Scientific Research Publishing

International Journal of Otolaryngology and Head & Neck Surgery, 2024, 13, 213-224
https://www.scirp.org/journal/ijohns
ISSN Online: 2168-5460
ISSN Print: 2168-5452

External Otitis: Epidemiological, Clinical, Etiological, and Therapeutic Aspects at the Oto-Rhino-Laryngology Department of Mamou Regional Hospital

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How to cite this paper: Diallo, M.M.R., Kourouma, S., Diallo, O.A., Diallo, I., Haba, F., Cisse, A., Keita, R.M.K., Keita, A. and Diallo, A.O. (2024) External Otitis: Epidemiological, Clinical, Etiological, and Therapeutic Aspects at the Oto-Rhino-Laryngology Department of Mamou Regional Hospital. *International Journal of Otolaryngology and Head & Neck Surgery*, **13**, 213-224.
https://doi.org/10.4236/ijohns.2024.133020

Received: March 16, 2024
Accepted: May 28, 2024
Published: May 31, 2024

Abstract

Introduction: External otitis (OE) is an acute or chronic inflammation or infection of the external ear resulting from an imbalance in the external auditory canal secondary to microtrauma, maceration, eczema, or a foreign body in the external auditory canal. **Objective:** To study cases of external otitis at the Mamou Regional Hospital. **Materials and Methods:** This was a prospective descriptive study conducted over a period of six (6) months from July 1st to December 31st, 2016. It included all patients admitted to the ENT department of the Mamou Regional Hospital. **Results:** During the study period, 712 patients were admitted to the department for various pathologies, of which 103 met our selection criteria, representing a frequency of 14.46%. The mean age of the patients was 33.74 years with a range of 1 to 90 years. Males predominated in the sample, accounting for 59.22%. The vast majority of patients resided in urban areas, constituting 61.17% of the sample. In our study, all patients consulted for otalgia (100%), and over half (53.39%) for hypoacusis. We formally identified rhinitis in 66.66% of cases, while diabetes was found in only 4 patients (11.11%). Otomycosis was the most commonly iden-

tified condition (53.39%), followed by furuncles (33.98%). Ear drops containing antibiotics were administered to all patients, although 66.60% received antibiotic therapy. **Conclusion:** External otitis is a relatively common condition, particularly among children and the elderly. Diagnosis can be made based on pain upon traction of the pinna and pressure on the tragus.

Keywords

External Otitis, ENT, Mamou Regional Hospital

1. Introduction

External otitis (OE) is a diffuse inflammation of the skin membrane and soft tissues covering the external acoustic meatus [1], potentially involving the tympanic membrane and the pinna [2]. The most common causative agent remains *Pseudomonas aeruginosa*, but other bacterial species, including methicillin-resistant Staphylococcus aureus, as well as fungal species, have been reported [3]. Various factors may predispose patients to the development of external otitis, including humidity, trauma to the narrow external auditory meatus, obstruction of the auditory meatus, stress, and immunosuppression [4]. Discharge, hearing loss, skin swelling, ear discomfort, and itching are the most common symptoms of external otitis [5]. Diagnosis is clinical and relies on direct otoscope examination, which varies depending on the severity of the condition, with lesions ranging from simple skin hyperemia to nearly complete stenosis of a canal, leading to serous secretions [6]. Identification of the causative organism is essential for appropriate treatment [7]. Generally, the use of antibiotics and analgesics, along with ear drops, is common in the treatment of OE. Several clinical forms may present depending on the infectious agent and individual predisposition, including diffuse external otitis, external auditory canal furuncle, otomycosis, phlyctenular external otitis, and necrotizing external otitis [8]. It is the most common ENT disorder and affects both children and adults [9]. The absence of a comprehensive study on external otitis in the Mamou region and the multiplicity of etiologies were the reasons for undertaking this study.

2. Methodology

2.1. Study Setting

The ENT/CCF department of the Mamou Regional Hospital served as the setting for this study.

2.2. Type and Duration of Study

This was a prospective descriptive study conducted over a period of six (6) months from July 1st to December 31st, 2016.

2.3. Target Population

The study included all patients who consulted the department during the study period.

2.4. Study Population

It comprised all patients seen in consultation for external otitis during the study period.

2.5. Selection Criteria

2.5.1. Inclusion Criteria

We included all patients seen in consultation for external otitis who were managed and agreed to answer the questionnaire during the study period.

2.5.2. Non-Inclusion Criteria

Patients seen in consultation for other pathologies and those with external otitis who refused to participate in our questionnaire during the study period were not included in our study.

