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Research Article

Middle Ear Cholesteatoma: About 15 Cases

Lekassa P[1]*, Miloundja J[1], Ella Ondo T[2], Manfoumbi Ngoma AB[1], Nzenze SAM[1], Atsame Gonzalves A[1], Mwanyombet L[3] and Nzouba L[1]

[1]*Department of ENT & CCF, Omar Bongo Ondimba Army Instruction Hospital, Gabon*

[2]*Department of Medical Imaging, Omar Bongo Ondimba Army Instruction Hospital, Gabon*

[3]*Department of Neurosurgery, Omar Bongo Ondimba Army Instruction Hospital, Gabon*

***Corresponding Author:** Lekassa Pierrette, Department of ENT & CCF, Omar Bongo Ondimba Army Instruction Hospital, Gabon

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Summary

Aim: Cholesteatoma of the middle ear is a particularly aggressive form of chronic otitis media. The objective of this work was to study the diagnostic, therapeutic and evolutionary aspects.

Materials and Method: This were a retrospective descriptive study conducted out in the ENT and CCF department of the HIAOBO from the files of patients hospitalized for surgery for middle ear cholesteatoma, between January 2006 and December 2019.

Results: Fifteen patients were selected, including 7 men (ratio = 0, 87). The average age was 28.53 years with the extremes of 8 and 77 years. There were 11 adults and 4 children. The circumstances of discovery were purulent otorrhea (7 cases), a complication (9 cases) including mastoiditis (4 cases), facial palsy (2 cases), cerebral abscess (1 case) and extra-Dural empyema associated with a cerebellar abscess (1 case). The interrogation found hypoacusis in all cases an earache (10 cases) and headache (4 cases). Otoscopy showed scales (7 cases), ACE polyp (4 cases), otorrhea (3 cases) and tympanic perforation of the shrapnel (1 case). CT scans of the rocks suggested the diagnosis in all patients. Tympanoplasty was performed using the closed (8 cases) and open (7 cases) technique. The associated procedures were drainage of abscesses and empyema (2 cases) and Ossiculoplasty (2 cases). The course was marked by the presence of a residual cholesteatoma (6 cases).

Conclusion: Cholesteatoma is a serious pathology that can engage the functional and vital prognosis. Its treatment is surgical.

Keywords: Cholesteatoma; middle ear; computed tomography; tympanoplasty

Introduction

Middle ear cholesteatoma is defined by the presence in the cavities of the middle ear of a keratinized squamous epithelium with the potential for desquamation, migration and erosion [1,2]. It is dangerous and serious because of its progressive and extensive risks and its complications which can be life-threatening [1,2]. A rock scan is the gold standard that shows the extent of the cholesteatoma and its possible complications. Magnetic resonance imaging (MRI), on the other hand, plays a key role in the detection of postoperative recurrences. The recent use of otendoscopy and MRI makes it possible to better identify the extensions of cholesteatoma before and after surgery. The objective of this work was to study the diagnostic, therapeutic and evolutionary aspects of chronic cholesteatomata's otitis media.

Materials and Methods

This was a retrospective study of the records of patients hospitalized for the management of chronic cholesteatomatous otitis media, in the ENT and CCF department of the HIAOBO between January 2006 and December 2019. The data collection was carried out using an exploitation sheet or were reported the data, clinical, para-clinical including the audiogram, the tomodensitometry of the rocks, the imaging by magnetic resonance as well as therapeutic and evolutionary data. The parameters studied were age, sex, ontological history, clinical history, and clinical and paraclinical signs. We included the charts of patients with chronic cholesteatomatous otitis media and excluded chronic non-cholesteatomatous otitis media and cholesteatoma of the external auditory canal from this study.

Results

Fifteen patients were selected. These were 7 males and 8 females, with a sex-ratio of 0 87. The average age was 28.53 years with the extremes of 8 and 77 years. There were 11 adults and 4 children. The circumstances of discovery were purulent otorrhea in 7 cases, a complication in 9 cases including 6 extracranial

complications including mastoiditis in 4 cases, facial palsy in 2 cases and 3 intracranial complications including a brain abscess (1 case), 1 Cerebellar abscess (1 case) associated with extra-dural empyema in 1 case. The history found was recurrent otitis in 7 cases, myringoplasty in 2 cases and trisomy 21 in 1 case. The functional signs were purulent fetid otorrhea associated with hypoacusis in all cases, earache in 10 cases (67%) and headache in 4 cases (26%). Otoscopic examination showed results reported in Table 1. The audiogram was performed preoperatively in all patients and demonstrated conductive hearing loss with a preoperative mean tonal threshold of 50 decibels and an average audiometric Rinne of 20 decibels.

Table 1: Otoscopic signs.

