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Original Research Article

Various outcomes of pinna abscess management in our experience

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ABSTRACT

Background: Pinna perichondritis is a common secondary to trauma due to RTA or high ear piercings. Early intervention with antibiotics can lead to cure without sequelae. Delayed presentation, suboptimal treatment, abscess formation, delays in surgical intervention can cause cartilage loss and cosmetic deformity. This study is conducted to evaluate the various outcomes of surgical intervention of pinna abscess and its predisposing factors in our experience.
Methods: A retrospective review was conducted to identify the cause, microbiology, management and outcome of the pinna abscess. Over a period of 2 yrs from September 2014 to September 2016, patients presenting with pinna abscess to the department of ENT, SMVMCH, Pondicherry, who underwent incision and drainage at least once were included in this study. 21 patients were included in the study. Exclusion criteria were post auricular abscess, infected pre auricular sinus.
Results: Among 21 patients, 11 were males and 10 were females. Most common etiology was road traffic accident in 15 patients, followed by high ear piercing 3 patients, and post-surgical in 1 patient.8 patients responded well with initial incision and drainage and IV antibiotics, with no postoperative complications. 2 patients needed second incision and drainage. 11 patients required incision and drainage more than 2 times and change of IV antibiotics. Among 21 cases, 10 were culture positive. The commonest pathogen was *Pseudomonas aeruginosa* in 9 cases. *Staphylococcus aureus* in 1 case. 11 patients developed postoperative complications cauliflower deformity in 4 patients, recurrent abscess in 7 patients.
Conclusions: *Pseudomonas aeruginosa* is the most common organism responsible for the pinna abscess caused by trauma (RTA), high ear piercings. Complications like cauliflower deformity and recurrent abscess were noted, which can be reduced by early initiation of antibiotics with surgical intervention.

Keywords: Pinna abscess, *Pseudomonas aeruginosa*, Cauliflower ear

INTRODUCTION

Pinna perichondritis is a common occurrence secondary to trauma due to road traffic accidents or high ear piercings, and in immunocompromised patients. Suppurative perichondritis of the pinna is a serious condition with potentially long-term cosmetic sequelae. Literature regarding the optimal treatment of these abscesses is scarce with most case series containing low numbers. The commonest organism grown on microbiological culture was *Pseudomonas*. Residual deformity was associated with longer time before presentation, piercing of the cartilage and a growth of *Pseudomonas*. Prompt surgical management and appropriate antibiotic regimens to cover *Pseudomonas* are the cornerstones of treatment in the event of pinna abscess formation.

Perichondritis typically occurs following trauma to the ear, including ear piercing. The most common organisms responsible for the infection are *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Since there is no single

oral antimicrobial agent that is reliably active against both these pathogens, it is important to undertake microbiological investigation to guide appropriate antimicrobial therapy.

The objective of this study was to evaluate the various outcomes of pinna abscess management in our experience.

METHODS

In this study retrospective review of clinical data of patients with pinna abscess presenting over 2 yrs period from September 2014 – September 2016 to the department of ENT at Sri Manakula Vinayagar Medical College and Hospital was done. Clinical case sheets, culture sensitivity reports, operative notes etc. were used to collect the patients details. 21 patients with a documented pinna abscess having had incision and drainage at least once were included in the study. Exclusion criteria were post auricular abscess, infected pre auricular sinus and cyst.

Clinical details of 21 patients were obtained including demographic details, etiology of pinna abscess, risk factors, antibiotics used, duration of antibiotic treatment, culture reports, details of surgical intervention, complications were noted.

Data analysis

Frequencies and percentage were calculated for the variables with complications.

RESULTS

Among 21 cases included in this study, 11 patients were males and 10 patients were females.

Age of the patients ranged from 12 years to 76 years, majority i.e. 10 patients belonging to 15-25 years.

Most common etiology was trauma following RTA in 15 patients, high ear piercing in 3 patients, secondary to ear surgery, i.e. endaural tympanoplasty in 1 patient and cause was unknown in 2 patients.