2.5.3. Recruitment Method

We conducted a comprehensive recruitment of all patients meeting our selection criteria.

2.5.4. Study Variables

Our study variables were qualitative and quantitative, categorized into epidemiological, sociodemographic, clinical, and therapeutic data.

2.5.5. Data Collection and Analysis

Our data were collected using a data collection form and then transcribed onto the KoBoToolbox server, where they were recorded in a database and downloaded to Excel for analysis using Epi-info 7.2.2.6 software. Data entry, presentation, and processing were performed using Word, Excel, and PowerPoint from the Office 2013 Suite. For bibliographic management, we used Zotero software with Vancouver as the reference system.

2.5.6. Ethical Aspects

All data were obtained with the free and informed consent of the participants. Confidentiality was a principle adhered to throughout.

2.5.7. Study Limitations and Constraints

- Non-compliance with appointments by some patients;
- Non-performance of bacteriological examination due to insufficient technical capacity;
- Low socioeconomic status of patients.

3. Results

During the study period, a total of 712 patients were admitted to the department

with various pathologies. Among them, 103 patients met the selection criteria, indicating a hospital frequency of 14.46% for external otitis (Figure 1).

The average age of the patients was 33.74 years, with ages ranging from 1 to 90 years. The age group most affected was 16 to 31 years, representing 38.83% of the cases (Table 1).

Male patients predominated in the series, accounting for 59.22% of the cases (Figure 2). It was observed that the vast majority of patients resided in urban areas, comprising 61.17% of the total (Figure 3).

Regarding the socio-professional status of the respondents, the majority were students, accounting for 32.03%, followed by professionals at 21.35% (Table 2).

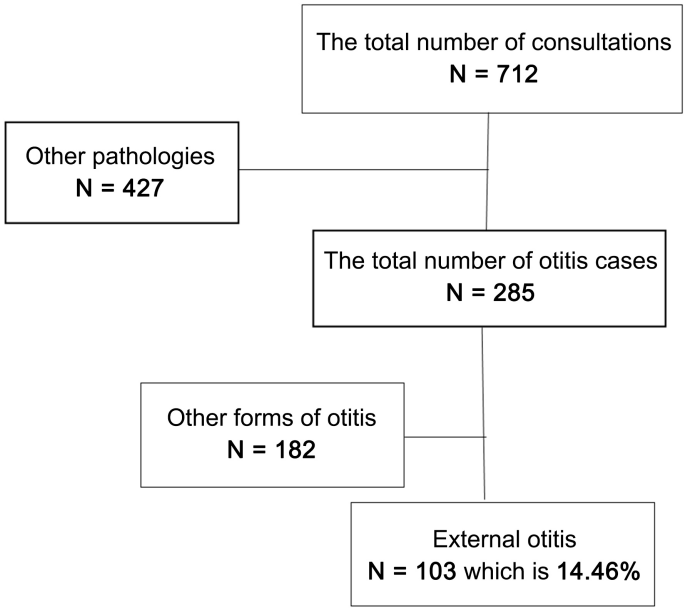

Figure 1. Flow diagram of patients during the study period.

Table 1. Distribution of the 103 patients aged 1 to 90 years diagnosed with external otitis according to age group at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Mamou Regional Hospital from July 1st to December 31st, 2016.

Age group	Number of cases	Percentage
[1 - 16[	**21**	**20.39**
[16 - 31[	**40**	**38.83**
[31 - 46[	8	7.77
[46 - 61[	16	15.53
[61 - 76[	16	15.53
[76 - 90[	2	1.94
Total	**103**	**100**

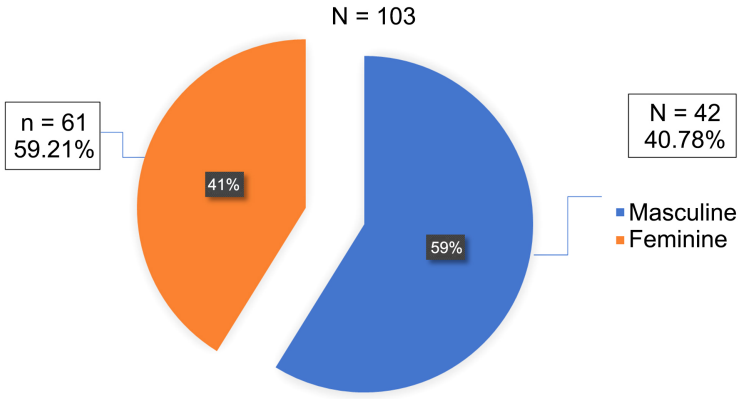

Figure 2. Distribution of the 103 patients aged 1 to 90 years diagnosed with external otitis according to gender at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Mamou Regional Hospital from July 1st to December 31st, 2016.

