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Tympanic Retraction Pockets: Diagnostic and Therapeutic Aspect

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Abstract: *Background*: Retraction pockets represent a form of chronic otitis considered to be a precholesteatomatous stage. This study aims to study the diagnostic and therapeutic aspects of tympanic retraction pockets in the ENT department of the University Hospital Center "Gabriel Touré". *Patients and Method*: This was a prospective longitudinal study extended over 15 months; from February 1, 2020 to May 31, 2021 from the files of patients received as an outpatient in the ENT and Cervicofacial Surgery department of the CHU Gabriel Touré in Bamako. Were included any patient seen in an outpatient department at the otorhinolaryngology and head and neck surgery department of the CHU Gabriel Touré in Bamako with a pocket of tympanic retraction and who had consented to the study. Data collection was done using a previously established survey form. Data were entered in Word 2016 and analyzed using SPSS software. *Results*: The prevalence of retraction pockets was estimated at 1.2% of all consultations. The most represented age group was that of (25-39 years), i.e. 25.0%. The average age was 44.91 ± 20.05 years. The extremes of ages were 10 years and 81 years. The female sex was the most represented, at 63.9% with a sex ratio = 0.6. A history of otitis was present in half of the cases. Tinnitus was the main reason for consultation (50% of cases) followed by hearing loss (25%). The otoendoscopic examination had noted a predominance of lesions on the left (52%) and an attical seat in 30.6% of cases. The pockets were controllable and self-cleaning in all cases, and peelable in 75% of cases (stage I of the weevil classification) and non-peelable and controllable in 25% of the cases (stage II of weevil). Conductive hearing loss was found in 8.3% of cases, mixed hearing loss in 5.6% of cases and sensorineural hearing loss in 2.8% of cases. CT of the rock was performed in two patients, and showed erosion of the attic wall associated with tissue hypodensity in the attic. Medical treatment based on systemic corticosteroids and nasal decongestant was initiated in all our patients associated with quarterly monitoring for stages I of charachon, i.e. 75% of the workforce. The placement of a tympanostomy tube was performed in 8 patients classified (stage II of charachon) ie (2, 88%). Antroatticotomy associated with reinforcement tympanoplasty was performed in a patient (0,36%).

Keywords: Retraction Pocket, Choleseatoma, Reinforcement Tympanoplasty

1. Introduction

The retraction pocket is defined as an area of the tympanic membrane, stripped of its conjunctive armature and which lies in a plane more medial than that of the eardrum, that is to say in retraction towards the body [1]. Indeed, retraction refers to a situation in which part or all of the eardrum is located in a

more medial plane in relation to the existence of negative pressure in the body. In the first case, the retracted segment is called retraction pocket [2, 3]. The mechanisms that preside over the appearance of atelectatic otitis and its particular form, the retraction pocket, are multiple and, to a large extent, unknown. Two of them seem obvious: hypopressure in the middle ear exerting its effects on a tympanic membrane and the fact that this is weakened [4]. These pockets are an essential factor involved in the pathophysiology of cholesteatoma formation [2, 4]. Several classifications have made it possible to evaluate the evolutionary stage of the disease; the most used are those of character [2-6].

2. Classification of Charachon (1988)

2.1. At the Level of the Pars Flaccida

1) Stage I: Mobile pocket, removable by the Valsalva and controllable;
2) Stage II: Pocket fixed, non-detachable and controllable;
3) Stage III: Pocket fixed and uncontrollable regardless of the importance of the size of the spontaneous atticotomy.

2.2. At the Level of the Pars Tensa

1) Stage I: Pocket mobile, peelable even if it still adheres to the BDE and controllable;
2) Stage II: Fixed pocket, not removable, molding the incudostapedial joint and eroding the BDE;
3) Stage III: Pouch fixed but uncontrollable, engaging towards the retrotympanum.

3. Patients and Method

Our study took place at the CHU Gabriel Toure in Bamako. This was a prospective longitudinal study extended over 15 months; from February 1, 2020 to May 31, 2021 from the files of patients received as an outpatient in the ENT and Cervicofacial Surgery department of the CHU Gabriel Touré in Bamako. Were included any patient seen in an outpatient department at the otorhinolaryngology and head and neck surgery department of the CHU Gabriel Touré in Bamako with a pocket of tympanic retraction and who had consented to the study. Data collection was done using a previously established survey form. Data were entered in Word 2016 and analyzed using SPSS software. This was a purely scientific work which aims to improve the management of pockets of tympanic retractions, anonymity is strictly respected.

4. Results

A total of 3111 patients consulted in the ENT department during the study period. A retraction pocket was diagnosed in 36 patients, or 1.2%. The most represented age group was that of (25-39 years), i.e. 25.0%. The average age was 44.91 ± 20.05 years. The extremes of ages were 10 years and 81 years. The female sex was the most represented, ie 63.9% with a sex ratio = 0.6. A history of otitis was present in half of the cases. Tinnitus was the main reason for consultation (50% of cases) followed hearing loss (25%). The otoendoscopic examination had noted a predominance of lesions on the left (52%) and an attical seat in 30.6% of cases. The pockets were controllable and self-cleaning in all cases, and peelable in 75% of cases (stage I of the weevil classification) and non-peelable and controllable in 25% of the cases (stage II of weevil). Conductive hearing loss was found in 8.3% of cases, mixed hearing loss in 5.6% of cases and sensorineural hearing loss in 2.8% of cases. CT of the rock was performed in two patients, and showed erosion of the cubicle wall associated with tissue hypodensity in the attic.

A medical treatment based on general corticosteroids and nasal decongestant was introduced in all our patients associated with quarterly monitoring for stages I of charachon, i.e. 75% of the workforce.

