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Literature Review: Characteristics Of Outer Ear Diseases

Nurul Hidayah[1], Hermiaty Nassaruddin[2], Samsi Mesi[3]
[1]Medical Profession, Faculty of Medicine, Indonesian Muslim University, [2]Department of Public Health Sciences, Faculty of Medicine, [3]Department of Ear Nose Throat Sciences, Faculty of Medicine Indonesian Muslim University

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ABSTRACT
Introduction: The ear is a human organ that functions as a hearing tool. The ear consists of the outer, middle and inner parts. The structure of the outer ear consists of the earlobe (auricle) and ear canal. The external ear (EE) is anatomically and functionally divided into the cartilaginous auricle, or pinna, and the external auditory canal (EAC). The outer ear can be affected by a variety of conditions, including congenital abnormalities, trauma, inflammatory conditions (infectious or other), blood vessel abnormalities, and neoplasms (benign or malignant). Objective: This literature aims to examine the characteristics of external ear diseases. Method: This research uses a literature review method with the Preferred Reporting Items for protocol Systematic Reviews & Meta-Analyses (PRISMA). Scientific articles or journals are downloaded from PubMed, Garuda Portal, and Google Scholar with SINTA IV and V standards in the time period 20 19-2023. The keywords in this article search were characteristics, external ear disease, 853 articles were obtained in the search results. All articles were selected based on the inclusion criteria, resulting in 9 research articles that would be reviewed. Results: In the literature this was found namely 9 research articles that report the characteristics of external ear diseases consisting of congenital abnormalities, namely preauricular fistula, microtia, acquired abnormalities, namely hematoma, perichondritis, pseudocyst, ear canal abnormalities, namely cerumen, otitis externa and otomycosis. Conclusion: Characteristics of external ear diseases consist of congenital abnormalities, namely preauricular fistula, microtia, acquired abnormalities, namely hematoma, perichondritis, pseudocyst, ear canal abnormalities, namely cerumen, otitis externa and otomycosis.

Corresponding Author:
Nurul Hidayah
Medical Profession, Faculty of Medicine, Indonesian Muslim University
nurllhdyyh@gmail.com

INTRODUCTION

The ear is a human organ that functions as a hearing tool. The ear consists of the outer, middle and inner parts. The structure of the outer ear consists of the earlobe (auricle) and ear canal (Nareswari, A et al, 2023). The external ear (EE) is anatomically and functionally divided into the cartilaginous auricle, or pinna, and the external auditory canal (EAC). The auricle captures, concentrates and amplifies sound waves, directing them to the external auditory canal. In turn, the function of the EAC is to transmit sound waves, in the form of vibrations, to the tympanic membrane (Tsuno, N et al, 2022).

The outer ear can be affected by a variety of conditions, including congenital

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abnormalities, trauma, inflammatory conditions (infectious or other), blood vessel abnormalities, and neoplasms (benign or malignant). Many of these lesions can be diagnosed clinically; however, diverse pathological conditions in this region can have similar clinical features. Therefore, imaging may be necessary to evaluate the extent of the lesion, to evaluate the feasibility of resection, to determine the differential diagnosis, to evaluate potential complications, and for surgical planning (Tsuno, N et al, 2022).

Ear and hearing disorders can result in several disorders, such as ear infections, balance problems and permanent hearing loss. Hearing loss can occur due to genetic causes, complications at birth, certain infectious diseases, chronic ear infections, use of certain medications, exposure to excessive noise, and increasing age (Martanegara IF et al, 2020).

External ear disorders are divided into three, namely auricular disorders, ear canal disorders and congenital disorders. Auricular abnormalities include hematoma, pseudocyst and perichondritis. Hematoma usually occurs in teenagers or adults who have activities involving violence, it can only be found in the elderly and children. The three types of auricular disorders are mostly caused by trauma in the form of insect bites to cause other infections (Pratiwi UM, et al 2018).