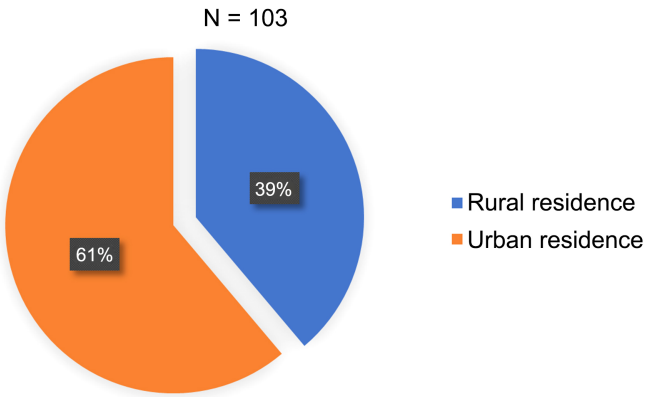

Figure 3. Distribution of the 103 patients aged 1 to 90 years diagnosed with external otitis according to their origin at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Mamou Regional Hospital from July 1st to December 31st, 2016.

Table 2. Distribution of the 103 patients aged 1 to 90 years diagnosed with external otitis according to socio-professional category at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Mamou Regional Hospital from July 1st to December 31st, 2016.

Socio-professional category	Number of cases	Percentage
Students	**33**	**32.03**
Self-employed/professional	**22**	**21.35**
Unemployed	ss20	19.41
Housewives	15	14.56
Civil servants	9	8.73
Workers	4	3.88
Total	**103**	**100**

In our series, all patients presented with otalgia (100%), with over half (53.39%) also reporting hyperacusis, followed by otorrhea in 31.06% of cases (Table 3). More than half of the respondents (50.48%) sought medical attention within the first 24 hours after the onset of symptoms, while 31.06% sought care one to several weeks later (Figure 4).

Otoscopy findings in our study revealed that pain upon traction of the pinna was the most common finding (100%), followed by a narrowing of the external auditory meatus (77.66%) (Table 4). The predominant etiology of external otitis in our series was associated with the improper use of cotton swabs, accounting for 55.33% of cases (Table 5). Three forms of external otitis were identified in our series: otomycosis (53.39%), external auditory meatus furuncle (33.98%),

Table 3. Distribution of the 103 patients aged 1 to 90 years diagnosed with external otitis according to the reason for consultation at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Mamou Regional Hospital from July 1st to December 31st, 2016.

Reason for consultation	Number of cases	Percentage
Earache	100	100
Hypoacusis	**55**	**53.39**
Otorrhea	32	31.06
Fever	20	19.41
Tinnitus	20	19.41
Otorrhagia	5	4.85

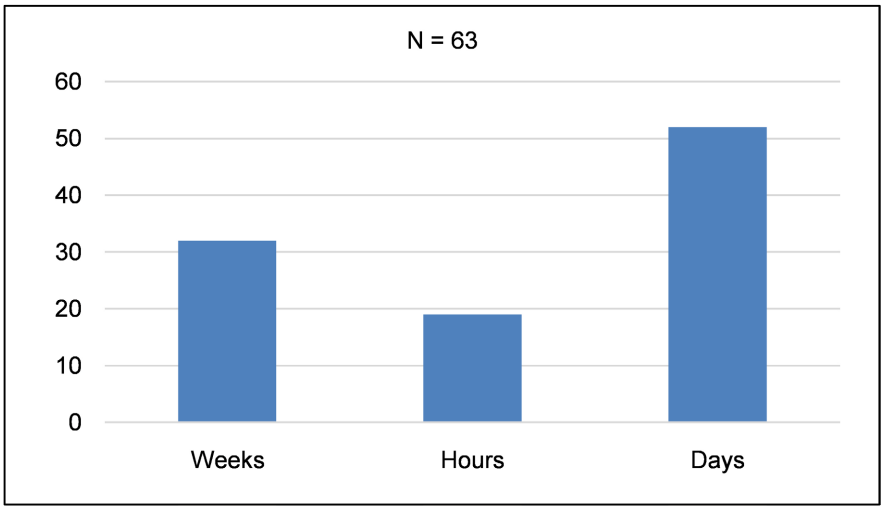

Figure 4. Distribution of the 103 patients aged 1 to 90 years diagnosed with external otitis according to the time of consultation at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Regional Hospital of Mamou from July 1st to December 31st, 2016.

