ORIGINAL ARTICLE

PRESENTATION AND BACTERIOLOGICAL PATTERN OF PREAURICULAR SINUS INFECTION / ABSCESS IN NIGERIA

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ABSTRACT

Background: Some patients with pre-auricular sinus get severe discomfort and disturbance of daily activities. This study was carried out to identify the presentation, common micro-organisms responsible and there sensitivity pattern to assist in controlling the infection before surgical excision. **Methods:** This was a prospective study of all patients with pre-auricular sinus infection/abscess that were seen at the University of Benin Teaching Hospital, Benin City, Nigeria, between January 2007 and May, 2012. Data collected from the patients included their symptoms, signs, and microscopy, culture and sensitivity results of the discharge from the abscess. **Results:** Thirteen patients with pre auricular sinus abscess were seen during the study period attending the Ear, Nose, Throat, Head and Neck surgery Clinic. There were 3 males and 10 females with a male to female ratio of 1: 3.3. Ages ranged from 4 to 32 years, with a mean age of 17.46 years. Recurrent pain, swelling and discharge from the pre-auricular sinus were the common symptoms, while an abscess located in front of the ear with purulent discharge was the main sign elicited. Staphylococcus aureus was the commonest micro-organism implicated while gentamycin, followed by ofloxacin, cefuroxime and augmentin were the most sensitive antibiotics to the pre-auricular sinus isolates. **Conclusion:** Recurrent swelling and discharge are the most common presentations of an infected pre-auricular sinus. Staphylococcus aureus is the commonest organism isolated while gentamycin the most sensitive antibiotic to pathogenic organisms isolated from pre-auricular sinus abscess.

KEY WORDS: Pre-auricular sinus, Pre-auricular abscess, Bacteriological pattern, Sensitivity.

INTRODUCTION

Pre-auricular sinus is a congenital malformation that is due to failure of the hillocks of the first and second branchial arches (which form the auricle) to fuse completely.[1,2] It was first described by Heusinger in 1864.[2] It usually presents as a small opening in the skin anterior to the insertion of the helix. A tract from this opening runs inward and it is usually lined by squamous cell epithelium.[3] The incidence is between 0.1% and 0.9% in Europe and the United states, 1.6% - 2.5% in Taiwan and reaches 4-10% in some Asia and African regions.[2,4,5] Pre-auricular sinus is usually asymptomatic and only one-third of persons are aware of their malformations. In a study of 31 patients, it took an average of 9.2 years before patients with pre-auricular sinuses sought medical care.[2]

Recurrent infections, ulcerations, scarring and facial cellulitis occur which may not readily respond to common antibiotics, necessitating the presentation of these patients to a specialist Ear, Nose, Throat, Head and Neck (ENTH & N) Surgery Clinic. If the patient refuses surgery, microscopy, culture & sensitivity (m/c/s) studies of the discharge from the sinus can be done with the use of the sensitive antibiotics to eliminate the offending pathogens.[2]

Although cases of pre-auricular sinus infection are not so common in the ENT H&N Clinic, the cases that are seen frequently have recurrent infections of the pre-auricular sinus, with severe pain, discomfort and disturbance of school and work activities. Even more disturbing is the tendency for abscesses to form in the sinuses which after treatment with antibiotics is followed by a recurrence of other infections/abscesses at close intervals.[2]

Although complete excision of the sinus tract is the hallmark of treatment, with repeated episodes of infection, the excision is difficult without completely eradicating the infection.

This study was carried out to elucidate the symptoms and signs of pre-auricular sinus infection /abscess and knowing the common bacteriological flora and sensitivity pattern.

MATERIAL AND METHODS

The study was a prospective study of patients presenting with pre-auricular sinus infection/ abscess between January, 2007 and May, 2012, at the ENT Head & Neck Surgery Clinic of the University of Benin Teaching Hospital, Benin City. An informed consent was taken from all patients including the terms and conditions about inclusion in the study, benefits and risks involved. Approval for this study was granted by the ethical review committee of the hospital.

On attending the clinic, the symptoms of the patients were asked for and the signs elicited. After confirming the diagnosis of pre-auricular sinus infection/abscess, a swab for m/c/s/ was taken under strictly aseptic environment and immediately sent to the microbiology laboratory for analysis.

Thereafter an incision and drainage (I & D) of the abscess was done and the patient was commenced on daily antiseptic dressing of the abscess cavity and placed empirically on broad spectrum antibiotics and analgesics.

The antibiotics therapy was later adjusted to the sensitivity pattern of the m/c/s result and the patients advised to come back for definitive excision of the sinus tract (3-4 weeks after 1& D), after an explanation of the nature of the ailment has been done to the patient in a language he or she understood.

