (progressive loss of balance function accompanying the normal aging process), polypharmacy and falls also are frequently encountered. Thus, Geriatric Otolaryngology is a tool to enhance the quality of life of older people by maximizing their functional and social activities in their later years.

Key Words: *Geriatric, Presbystasis, Presbyacusis, Hearing aids, Rehabilitation*

Introduction

Geriatric medicine differs from standard adult medicine because it focuses on the unique needs of the elderly person. the first modern geriatric hospital was founded in Belgrade, Serbia in 1881 by Dr. Laza Lazarevic. In 1909, the term "geriatrics" was proposed by Dr. Ignatz Leo Nasher from New York who is also recognized as "father" of geriatrics in the United States. American geriatric society (AGS) formed in 2007 under the aegis of the American medical association (ama) which established and endorsed eight (08) domains. The elderly are physiologically different from younger adults, with an expected, but variable decline of all organ systems.

Domains Of Geriatric Competencies:

1. Cognitive and behavioral disorders.
2. Medication management.
3. Self-care capacity.
4. Falls, balance & gait disorders.
5. Atypical presentation of disease.
6. Palliative care
7. Hospital care for elders.
8. Healthcare planning and promotion.

Assessing Functional Reserve:

Disease often presents very differently in the elderly, with a vague and non- specific history that may include falls & confusion. Several validated "barometers" currently exist to objectively determine functional reserve. These include the comprehensive geriatric assessment (CGA), the activities of daily living score (ADLS), or instrumental activities of daily living score (IADLS), exercise tolerance or gait speed, and frailty, assessed on a scale of 0-5.

Frailty Criteria

Objective assessment of Frality in the Elderly is Done Using the following Five Criteria:

1. Unintentional weight loss
2. Muscle weakness
3. Exhaustion
4. Low physical activity
5. Slowed walking speed
6. Each item is assigned a score of 0 if absent & 1 if present. a healthy individual would have a minimum score of 0, while a frail person may have the maximum score of 5. this scale will help in identifying the problem faced by the elderly.

Polypharmacy:

This refers to the concurrent use of several medications. it is a common problem in the elderly. It is defined by absolute number of medications taken (> 5) or by use of excessive or unnecessary prescriptions. More than half of the seniors take "supplements" in form of vitamins, minerals, or herbal preparations. Polypharmacy is associated with an increased risk of adverse drug reactions, drug interactions and patient noncompliance.

Common Diagnosis in Patients Over 65 Years

1. Dementia
2. Delirium
3. Falls
4. Hearing impairment
5. Sarcopenia (loss of muscle mass & increase of body fat).
6. Malnutrition
7. Frailty

8. Incontinence
9. Visual impairment
10. Aphasia especially Broca's aphasia.

Common ENT Disorders in the Elderly

Recognition of the scope of new demographic reality led to the birth of the American Society of Geriatric Otolaryngology (ASGO) in 2007 under the leadership of Dr. Jerome c. Goldstein.

The commonly identified E.N.T. disorders in the elderly are:

1) Hearing loss
2) Disorders of the external ear
3) Other ear disorders, mainly tinnitus
4) Non suppurative otitis media
5) Eustachian tube disorders
6) Vertiginous syndromes
7) Vestibular disorders / balance issues
8) Dysphonia
9) Dysphagia
10) Dementia
11) Rhinitis of old age (Geriatric rhinitis)
12) Chronic Sino-nasal Disease
13) Allergies
14) Sleep disorder
15) Facial plastic surgeries
16) Head- neck cancers

17) Effect of radiotherapy

18) Miscellaneous like Meniere ‘s disease, certain CNS disorders etc.

In this article we would like to only highlight the top eight E.N.T. disorders encountered on a daily and regular basis in the clinics namely : Hearing loss in the elderly & its solutions, Tinnitus & its management, Balance issues & its treatment, Rhinitis in the elderly, Dementia in the elderly associated with hearing loss, Dysphonia , Dysphagia and Swallowing.