Table 4. Distribution of the 103 patients aged 1 to 90 years diagnosed with external otitis according to the results of otoscopy at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Regional Hospital of Mamou from July 1st to December 31st, 2016.

Otoscopic findings	Number of cases	Percentage
Pain upon traction of the pinna	**103**	**100**
Narrowing of the external auditory meatus	80	77.66
Earwax plug	24	23.30
Otorrhea	19	18.44
Foreign bodies in the external auditory meatus	4	3.88

Table 5. Distribution of the 103 patients aged 1 to 90 years diagnosed with external otitis according to etiology at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Regional Hospital of Mamou from July 1st to December 31st, 2016.

Etiology	Number of cases	Percentage
Untimely use of cotton swab	**57**	**55.33**
Not specified	**28**	**27.18**
Scratching lesion (Allergy)	10	9.73
Foreign body of the external acoustic meatus	4	3.88
Diabetes	4	3.88
Total	103	100

and diffuse external otitis (12.62%). The first step in managing our patients often involves cleaning the external auditory canal to remove any buildup of earwax or debris. Anti-inflammatory medications were administered to reduce pain and inflammation. Our patients underwent medical follow-up to assess the effectiveness of the treatment and monitor for any complications. We recommended avoiding swimming or exposing the affected ear to water during treatment (Table 6). The few socio-economic factors that we suspect influence the prevalence of external otitis and access to care in our series are low income level, low education, limited access to healthcare, poor housing conditions, and limited access to clean water. A holistic approach that considers the social and economic determinants of health is necessary to effectively address the prevalence of external otitis and improve access to care for the most vulnerable populations. Targeted interventions, combining awareness, education, access to healthcare, and improvement of living conditions, can help reduce the burden of this condition and promote ear health within communities.

Table 6. Distribution of 103 patients aged 1 to 90 years diagnosed with otitis externa according to treatment at the Oto-Rhino-Laryngology and Cervico-Facial Surgery department of the Mamou Regional Hospital from July 1 to December 31, 2016.

Treatment	Number of cases	Percentage
Instrumental means		
Suction	10	9.70
Instrumental extraction	4	3.88
Extraction by washing	**24**	**23.30**
Medicinal means (Drop)		
Antibiotic + Corticosteroids	103	100
Antibiotic alone	48	46.60
Antifungal	15	14.56
Other associated medications		
Analgesic	**103**	**100**
Antibiotic	**35**	**33.98**
Anti-inflammatory	5	4.85

4. Discussion

We initiated a prospective descriptive study over a period of 6 months in order to contribute to the study on the etiological, clinical and therapeutic factors of patients suffering from otitis externa in the ENT - CCF department of the regional hospital of Mamo. This study carried out only at the Mamou regional hospital, may produce results that do not reflect the situation in other regions. Hence the a need to carry out a multicenter, cross-sectional study in all regions of the country in order to obtain more data on otitis externa.

Without additional tests such as microbial cultures or imaging tests, the diagnosis of external otitis can be less precise. This can lead to underestimation or overestimation of the prevalence of external otitis in the studied population. This rate is consistent with Nenad A data in 2020 in Serbia in his study on malignant otitis externa: causes of various responses to treatment which reported a frequency of 16.25% [10].

However, our study differs from that of Keita A in Guinea in 2018 who recorded a hospital frequency of 2.14% at the Donka National Hospital [11].

External otitis can occur at any age, particularly from the age of prehension to adulthood. The average age of our patients was 33.74 years with extremes of 1 and 90 years. The age group mainly affected was 16 - 31 years old, or 38.83%. This result corroborates the literature data which states that otitis ex-

terna affects adults much more than children. The male gender was the majority in our series, *i.e.* 59.22%. Our result is comparable to that of Moata H in [12] 2018 in Morocco who reported a male predominance of 62.5%. It appears from our study that almost all of our patients resided in urban areas, *i.e.* 61.17%.