Abnormalities in the ear canal can include cerumen, foreign bodies, external otitis, otomycosis, herpes zoster oticus, keratosis obturans and other chronic infections. Almost all middle ear disorders occur frequently. Apart from foreign objects, what is often found in children which can affect hearing loss and thus disrupt the learning process at school is otitis externa which is an acute inflammation of the ear canal caused by infection by bacteria, fungi and viruses which also often occurs in the air. damp and this case most often occurs in children (Pratiwi UM, et al 2018).

Based on the description above , it appears that the prevalence of external ear disease is still high in Indonesia due to a lack of public education about this disease so that it is treated too late, resulting in a poor prognosis. Many studies have shown the incidence of external ear infections. Therefore, it is necessary literature studies are carried out so that it can be created a conclusion from these various studies. This is what makes researchers interested in conducting this *literature review* . This literature *review* aims to look at the characteristics of external ear diseases.

METHOD

This research uses a *literature review method* . Literature obtained by means reviewing scientific articles or journals downloaded from PubMed, Garuda Portal and Google Scholars with SINTA IV and V standards are listed in Figure 1. Articles screened based on provisions include articles published in 2019- 2023, published articles can be downloaded online *full text* and open access, article with qualitative, quantitative, *mix method* and *literature review* regarding the characteristics of external ear diseases. Keywords in article searches include characteristics, external ear.

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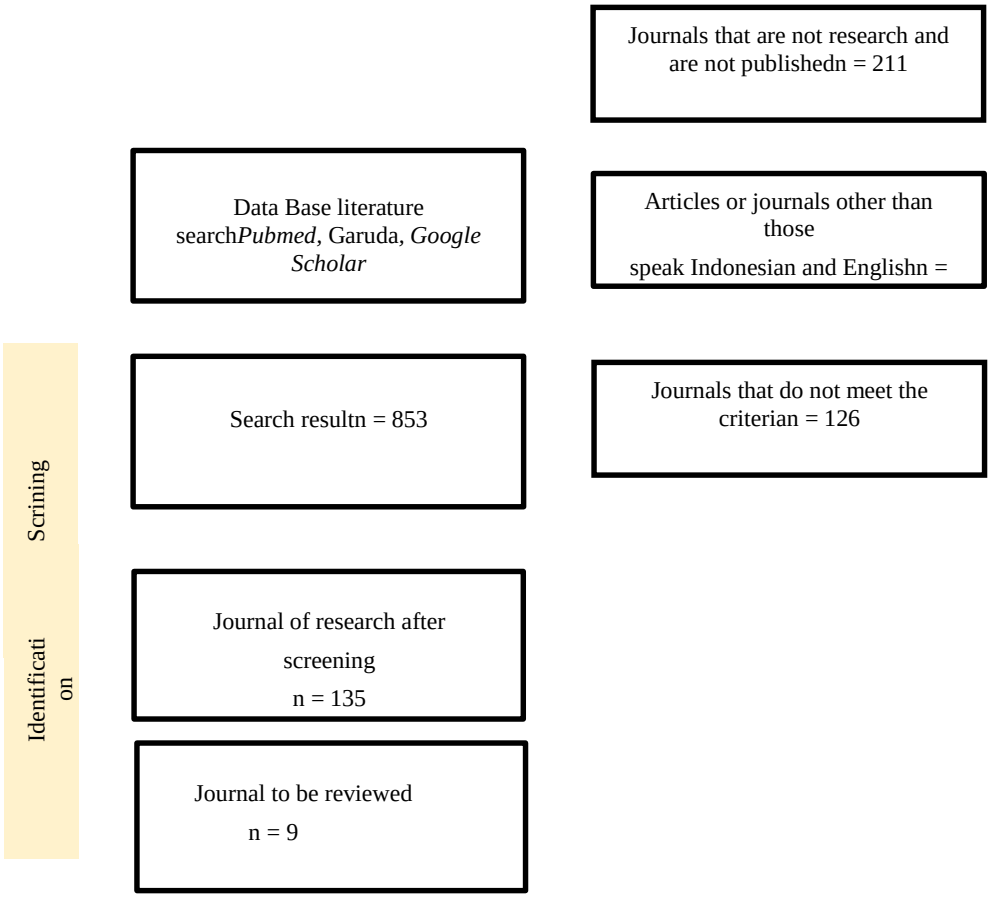