Hearing Loss in the Geriatric Population

This is highly prevalent. Untreated HL is a public health concern. vulnerable populations are at an elevated risk for untreated hearing loss. presbycusis—age related H.L (primarily affects adults > 50 yrs.). manifests as a high frequency SNHL……. leads to permanent damage to the cochlear structures. Results from: noise exposure / age related changes in auditory system, i.e., vascular changes. Genetic predisposition.

Hearing AIDS (H.A.):

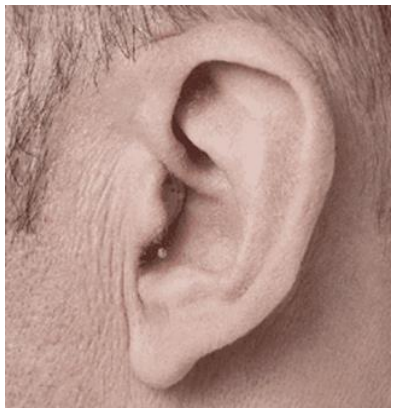
Finding / selecting the right type of H.A. depends on the degree of hearing loss, lifestyle preferences of the individual & cosmetic concerns. Customization is ideal, OTC purchases should be avoided; it should be H.A. trial followed by fitting.

There are two basic types of H.A. that come in different styles :-

1. In-the ear (ITE) H.A.
2. Behind the-ear (BTE) H.A

ITE H.A.

Referred to as invisible H.A. as they are worn in the canal. They are custom made according to the ear mold measurement taken. They are available in different skin tones.



BTE H.A.

This is the more popular option. Custom fit ear mold or dome style that doesn't block the canal opening. These are available in different colors to match the skin tones of the individual.

Common H.A. Styles:

A.) Invisible in the canal (IIC)

B.) Completely in the canal (CIC)

These are the most discrete & smallest H.A. available. A wearer places them very deeply in the ears, and they must be removed by tugging on a small pull-out string. Most expensive. These styles are typically fit for people with mild to moderate hearing loss. Due to their small size, they don't usually come with any manual controls like volume wheels or program buttons.

Advantages: Very discreet sound quality.

Disadvantages: Susceptible to ear wax & moisture /small batteries

Require more frequent replacement / small size limits connectivity to wireless devices like smartphones.

ITC H.A

ITC H.A. sits in the lower portion of the outer ear bowl, making them comfortable & easy to use. They are slightly larger than IIC & CIC styles, so they have a longer battery life and can cater to a wider range of hearing losses. Due to their larger size, they can have directional microphones for better understanding in noisy environment& manual controls like a volume wheel. advantages: discreet / longer battery life with more features. Disadvantages: susceptible to ear wax & moisture / feeling of more occlusion specially in persons with mild low- frequency hearing loss.

LOW PROFILE H.A

These range from half shell designs that fill half the bowl of the outer ear to full-shell designs that fill almost the entire outer ear bowl. Features like directional microphones / manual controls are present which have volume wheel & a push button for changing programs.

Advantages: Larger size easier to insert & remove / accommodates more features & user controls / likely to have connectivity to wireless devices like phones.

Disadvantages: Less discreet / more occlusion

BTE Style : RITE / RIC

Most popular type of H.A. speaker of the H.A. rests in the ear canal, but the microphone & processor sit in a tiny case behind the ear. They are connected by a thin wire. these have above average sound quality.

Advantages: easy to find options with rechargeable batteries / wireless connectivity to devices like phones / some even have ai / speaker can be replaced separately/ telecoil options are common. Disadvantages : Smaller rite sizes (also known as mini rites) can be problem for dexterity / speaker which is inside the ear is susceptible to moisture & ear wax damage. The microphone & sound processor behind the ear is visible in this type.