For microscopy a labeled swab-stick was used to collect the discharge from the preauricular sinus under strictly aseptic environment. The swab-stick was applied to a labeled microscope glass slide to make a smear. The smear was then fixed with absolute methanol (95%) for 2 minutes to avoid damage to the pus cells. Thereafter Gram stain was carried out by covering the smear with crystal violet stain for 1 minute. The stain was thereafter rapidly washed in clean running tap water. Next the smear was covered with Lugol's iodine for 1 minute after tipping off the water from the slide. The iodine was then washed off under running tap water. Acetone was then used to decolorize the smear for a few seconds after which the smear was washed under clean running tap water. Counter staining of the smear was done with neutral red for 2 minutes after which it was washed off with clean water. The slide was then allowed to air-dry and it was viewed under a microscope with oil immersion objective (x100) to identify the bacteria and cells.[6]

The discharges from the preauricular sinuses were inoculated onto MacConkey, chocolate and blood agar plates. The chocolate agar was incubated in a candle jar, while the blood and MacConkey agar plates were incubated aerobically for 24 hours. The colonies were identified according to standard bacteriological methods.[7] Disc susceptibility test was performed according to Clinical and Laboratory Standards Institute.[8]

RESULTS

During this period, a total of 4,513 patients were seen in the ENT Head & Neck Clinic. Among these, 13 patients were having pre-auricular sinus infection /abscess, giving an incidence of 0.29% for pre-auricular sinus infection /abscess. Of these 13 patients, 3 were males and 10 females, giving a male to female ratio of 1: 3.3. Ages ranged from 4 to 32 years with a mean age of 17.46 years.

Table 1 shows the symptoms and signs on presentation, while Tables 2 shows the culture and sensitivity pattern.

Microscopic examination revealed pus cells and Gram positive cocci in 7 patients and pus cells and Gram negative bacilli in 3 patients. In 3 patients microscopy was not performed.

DISCUSSION

Only 13 patients with pre-auricular sinus infection/abscess were seen out of a total of 4,513 patients seen in the ENTH & N Surgery Clinic, during the study. Although it can be said that preauricular sinus is a common congenital abnormality, only patients with infection/abscess of the sinus will usually present for treatment.[2,9]

A preponderance of females were seen in this study as also documented by other workers.[2,10] Another study reported an equal distribution between male and female.[2] Although this female preponderance may be anecdotal, it may also be due to the fact that males in our environment as a result of financial constraints may engage in self-medication rather than presenting to the hospital for treatment for a supposedly 'minor problem.'

Ages ranged between 4 to 32 years with a mean age of 17.46 years. (Table 1). This average age of presentation is however late when we note that symptoms started from birth/childhood in all the patients. But this average age of presentation tend to agree with the study that claim an average of 9.2 years interval between symptoms and presentation for medical care.[2] This average youthful age of presentation also indicates that as the preauricular sinus is a congenital abnormality, the patient with repeated infections /abscess will seek for treatment relatively early in life, rather than to wait till middle or old age.

The duration of symptoms showed that most patients have been suffering from the ailment recurrently before presentation. Ignorance, poverty

Table 1: Clinical presentations of patients.

S. No.	Symptoms	Duration of symptoms	Signs
1	Recurrent purulent discharge from opening in front of right ear. Previous excision with recurrence.	Since birth	Abscess around right pre-auricular sinus, discharging pus.
2	Recurrent purulent drainage from opening in front of left ear.	3 years	Left pre-auricular sinus abscess.
3	Recurrent swelling anterior to left ear, with occasional pain and discharge.	12 years	Left pre-auricular sinus abscess discharging pus.
4	Swelling in front of left ear with associated pain.	10 days	Abscess around left pre-auricular sinus.
5	Recurrent swelling and discharge from opening before left ear.	9 years	Left pre-auricular sinus with surrounding abscess.
6	Recurrent swelling in front of right ear, with intermittent discharge of pus. Had similar problem in the left but ear, no recurrence for past 7 years in left ear.	Since childhood	Right pre-auricular sinus abscessLeft pre-auricular sinus (infection free).
7	Recurrent swelling in front of left ear.	2 years 5 days	Left pre-auricular sinus with swelling and intense pain on touch.
8	Recurrent pain, swelling, itching and discharge in front of right ear.	Since birth	Right pre-auricular sinus abscess with discharge.
9	Recurrent painful swelling and discharge, fever with rigors and chills.	15 years	Right pre-auricular sinus abscess.
10	Recurrent swelling and discharge in front of right ear, pain and discomfort.	Since birth	Raw wound around the sinus opening with discharge.
11	Recurrent episodes of swelling in front of right ear.	Since birth	Right pre-auricular sinus with surrounding edema.
12	Recurrent discharge, painful swelling, occasional itching.	6 years	Edematous, non-tender, soft area in front of left ear.
13	Recurrent swelling with occasional discharge in front of left ear.	Since childhood	Scar opposite left tragus, with mild tenderness.

and dearth of ENTH & N specialists can be adduced for this delay in our environment.