Picture. PRISMA Flow Research Article Characteristics of Outer Ear Diseases

JOURNAL ANALYSIS RESULTS

No	Writer	Research purposes	Location	Amount Sample	Research design	Results	Determinant Factors
1.	Keon-Ho Kim et al (2019)	evaluate the clinical characteristics of external auditory canal foreign bodies in children and adolescents,	U emergency department or ENT pediatric outpatient department	284 patient medical records	Retrospective	Of the 284 patients, the majority gender was male. The peak incidence is recorded at ages 3 to 6 years and 17 to 18 years. The most	Foreign bodies, external auditory canal, children, adolescents

						frequently observed foreign objects were insects, followed by air rifle bullets, cotton balls, marbles, and earrings. the patient experienced complications of abrasion or laceration of the auditory canal and perforation of the tympanic membrane.	
2.	NP Mirah Ayunda Kartika Wulandari, I Made Sudipta (2020)	know the description of the OE incident at Sanglah General Hospital.	at Sanglah General Hospital	84 cases	*Descriptive cross-sectional*	OE most often occurs in the age group 15-49 years. The dominant gender is female. The most common clinical symptoms of OE sufferers are ear	Otitis externa, causes, age, clinical symptoms.

						pain, followed by watery or fluid discharge from the ear, itching, ringing, and hearing loss. The most common cause of OE is trauma, followed by fungi or bacteria and the least is caused by systemic disease.	
3.	Samantha L. aensch1,, Antonia L. Watson1, Ranga Sirigiri, Catherine S. Birman 2023)	present a 10-year retrospective review of the experience of perichondritis and pinna abscess in a large rural area	Dubbo Base Hospital Emergency Unit	30	*Retrospective*	There were 30 cases of perichondritis identified, with an average age of 35.7 years and 60% were male. Cartilage piercing is the most common cause, followed by otitis externa. All cases of pinna abscess associated	Pinna abscess; perichondritis; suppurative perichondritis; ear piercing

						with piercing grew Pseudomonas aeruginosa (P. aeruginosa) in culture.	
4.	Helmi Aditya Wijaya, Anton Budhi Darmawan, Rani Afifah Nur Hestiyani, Nia Krisniawati, Lantip Rujito (2023)	To determine the prevalence of Candida albicans in Otomycosis at Margono Soekarjo Regional Hospital	ENT Polyclinic at Margono Soekarjo Regional Hospital	42	*Observational descriptive*	It was found that the male gender was 50:50 compared to female. The age group that suffers most from otomycosis is the 26-35 year age group. The prevalence of Candida albicans in Otomycosis is 2.17% or 1 out of 46 patient samples with a clinical diagnosis of otomycosis at Margono Soekarjo Regional Hospital is	Candida albicans, Prevalence, Otomycosis

						caused by the Candida albicans fungus.	
5.	Srikanth Myla, K. Varsha (2021)	Know the clinical presentation of keratosis obturans	Mahabubnagar Medical College and Hospital, India.	50	*Prospective study*	The incidence of keratosis obturans showed 4.5/1000 cases during the study period. generally seen in younger people, more women than men. The most common complaint in our patients was pain followed by hearing loss. keratin debris was seen in all cases in the study and granulation was seen in 46 cases and EAC widening was seen in 45 cases.	Keratosis obturans, keratin debris