Otoscopic Signs	Number of Cases	Percent(%)
Squames	7	40
CAE polyp	4	30
Otorrhea	3	20
Perforation of the shrapnel	1	0,66

The computed tomography of the rocks carried out in all the patients preoperatively showed a filling of the middle ear and mastoid cells in all the patients, a partial or complete lysis of the ossicular chain in 10 cases (70%), an erosion of the wall cubicle in 12 cases (80%), a cerebral abscess in one case and a cerebellar abscess associated with an extradural empyema in one case, and lysis of the antri tegmen (Figure 1). The results of the tomodensitometry are reported in (Table 2). The contralateral ear was pathological in 3 cases with a type of tympanic perforation and normal in 12 cases. MRI was performed in 2 cases and confirmed the CT results by showing 1 brain abscess in 1 case and extra dural empyema associated with right cerebellar abscess in the other case (Figure 2). Tympanoplasty was performed in a closed technique in 8 patients (53%). It consisted of performing a masto-antro-atticotomy with reconstruction of the eardrum and the atticotomy by the tragian cartilage. Open technique tympanoplasty with sacrifice of the bony ear canal with or without posterior filling was performed in 7 patients (47%). Trepanation followed by fine needle aspiration was performed for extra-dural empyema associated with cerebellar abscess and craniotomy for cerebral abscess. Broad-spectrum antibiotic therapy, corticosteroid therapy and an anticonvulsant have been combined. All of the pus samples were sterile, and the pathological examination of the tissues collected during the operation was in favor of cholesteatoma all patients. Postoperatively, an audiogram was performed in 11 cases (73%) and demonstrated conductive hearing loss with an average tonal threshold of 40 decibels and an average audiometric Rinne of 20 decibels. The evolution was marked by recurrence in 6 cases (40%), including 5 cases operated on by the open technique and 1 case operated on by the closed technique. Otoscopy showed a whitish bead on the hypotympanum in 5 cases operated on by the open technique and scales on the neotympanum in 1 case operated on the closed technique. CT of the rock was performed postoperatively in 8 patients (53%) within 12 to 18 months. It demonstrated total filling of the mastoid and nodular recess cavity of the attic and the mesotympanic membrane with bone lysis by cholesteatoma in 5 cases (Figure 3). All these patients were re-operated (2nd look) after 55 months with the extremes of 18 months and 7 years. Type II ossiculoplasty was performed in 2 cases operated in the closed technique, including 1 case using an anvil transposition but without improvement of hearing, and one case using cartilage, with improvement of l 'hearing.

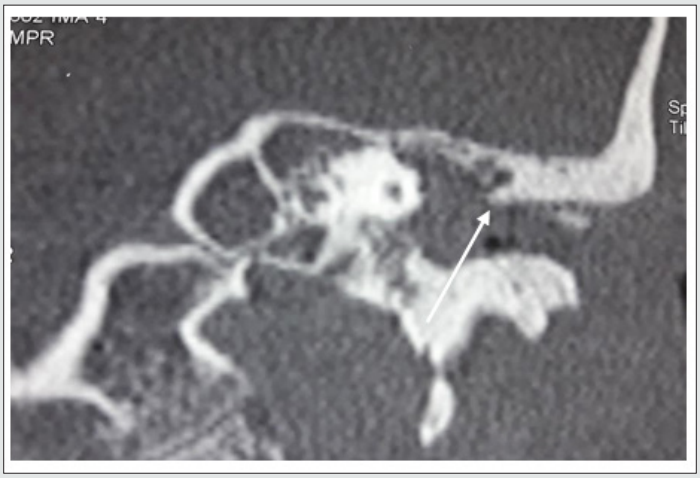

Figure 1: Coronal CT scan of the left rock: total filling of the eardrum and CAE with bluntness of the wall of the cubicle (arrow) analysis of the ossicles.

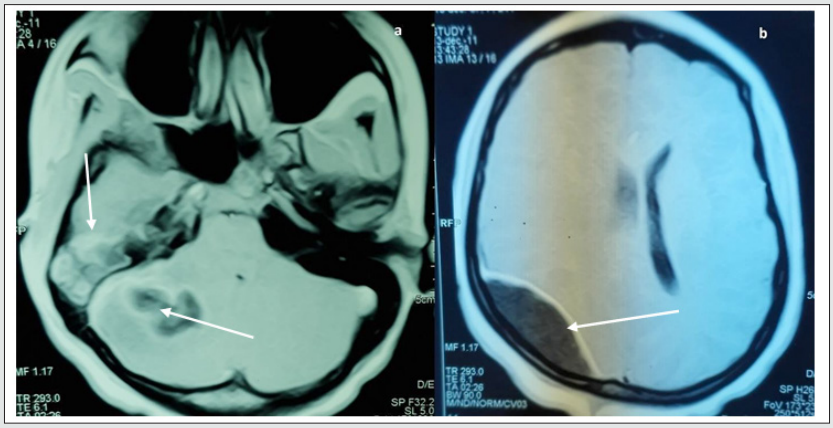

Figure 2: Axial T1- weighted brain MRI after gadolinium injection

a) Abscess of the right cerebellar hemisphere in T1 hypo-signal enhanced by peripheral cockade and right mastoid filling (arrows)

b) Hypointense biconvex right extra-dural parieto-occipital empyema in T1 with peripheral enhancement (arrow).