Recurrent swelling, pain and purulent discharge from a sinus anterior to the ear, are the common symptoms, while the patients presented with signs indicative of an abscess around the pre-auricular sinus, with purulent discharge from the sinus.

Five out of the 13 patients had the (R) pre-auricular sinus involved, while 6 out of the 13 patients had the (L) pre-auricular sinus involved. Patients 6 and 7 had bilateral sinuses. This may not be of any significance, but earlier studies have implicated the (R) side to be more involved than the (L) side.[2,10]

In 3 of the 13 patients the culture of the discharge from the sinus yielded no significant growth after 48 hours incubation. This is due to the common practice of use of antibiotics in self medication before presenting to a doctor. This in itself is responsible for the delay in presenting for expert management. With resolution of symptoms following indiscriminate use of antibiotics, patients are more likely to believe that the problem has been solved. With a recurrence he/she repeats the same antibiotics or goes for a more potent one if there is no resolution. This is also highly responsible for

Table2: Culture and sensitivity pattern.

S. No.	Organism cultured	Sensitivity to antibiotics
1	Staphylococcus aureus	AUG, OFX, OX, VA, AZM, CXM,CN
2	Alkaligenes species	CAZ, OB
3	Staphylococcus aureus	VA,CN,CXM,CAZ,AUG
4	Staphylococcus aureus	OFX,CIP,CN,CXM
5	CYNSGA 48 hours	————————————-
6	CYNSGA 48 hours	————————————-
7	CYNSGA 48 hours	————————————-
8	Pseudomonas Pyocyanae	OFX,CN
9	Staphylococcus aureus	AUG,OB, CXM,AMX,E,OFX
10	Not done	Infection eradicated by Ceftriaxone
11	Not done	Infection eradicated by Augmentin
12	Not done	Infection eradicated by Ampiclox
13	Staphylococcus aureus	OFX,CIP,CN,CXM

CAZ-Ceftazidime, AUG-Augmentin, OFX-Ofloxacin, OX-Oxytetracycline, VA-Vancomycin, CIP-Ciprofloxacin, AZM-Azithromycin, CXM-Cefuroxime, CN-Gentamycin, OB-Obenin, CYNSG A 48 hrs—Culture yielded no significant growth after 48 hours incubation. Ampiclox—Ampicillin & Cloxacillin E—Erythromycin, AMX—Amoxycillin

the low incidence of preauricular sinus infection/ abscess presenting in the ENTH& N clinic.

Staphylococcus aureus was the commonest pathogenic micro-organism in this study. This is a beta-lactamase producing bacteria. This indicates that antibiotics with sensitivity against beta-lactamase producing bacteria like flucloxacillin and cloxacillin will readily bring about resolution of the infection.[11] Other organisms were also cultured, but it is possible that these might be due to secondary contamination of the discharges. Other studies have also implicated Staphylococcus species, and less frequently, Proteus, Streptococcus and Peptococcus in preauricular sinus infection.[12] In another study infectious agents identified included staphylococcus epidermidis (31%), Staphylococcus aureus (31%), Streptococcus viridians (15%), Peptococcus species (15%) and Proteus species (8%).[2]

From the sensitivity study, gentamycin followed by ofloxacin and cefuroxime appear to be first line sensitive antibiotics to the isolates from the preauricular sinus. Augmentin also proved useful in 3 of the patients with sensitivity studies. Although latex test kit for identifying methicillin-resistant Staphylococcus aureus (MRSA) were not available for use in our laboratory, the outcome of the sensitivity studies in which other antibiotics apart from vancomycin were sensitive to the isolated organisms may be suggestive of the absence of MRSA.[11]

In 3 of the patients m/c/s was not done because there was no discharge from their preauricular sinus at presentation. The patients used ceftriaxone, augmentin, and ampicillin plus cloxacillin (ampiclox) with gentamycin ointment respectively(table 3), to control the infections before presentation for treatment.

While it should be clearly stated that complete excision of the sinus tract to remove all vestiges of squamous epithelium is the gold standard of treatment, achieving an infection-free sinus is a necessary pre-requisite for easy dissection, minimization of complications and destruction of adjoining tissues during surgery.

In an environment where hunger, poverty and unemployment are high ranking problems ,the use of sensitive antibiotics will result in most patients' reluctance to present for surgery with an 'apparent cure' of their symptoms. The need to emphasize the presentation and bacteriological pattern of preauricular sinus infection may therefore be of more relevance in our environment.

CONCLUSION

Recurrent swelling and discharge are the most common presentations of an infected pre-auricular sinus. Staphylococcus aureus is the commonest organism isolated while gentamycin the most sensitive antibiotic to pathogenic organisms isolated from pre-auricular sinus abscess.

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