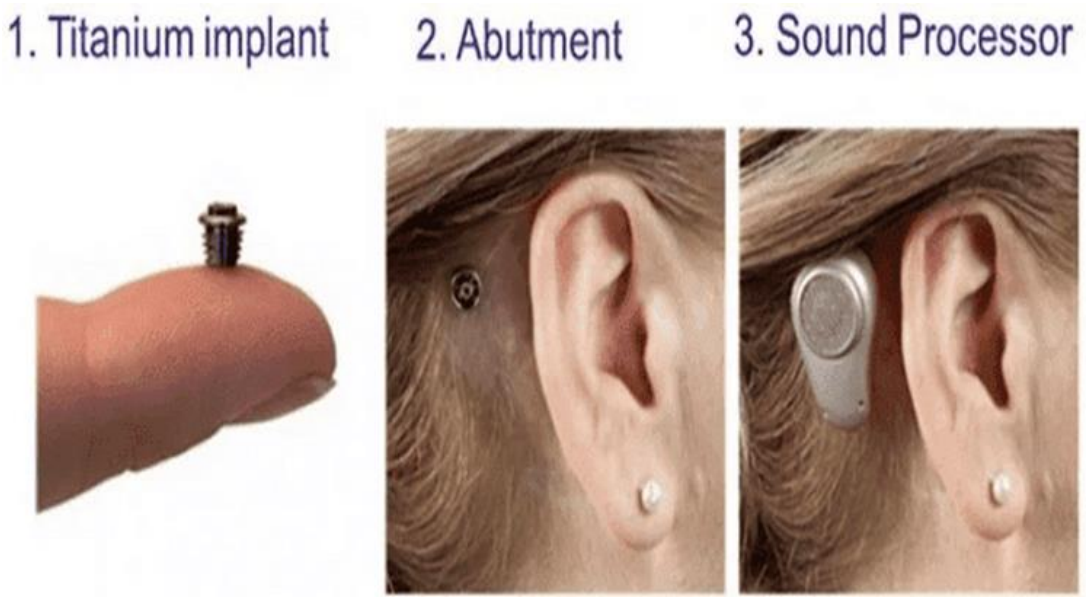
BTE WITH EAR MOULDS

These can fit any type of H.L., from mild to profound. This is commonly used for children because the BTE can be reprogrammed as needed and the ear mold can be replaced as the child grows.

Advantages: fits all degrees of H.L. / comes with wireless connectivity to devices / custom fit ear mold can be replaced separately / less susceptible to moisture damage.

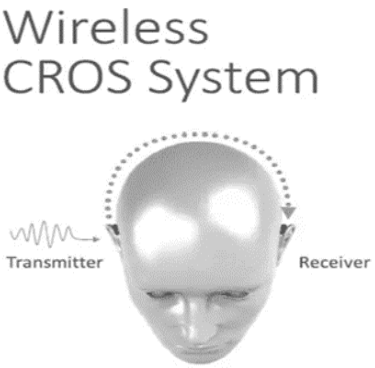
Disadvantages: Feeling of more occlusion / potential space limitations for eyeglass wearers and / or people with small ears / not as cosmetically hidden.

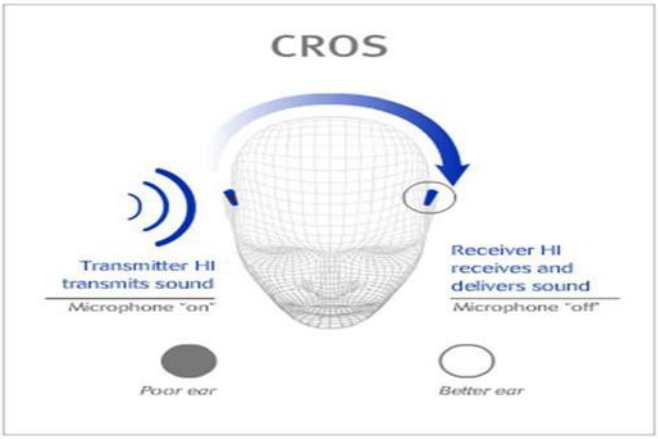
Bone Anchored H.A. (BAHA)



This is an implantable H.A. that consists of : (1)an implanted titanium screw placed behind the ear, (2) an abutment attached to the screw & visible on the surface of the skin, and (3) an external sound processor. These bypass the outer ear & middle ear entirely and create a new pathway for hearing. common problem: skin overgrowth over the stud. expensive. Mainly used in patients with cond. H.L. , associated in those with aural atresia and it is also used in mixed & SNHL.