Table 2: Computed tomography signs.

Computed Tomography Signs	Number of Cases	Percent (%)
Filling of mastoid cells and middle ear	15	100
Lysis of the ossicular chain	10	70
Erosion of the cubicle wall	12	80
Brain abscess	1	0,66
Cerebellar abscess	1	0,66
Extra-dural empyema	1	0,66
Lysis of the tegmen antri	1	0,66

Discussion

Middle ear cholesteatoma is a particularly aggressive chronic otitis media, characterized by the presence in middle ear cavities of a keratinizing squamous epithelium with a triple potential for desquamation, migration and erosion. Its etiopathogenesis is poorly understood. Two entities are described. Congenital or primary cholesteatoma which is the prerogative of children, and which is rarer. It corresponds to the absence of resorption of embryonic epidermal cells and initially develops behind a normal eardrum. The more common acquired cholesteatoma whose pathogenesis is dominated by the theory of epidermal migration through the edges of a marginal perforation or from a ruptured tympanic retraction pocket, with the appearance of acute and chronic inflammatory lesions [3]. The average age for some authors is between 35 and 43 years old [4,5]. In our study the mean age was 28.83 years, our results are lower than those of Bouaty and Sethom [4,5]. The distribution by sex is very variable [6,7]. However, in our study, the female sex is slightly in the majority. The functional signs which are also the most common reasons for consultation are fetid otorrhea and hypoacusis [1,8]. Similar results are found in all the patients in our study. Sometimes it is a complication such as dizziness, facial paralysis, retroauricular skin fistulization or neurological signs that reveal cholesteatoma [1,4]. Bouaity et al. report 20% of complications comprising 20 cases (13.8%) of mastoiditis, 6 cases (4.1%) of facial paralysis and 3 cases (2%) of labyrinthitis (2%) [4]. In our study, the complications that led to the diagnosis of cholesteatoma were mastoiditis, facial palsy, brain abscess and extra-dural empyema. Rarely, the finding is accidental during otoscopic examination, medical imaging, or surgery on the middle ear [5].

Cholesteatomatous otitis is often marked by a long history of otitis and middle ear surgery. Dulos reports 89.6% respectively [9], while Bouaity reports 18% of a history of ear infections also tympanoplakia for cholesteatoma in 32 cases (22%) [4]. A history of otitis and myringoplasty was found in our study in 47% and 13% of cases. Trisomy 21 was found in 1 case. Otoscopic examination is the key to diagnosis in the majority of cases [1]. It is performed in our context under a microscope after aspiration, followed if necessary by an otendoscopic examination. The diagnosis of cholesteatoma is confirmed by the presence in the middle ear of emerging epidermal scales, a marginal perforation or a pocket of tympanic retraction. Bouaity et al. report marginal perforation in (60%) of cases and attical perforation in 20.7% of cases [4]. Sethom et al. report 8% of cases of external auditory canal polyp (EAC) [5].

Audiometry most often results in conductive hearing loss secondary to the inflammatory reaction or tympano-ossicular destruction in advanced forms [8,10]. It can also show mixed deafness or cophosis [1]. Sometimes hearing is normal due to the columellar effect of the cholesteatoma, who after having destroyed the ossicles replaces them. In our study, the tonal audiogram performed preoperatively showed conductive hearing loss of 50 decibels on average with an audiometric Rinne of 25 decibels on average. Computed tomography of rocks in bone windows is the gold standard for studying the middle ear, especially in cholesteatomatous otitis before and after surgery [2,11-14].