Our data match those of another study carried out in Guinea by Keita A in 2018 [11] at the ENT - CCF department of the Donka National Hospital which reported that 79% of its patients resided in urban areas. The analysis of the socio-professional status of our patients showed that the majority of them were pupils/students followed by the liberal profession respectively with 32.03% and 21.35%. This finding is different from work published by Keyvan K [5] in 2016 in Iran at the ENT clinic in Babol in the north of Iran which noted a predominance of nannies in 37.7%. The clinical presentation of otitis externa may vary depending on the stage or severity of the disease. They are due to irritation of the periosteum just under the thin dermis of the bony ear canal. In our case, all our patients consulted for ear pain (100%) and more than half (53.39%) for hyperacusis. Our result confirms the literature data which states that the characteristic symptom of otitis externa is intense pain in the ear. More than half (50.48%) of our patients were seen within the first 24 hours after the onset of symptoms followed by the interval of one to several weeks, *i.e.* 31.06%.

In the case of otitis externa, otoscopy reveals an inflammatory external ear canal and stenosis, which is the site of purulent secretions and sometimes bone and/or cartilaginous exposure. In our study, its expression was dominated by pain when pulling the pinna (100%) supported by a narrowing of the external acoustic meatus (77.66%).

Thomas S in 2015 [13] in Nigeria noticed during otoscopy examination signs ranging from tragal sensitivity, hyperemia and ear canal edema respectively 75.9%, 54.9% and 65%. External ear infections can have a multitude of causes. In our series, it was dominated by the untimely use of cotton swabs, *i.e.* 55.33%. In our study, we found three clinical forms of otitis externa, namely otomycosis (53.39%), furuncle of the external acoustic meatus (33.98%) and diffuse otitis externa (12.62%). Togolese literature through the work of Amana B in 2014 [8] in Togo noted diffuse otitis externa as the major clinical form, *i.e.* 76.40%. Antibiotic/corticosteroid ear drops were administered to all our patients. Our result is similar to that of Amana B in 2014 [8] who reported in her series that ear drops containing a combination of antibiotics and corticosteroids were administered to all patients.

Thomas S in 2015 [13] in Nigeria noted that the majority of cases, *i.e.* 63.2%, were treated with topical medications based on analgesics and antibiotics.

5. Conclusion

External otitis remains a frequent reason for ENT consultation. This study al-

lowed us to know that they affect young, actively working males much more. The diagnostic approach must first and foremost be guided by pain when pulling the pinna, pressure on the tragus and then completed by an otoscopy examination. Treatment is based on the use of ear drops depending on the etiology. A multicenter prospective study coupled with an awareness campaign on preventive measures must be carried out in order to reduce the frequency of this condition.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Date /_____/_____/2016

DATA COLLECTION SHEET N°/_____/

I. General Information

Age /_____/ Gender: Male /___/ Female /___/ Occupation: Worker /___/
Civil servant /___/ Housewife /___/ Self-employed /___/ Student /___/
Unemployed /___/ Origin: Urban /___/ Rural /___/

II. Symptomatology

Otalgy: Right /___/ Left /___/ Bilateral /___/ Fever /___/
Tinnitus: Right /___/ Left /___/ Bilateral /___/
Hypoacusis: Right /___/ Left /___/ Bilateral /___/
Otorrhea: Right /___/ Left /___/ Bilateral /___/
Otorrhagia: Right /___/ Left /___/ Bilateral /___/
Evolution /_____/

III. ENT Clinical Examination (Otoscopic Examination)

Narrowing of the External Auditory Meatus: Right /___/ Left /___/ Bilateral /___/

Suppuration of the External Auditory Meatus: Right /___/ Left /___/ Bilateral /___/

Bleeding: Right /___/ Left /___/ Bilateral /___/

Presence of Foreign Body: Organic /___/ Inorganic /___/ Other types of foreign bodies /___/ Earwax plug: Right /___/ Left /___/ Bilateral /___/

IV. Associated ent pathologies

Tonsillitis /___/ Pharyngitis /___/ Sinusitis /___/ Rhinitis /___/

V. Other associated pathologies

Diabetes /___/ Hypertension /___/ Human Immunodeficiency Virus (HIV) /___/ Others /_____/

VI. Clinical forms

Diffuse External Otitis /____/ External Auditory Canal Furuncle /___/Otomycosis /___/

VII. Etiological

Use of cotton swab/___/ Scratching lesion/___/ Foreign body in the External Auditory Meatus /____/ Not specified /_____/

VIII. Medical treatment

Ear drops /___/ Analgesic /___/ Antibiotic /___/ Corticosteroid /___/
Antifungal /___/ Others treatment /_____/

IX. Evolution

Favorable: No sequelae /___/ With sequelae /___/
Unfavorable: Complication /___/ Death /___/