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6.	WA Adegbiji, BSAlabi, OAOlajuyin 1, CCNwawolo	Determine distribution and the clinical presentation of preauricular sinus abscess	Ear, Nose and Throat Clinic of the University Teaching Hospital, Ado Ekiti, capital of Ekiti State, Nigeria	184	*Prospective study*	There were 184 subjects who experienced preauricular sinus. Preauricular sinus abscess was found in 21 subjects. The prevalence of preauricular sinus is 4.4% while the prevalence of preauricular sinus abscess is 0.5%. Women accounted for 57.1% and men 42.9. The majority of preauricular sinus abscesses are symptomatic during childhood, including those aged less than 10 years. Unilateral preauricular sinus	Preauricular sinus; preauricular sinus abscess; congenital

						abscesses were found to be more unilateral than bilateral and 13 cases occurred in the right ear while 7 cases occurred in the left ear. The most common complaints that occur are preauricular swelling , recurrent ear pain, recurrent discharge from the ear, and itching .	
7.	Renanda Sekar Tadika, Rosa Falerina, Agus Santoso Budi, Rizka Fathoni Perdana (2023).	Knowing the characteristics of microtia patients at Airlangga University Hospital for the 2018-2021 period	ENT-KL Polyclinic, Airlangga University Hospital	107	*Descriptive*	The results showed that the gender of most patients was male (69.2%). The majority of patients suffered from unilateral microtia (55.1%), grade III (83.3%)	anotia, risk factors, hearing loss, microtia

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						with conductio n deafness (95.71%). Meanwhil e, most of the patient's mothers had a history of taking teratogeni c drugs (42.3%). Cases of microtia occur more often in men and occur in the right ear.	
8.	Asti Widuri (2020).	To determine whether chewing habits influence the degree of cerumen obstruction in patients with affected cerumen	Wates Kulon Progo Regional Hospital Polyclinic, Yogyakarta, Indonesia.	80	*Cross Sectional*	Responde nts were 80 ear blockage patients, the largest age group was 17 to 38 years (58.8%) male, 47 (58.8% and 33 (41.2%) female. Significant risk factors were chewing habits and use of cotton	chewing habits; risk factors; cerumen blockage

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		buds. Factors that influence the degree Cerumen blockage is the habit of chewing and using cotton buds.

Discussion

Disorders are an important problem in Southeast Asian countries, including Indonesia. Hearing loss and deafness are still problems facing society. External ear diseases such as otitis externa are the most common external ear diseases. The external auditory canal (also called ear canal or external ear canal) is an S-shaped cartilaginous structure that traverses the canal medially to the eardrum. It extends from the earlobe to the tympanic membrane. Congenital, neoplastic and traumatic inflammatory lesions can affect the external auditory canal (EAC) (Pratiwi UM, et al. 2018). The external auditory canal (EAC) is the most common location for foreign body encounters, especially in children, accounting for 44% of cases, with nasal, pharyngeal, esophageal, and laryngobronchial locations representing 25%, 23%, 5%, and 5%, respectively. 2% of cases each. The most common complications of foreign bodies in the EAC and attempts to remove them include excoriation and laceration of the EAC skin. Therefore, it is important to document pre- and post-removal examinations, noting any injuries prior to removal. EAC skin usually heals quickly if kept clean and dry. Antibiotic ear drops may also be considered. Rarer and more serious complications of foreign body removal include perforation of the tympanic membrane or damage to the ossicular chain. (Seth Lotterman et al 2022). Otitis externa is an infectious disease of the external ear canal (external acoustic meatus) caused by microorganisms due to damage to the normal external acoustic meatus skin cerumen coat which functions to maintain humidity and temperature of the external acoustic meatus. Otitis externa is usually caused by environmental conditions and the patient's habits. Several predisposing factors for this disease are living in tropical areas, cleaning excess cerumen and activities in water (Nabila A, et al. 2023). Perichondritis of the pinna is inflammation of the perichondrium layer that surrounds the ear cartilage. Trauma that penetrates the ear, such as transcartilaginous ear piercing, is the most common cause of perichondritis. Perichondritis of the pinna is not a common condition. The incident is unknown; however, it has been reported that the number of cases doubled between 1990 and 1998 in the UK. This increase is caused by an increase in ear piercing among teenagers (Khan N, et al 2024). Otomycosis is a common superficial fungal infection that affects the external auditory ear (EAC). Infection can present as acute, subacute, or chronic, and is usually unilateral, with the bilateral form more common in immunocompromised patients.