The placement of a tympanostomy tube (ATT) was performed in 8 classified patients (stage II of charachon) or 2.88% in cases. Antroatticotomy associated with reinforcement tympanoplasty was performed in one patient (0.36%).

Table 1. *Breakdown by age.*

AGE OF PATIENTS (IN YEARS)	Effective	Percentage (%)
[10-24]	7	19,4
[25-39]	9	25,0
[40-54]	8	22,2
[55-69]	6	16,7
[70-84]	6	16,7
Total	36	100,0

Table 2. *Breakdown by sex.*

Patient gender	Effective	Percentage (%)
Male	13	36,1
Feminine	23	63,9
Total	36	100,0

Table 3. *Breakdown by reason for consultation.*

REASON FOR CONSULTATION	Effective	Percentage (%)
HYPOACUSIS	9	25,0
OTALGIA	3	8,3
TINNITUS	18	50,0
OTORRHEA	3	8,3
OTHERS	3	8,3
TOTAL	36	100,0

Table 4. *Breakdown by seat.*

Headquarters	Effective	Percentage (%)
Pars flaccida	22	61,11
leave tensa	14	38,89
total	36	100

Table 5. *Breakdown by type of surgery.*

Surgical treatment	Effective	Percentage (%)
Att pose	8	2,88
Antroatticotomy + reinforcement tympanoplasty	1	0,36
total	9	3,24

5. Discussion

5.1. Epidemiological Data

5.1.1. Frequency

It is difficult to estimate the exact prevalence of retraction pockets in a given population because it is an asymptomatic condition in its initial phase [7]. The figures obtained in this study in terms of prevalence were discovered by chance during a systematic ENT examination during consultations in the department.

Thus we found a prevalence of PDR of 1.3% of all consultations.

5.1.2. Age

In our study, the average age was 44.91 years. The extremes of ages were 10 and 81 years. This could be explained by the fact that our sample excluded patients under 10 years old.

5.1.3. Sex

Studies have shown that pockets of retraction frequently develop in children related to nasopharyngeal episodes and hypertrophy of the adenoids, which are most often responsible for tubal dysfunction resulting in negative pressure in the chest [8].

On the other hand, there is no notion of sex predilection and the distribution of the disease according to sex varies according to the studies [7].

In our study, the female sex was the most represented, i.e. 63.9% and a sex ratio of 0.6.

5.2. Clinical Data

5.2.1. Reason for Consultation

The circumstances of discovery of retraction pockets are diverse and depend on the evolutionary stage of the disease.

In our study, among the functional signs that motivated patients to consult, tinnitus was predominant with 50.0%. Otalgia and hearing loss were reported in 8.3% and 25.0% respectively.

5.2.2. Character of the PDR

In our study, the pocket was; self-cleaning in 100% of cases, controllable in 100% of cases and non-removable in 25% of cases. This can be explained by our type of sampling, which included all patients seen in ENT consultations, the majority of whom were asymptomatic.

LOCATION OF THE RETRACTION POUCH: We shared with the authors that the preferred location of the retraction pouches is represented by the pars flaccida [7, 8]. Indeed, the tympanic membrane is made up of three layers: an outer cutaneous layer, a fibrous intermediate layer and an inner mucous layer. The intermediate layer is the most rigid made up of several types of fibers (radiate, circular, parabolic, semilunar). This layer is less thick at the level of the pars flaccida and tends to invaginate in the event of negative pressure [2].

5.2.3. Therapeutic Modalities

Several therapeutic modalities have been described in the literature [2, 3, 6, 7, 9]: these are medical treatments aimed at repairing the Eustachian tube, placement of ATT, excision of the pocket with installation of ATT, dissection or excision of the pocket with tympanic reinforcement associated or not with the restoration of the columellar effect and the antroatticotomy.

In our study, drug treatment associated with monitoring were the therapeutic methods adopted in 58.3%. The establishment of an ATT was performed in 8 patients to slow down the evolution of the pocket and compensate for the negative pressure of the box.

The concept of preventive tympanoplasty proposed by Chiossone in the 1995s seems to be debated [9]. It corresponds to the practice of a tympanoplasty on a retraction pocket without auditory repercussions but having an evolutionary potential towards cholesteatoma. In this case, it would be important to carefully weigh the risk-benefit ratio before performing the surgery. However, surgery should be indicated in the event of a retraction pocket whose bottom is not visible, in the event of intermittent or persistent otorrhea on the retraction pocket and in the event of obvious accumulation of keratin [3, 7-9]. The charachon classification is the one that best characterizes these different indications. Thus, surgery is indicated for stage III and symptomatic stage II of the said classification. Several surgical strategies have been described; for small pockets, some authors suggest excision of adhesions and placement of a sheet of silastic under the tympanomeatal flap [3, 7]. For larger pockets, cartilage reinforcement tympanoplasty or tympanoplasty with a temporal fascia graft is proposed [3, 7, 8]. The cartilaginous graft seems more efficient because it is more rigid and more resistant to the negative pressure of the box and to reperforation [7, 8, 10, 11]. In the event of lysis of the ossicular chain, the various techniques for restoring the columellar effect may be indicated, ranging from partial PORP prostheses to total TORP prostheses or, in the contrary case, interposition of a cartilage fragment when the superstructure of the stapes allows [8]. In our study, only one case of antroatticotomy had been performed due to signs of erosion of the stall wall associated with tissue hypodensity in the attic.

6. Conclusion

The pockets of tympanic retraction constitute a particular nosological entity which deserves rigorous monitoring. Erosion of the ossicular chain and their potential risk of progression to cholesteatoma should be known to any ENT practitioner. The major challenge lies above all in the diversity of therapeutic options, which is still a topical subject.

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