CROS H.A.





Contralateral routing of signals the deaf / bad ear is stimulated with sound & this sound is transmitted to the better ear. This optimizes speech understanding & provides aided benefit or tinnitus masking to the deaf ear. The CROS transmitter looks just like a typical H.A., but it's not. it only has a microphone in it to capture sounds, and then transmits those sounds to the other aid.

Tinnitus

Dennis Mcfadden (1982) : definition--the conscious expression of a sound that originates in an involuntary manner in the head of its owner, or may appear to him to do so. tinnitus can be perceived as a formless sound, either tonal or complex in nature, that resembles environmental sounds for example ringing , hissing, buzzing, escaping steam, florescent light, running engine, humming etc.

Jastreboff (1995) : the perception of sound that results exclusively from activity within the central nervous system without any corresponding mechanical, vibratory activity within the cochlea, and not related to external stimulation of any kind. It is believed that this kind of perception occurs as a result of neuronal activity at a sub cortical level of the auditory pathway. The cortex plays a predominant role. Tinnitus is considered a disorder of sound tolerance and is rarely a harbinger of serious pathology, but careful clinical assessment is required.

Management of Tinnitus

Jastreboff (1990) : Published the 'neurophysiological model' which demonstrated the link between the auditory system & other somatosensory pathways. During the recent past, it has been demonstrated that tinnitus can be influenced by stimuli from outside the auditory system - for example: many people with tinnitus can modulate their symptom by touching the face, clenching their teeth, changing their gaze etc. This model was subsequently used to produce a clinical application that became known as "tinnitus retraining therapy" (TRT). This form is currently employed to form the basis of a novel form of tinnitus therapy. A thorough history & examination is warranted before proceeding with the investigations. Several specific / specialist investigations may be required in certain specific forms of tinnitus.

Non-synchronous pulsatile tinnitus:

Tinnitus manifesting itself as a train of rhythmical clicks or a buzzing sound or fluttering noise or sensation that is not synchronous with the pulse. Example: myoclonic activities related to middle ear muscles & head-neck muscles (palatal myoclonus).

Balance In the Elderly

Presbystatis : progressive loss of balance function accompanies the normal aging process. the inevitable slowing of reflexes due to reduced sensation, neural pathway slowing, and reduced motor activity leads to unsteady gait. Falls are responsible for about two-thirds of injuries in the elderly. Post labyrinthitis vestibulopathy is frequently seen in the elderly. Vestibular rehabilitation is the key.

Vestibular Rehabilitation Therapy

Specific form of physical therapy designed to promote habituation & compensation for deficits related to a wide variety of balance disorders.

1. Effective in improving the functional deficits & subjective symptoms resulting from unilateral and bilateral peripheral vestibular hypofunction as well as from central balance disorders.
2. Very useful in at risk elderly patients as a preventing role in reducing falls.
3. All exercises should be done first with eyes open & then with eyes closed.
4. 5-10 mins. each session.
5. Approx. 1 hr. everyday. / repeat each exercise 20 times.
6. May get dizziness / nausea. not to overdo / no gym.
7. VRT needs to be customized to the individual's impairment & exercises.
8. Needs to be tailored according to each pt.'s rate of progression.

Dysphonia

Dysphonic seniors suffer from social isolation , anxiety & depression. common causes are benign vocal fold lesions, chronic & acute inflammatory laryngitis, muscle tension disorders, neurological disorders, vocal malignancies & vocal fold atrophy. The aging voice is associated with change in vocal quality that may be perceived in terms of reduced volume, increased breathiness, change in pitch and reduced vocal range. Examination with videostrobolaryngoscopy will reveal the changes. Microscopic changes shows disorganization of collagen fibers.