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This infection occurs globally, with a prevalence ranging from 9% to 30% in patients with signs and symptoms of infection EAC. The most common causative agents of otomycosis are fungi of the genus Aspergillus and yeast of the genus Candida, in particular the Aspergillus (A.) niger and Candida (C.) albicans complex. Factors that contribute to the development of otomycosis are categorized into environmental factors and host origin. Warm and humid climates in tropical and subtropical areas are the most significant external risk factors. Risk factors of host origin include specific anatomical features of the EAC, excessive cerumen secretion, local trauma to the ear canal, use of hearing aids with occlusive molding, and compromised health status. Otomycosis can also result from bacterial infection of EAC previously treated with topical antibacterial medications. In addition, the disease can occur as a result of autoinfection (autoinfection) of the ducts in patients with untreated dermatomycosis. Keratosis obturans is an accumulation of large buildups of desquamated keratin in the pearly white external acoustic meatus, forming lumps, while primary ear canal cholesteatoma is an invasion of squamous tissue from the ear into the area of bone erosion. The etiology and pathogenesis of keratosis obturans is not clearly understood. The causes are related to eczema, seborrheic dermatitis or furunculosis as well as bronchiectasis which causes reflex sympathetic stimulation of the cerumen glands and subsequent formation of the epidermal plug. The frequency of primary auditory canal cholesteatoma has been estimated as one in 1000 new otologic cases and for every case of primary auditory canal cholesteatoma there are four or five cases of keratosis obturans. Both of these conditions are very rare. Typically, patients with keratosis obturans present with acute conductive deafness, and severe pain due to accumulation of keratin in the ear, whereas cholesteatoma of the external ear canal is characterized by chronic secondary dull pain that is unilateral as invasion of squamous tissue into the localized area of ear canal periostitis. (Srikanth Myla, et al 2021). Preauricular sinus or what is often called preauricular fistula is a benign congenital abnormality in the preauricular soft tissue and is located at the anterior margin of the helix. Preauricular sinus generally occurs unilaterally, if it occurs bilaterally it is usually inherited by incomplete autosomal dominant genetics. This disorder arises due to failure in the process of merging the first and second tubercles of the branchial arch. Data regarding the incidence of preauricular sinuses is quite limited. However, it is known that the incidence of preauricular sinuses in several countries such as Hungary, Taiwan and England is around 0.47% - 2.5%. Most preauricular sinuses are usually asymptomatic and do not require any treatment, but if infection occurs then appropriate treatment needs to be given immediately (Veda LP, et al. 2023). Microtia is a deformity of the outer ear which is characterized by small ear lobes or even no ear lobes at all (anotia). Based on the incidence rate, only 1 baby out of 7000-8000 births experiences microtia. The classification of microtia is divided into grades I-IV. Grade I if the ears are normal only smaller in size. Grade II if ear structures such as the scapula, lobules, helix or concha are not formed. Grade III if the ear is shaped like a bean without structure. Grade IV if no ear structure is formed at all or anotia (Tadika RS, et al 2023). Cerumen (ear wax) is the result of normal secretions from the sebaceous glands of the outer third of the external auditory canal. Consists of glycopeptides, lipids, hyalurionic acid, sialic acid, lysosomal enzymes and immunoglobulins. Cerumen provides protection by maintaining acidity with a pH of 5.2-7.0 in the external auditory canal. It was also found that

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this cerumen functions as an antibacterial and anti-fungal. Cerumen prop or what is also known as cerumen impaction is a problem found in various countries. The prevalence of cerumen impaction starts from 8.9% to 20% and is one of the main reasons for consultation at primary health facilities and high comorbidity rates in ENT patients (Hakim, GR et al 2023).

CONCLUSION

This literature review , it can be concluded that the characteristics of external ear diseases consist of congenital abnormalities, namely preauricular fistula, microtia, acquired abnormalities, namely hematoma, perichondritis, pseudocyst, ear canal abnormalities, namely cerumen, otitis externa and otomycosis. The author's suggestion is to make efforts to actively screen people who are suspected of having external ear disease in the field and to provide fast and appropriate treatment to sufferers who have been diagnosed with congenital, neoplastic and traumatic external ear disease.

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