Preoperatively, this examination makes it possible to carry out a precise lesion assessment, to look for certain complications and to orient the operative strategy by highlighting the anatomical particularities [1,3,11,13]. In rare cases, it can be used to confirm the diagnosis when the otoscopy is not helpful in order to allow a comparative analysis. This systematically recommended examination was carried out in all the patients in our study on the 2 ears in axial and coronal slices. The CT signs suggestive of cholesteatoma are the presence of a tissue mass in the tympano-mastoid cavities and one or more areas of osteolysis, at the level of the ossicular chain and the wall of the cubicle. The extension of osteolysis to the tegmen, facial canal, labyrinth and lateral semicircular canal is evidence of complications of cholesteatoma [4,15]. Bouaity et al. report partial or total destruction of the ossicular chain in 81% of cases and erosion of the cubicle wall in 62% of cases [4]. Sethom et al. report erosion of the cubicle wall in 62% of cases, filling of mastoid cells in 35% of cases and ossicular lysis in 81% of cases [5]. Postoperatively, the scanner makes it possible to identify recurrences. It is possibly supplemented by MRI in late acquisitions after injection of gadolinium in T1-weighted sequence supplemented by diffusion sequences to differentiate between cholesteatomatous recurrence and residual inflammatory change [16]. MRI is sometimes essential for the diagnosis of residual in the case of a closed technique with cartilaginous eardrum and the assessment of the extension of encephalic complications. The treatment of cholesteatomatous otitis media is surgical. Its objective is firstly to eradicate cholesteatoma and its matrix, secondly to restore or improve hearing [4,17-19].

There are typically two types of interventions. The closed technique tympanoplasty consists of a masto-antro-atticotomy associated with a posterior and / or superior tympanotomy. It preserves the facial wall, restores normal anatomy of the middle ear and the external auditory canal. It preserves adequate hearing and relieves post-operative care problems, but exposes the risk of recurrence [9,18-20]. Duclos et al. report performing a closed technique in 85% of cases [9]; Drahy et al. report 82% of cases [19] and Touaty et al. perform it in all their patients [21]. In our study this technique was used the most. Tympanoplasty in the open technique, with or without posterior filling, makes it possible to perform the removal of the cholesteatoma, to definitively exclude the posterior mastoid cavities and the epitympanum by a muscle, cartilage or bone filling and to perform a large meatoplasty to lead to a functional petty cash and a stable ear [1]. It confers a new anatomo-physiological status of the ear in order to modify the local conditions, which gave rise to cholesteatoma [4]. It also allows the creation of a large cavity and allows drying and stabilization of unstable cavities. This open technique is indicated in cases of small mastoid, low cellularity or meningeal prolapse. It is also indicated when the "2nd look" is not possible and in the event of the impossibility of a rigorous follow-up as in our study or in the event of recurrence. However, it is complicated by otorrheic episodes and makes fitting difficult. In many studies this technology is little used [9,19-21]. Currently, the indication of a second operative step is no longer systematic due firstly to the intraoperative use of otovideo-endoscopy, which improves the vision and the quality of the removal of the cholesteatoma or of a pocket. of retraction in regions difficult to access, in particular the tympani sinus and the anterior attic; and secondly, the advent of CT of rocks in millimeter sections and diffusion MRI which allow quality radiological monitoring [4,20,22]. When the 2nd look is indicated, it is done between the 12th and 18th month. Duclos et al. achieved 75% of a second look after 18 months of the initial procedure [9]. It makes it possible to ensure the absence of recurrence and to perform a possible ossiculoplasty [1]. In our study, this second operative step was performed in 7 cases (46%) after 24 months.

The rehabilitation of hearing in cholesteatoma surgery, calls upon the different types of ossiculoplasty, carried out from the first operative stage if the mucosa is healthy, either using autologous material (cartilage, anvil), or with the using ossicular prostheses. Where appropriate, conventional or bone-anchored hearing aids are used [4]. Drahy et al. report 86% of ossiculoplasty including 18% during the first phase and 61% by autologous materia l [19]. Bouhafs et al. report 26 type II ossiculoplasty in 30 patients in their series [23]. In our experience, type II ossiculoplasty was performed in 2 cases, including 1 case with the anvil and 1 case with anvil cartilage and cartilage. Hearing was not improved in the first case, possibly due to the presence of an inflammatory and scarring process. The postoperative course is marked by the appearance of residuals, which represent the real problem with cholesteatoma surgery. In the studies by Duclos and Mutlu, the residual rates were 32% and 38% respectively [9,24]. Triglia et al. report 41% residual during the 2nd look [8]. In our series, cholesteatoma was found in 40% of cases during the 2nd look, including 5 cases operated on in the open technique and 1 case in the closed technique, unlike Bouaity who reported 25% in patients operated on by the closed technique and 13, 4% in patients operated on by the open technique [4]. Long-term monitoring must be an integral part of therapeutic management regardless of the technique chosen. It makes it possible to detect residual cholesteatomas and recurrences.

Conclusion: Cholesteatoma of the middle ear is a fairly common pathology in our context, but serious due to its complications. The pre and post operative scanner is essential. Its treatment is only surgical by tympanoplasty in closed or open technique. Ossiculoplasty, when possible, improves hearing.

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