Management of Dysphonia

Geriatric patients accounts for approximately 25% in this group. Management options are reassurance / voice therapy/ injection laryngoplasty & thyroplasty. About 60% of who are selected for voice therapy had significance improvement in voice – related quality – of – life (VRQOL). Voice changes associated with vocal fold atrophy can be effectively treated with the simple interventions of voice therapy, injection laryngoplasty, or combination of both.

Geriatric Rhinitis

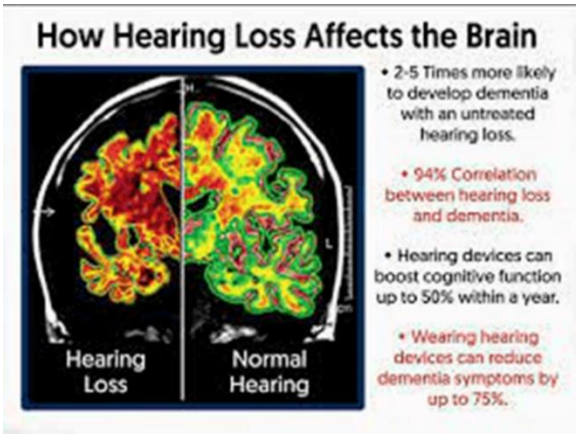
This is a common but often neglected or overlooked condition because it is not life- threatening. Patients have nasal obstruction / congestion , rhinorrhea / PND, itchy nose, sneezing & or nasal dryness or crusting. there is age related changes in the nasal mucosa due to chronic inflammation (caused due to pollutants / allergens / smoke) & certain hormonal changes. Nasal dryness & crusting along with frequent nose bleeds occur. anosmia along with excess production of mucus. conservative treatment is required in these cases.

Dysphagia

Presbyphagia : Physiologic modifications in swallowing with advancing age. They are often subtle and are unnoticed. transition from presbyopia to dysphagia occurs due to changes/ reduction in "functional reserves" and the added presence of disease.at least 15% of elderly suffer from dysphagia and this figure doubles when they are admitted to hospitals. The changes are multifactorial which involves generalized muscles loss , as well as reduced activity and exercise. FEES (functional endoscopic evaluation of swallowing) and / or a modified barium swallow is used to assess dysphagia.

Dementia

Dementia is directly related to the nature of prevailing type of hearing loss. So addressing the issue of hearing loss of the individual by means of Hearing Aid fitting would substantially reduce this problem. It has been proved that those who received H.A.'s have an almost 50% reduction in the rate of cognitive decline compared with people in the health-education group. The leading scientists believe that hearing loss may actually be a cause of dementia.



Swallowing

Swallowing disorders are frequently encountered in the senior citizens group. Certain specific exercises can do wonders for these patients with such disorders.

Exercises:

1. Lingual exercises : strengthens the lip& tongue – increase swallow pressure & decrease aspirations.
2. Shaker head –lift : strengthen suprahyoid muscles & improves swallowing.
3. Expiratory muscle strength training (EMST) : strengthens submental & muscles of expiration – reduces aspiration.
4. McNEILL dysphagia therapy program (MDTP)– by swallowing exercise its strength, movement & timing is improved.
5. For dysphagia with intractable aspiration – surgery may be required.

Communication Strategies in the Elderly

This goes a long way in helping the elders achieve their goals with ease.

Certain essential habits which the elderly must develop and seek training whenever necessary :

1. Always face the person to whom one is talking.
2. Advised to speak normally; not to yell or scream.
3. Not to speak too quickly.
4. The individual should be in a well lit room / environment.
5. Ambient noise should be reduced.
6. Alternative ways of communication should be explored.
7. Confirm with clarification.

Conclusions

Geriatric otorhinolaryngology as a tool to enhance the physical quality of life of the elderly; raise the Physical Quality of Life Index (PQLI). Physician should be aware & understand the E.N.T. disorders of the elderly which impact their life directly. The goals of the elderly are different from that of the adults , so that they can maximize their functional and social activities in the later years. Prevent long term morbidity and social isolation. Role of exercise is highlighted along with appropriate interventions & counselling in enhancing the quality of life in the elderly.

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