All the patients underwent incision and drainage of the pinna abscess at least once. Majority of the surgical procedures were performed under general anaesthesia. 8 patients responded well with initial incision and drainage and IV antibiotics, with no postoperative complications. 2 patients needed second incision and drainage. 11 patients required incision and drainage more than 2 times and change of IV antibiotics.

Pus was sent for culture and sensitivity in all 21 cases. Culture was positive in 10 cases. Among these, *P. aeuroginosa* was most commonly cultured i.e. in 9 cases. *S. aureus* was cultured in 1 patient.

In our study 11 cases had postoperative complications. 4 patients had cauliflower deformity, 7 cases with recurrent abscess. All the 9 cases where *P. aeruginosa* was cultured, developed post-operative complications.

Table 1: Sex distribution of patients.

Sex distribution of patients	No. of patients
Males	11
Females	10

Table 2: Various etiological factors for pinna abscess.

Etiology	No. of patients
Trauma secondary to RTA	15
High ear piercing	3
Secondary to ear surgery	1
Unknown	2

Table 3: Culture reports of the patients.

Culture report	No. of patients
Pseudomonas aeroginosa	9
Staphylococcus aureus	1
No growth	11

Figure 1: It shows left pinna abscess in a 13 year old male patient, which was secondary to RTA. Patient was treated elsewhere with oral antibiotics, but with no response. Patient presented to us after 2 weeks, and underwent incision and drainage of the abscess along with IV antibiotics.

Figure 2: It shows residual deformity after incision and drainage (cauliflower ear).

Table 4: Number of patients with postoperative complications.

Postoperative complication	No. of patients
Recurrent abscess	7
Cauliflower deformity	4

DISCUSSION

Perichondritis of the pinna is a relatively common but serious occurrence with potential complications of cartilage loss and cosmetic deformities. The perichondrium is responsible for the provision of blood supply to the underlying cartilage. Thus disruption of the perichondrium can result in necrosis and destruction of the cartilage with, often irreversible, cosmetic deformity.

This study included 21 patients with pinna abscess who underwent incision and drainage at least once. Our study shows that perichondrial infection of the pinna is associated with significant morbidity in terms of hospital admission and potential long term cosmetic deformity.

In this study, 11 patients were males, 10 patients were female, male to female ratio being 1.1:1. Age of the patients ranged from 12-76 years, majority of them belongs to the age group of 15-25 years. In a case series of pinna abscesses done in UK by Mitchell et al male to female ratio was 4:1 and average patient age was 25.3 years.[1]

Out of 21 cases of pinna abscess, we were able to identify a reason for developing the abscess in 19 of the patients. 3 patients had undergone recent high trans cartilage piercings and 15 had experienced local trauma to the pinna secondary to RTA and one patient had undergone endaural tympanoplasty.

In a prospective study of 45 cases by Ahmed et al, 44% cases were RTA, 28% assaults and 15% cases were due to assaults and one case of human bite.[2] Most of the cases healed well except 9 cases which developed chondritis. In a study of 40 patients with ear trauma by Sharma et al 11 cases developed complications like perichondritis (7 cases), facial nerve palsy (2 cases) and meatal stenosis (2 cases).[3]

Patients with pinna perichondritis are commonly treated with various IV antibiotics like co amoxiclav, metronidazole, cefixime, ciprofloxacin, cefuroxime for a duration ranging from 2 weeks to 6 weeks.[3-5] With early initiation of treatment, patients respond well without any cosmetic deformity.

In our study, all 21 patients with pinna abscess were commenced on either oral or intravenous empirical antibiotics including co amoxiclav, ciprofloxacin, metronidazole and anti-inflammatory drugs and analgesics. The entire cohort of patients required at least one incision and drainage of their pinna abscess and a high proportion of patients developed complications.

All patients had microbiological investigations and 10 of these were positive, indicating that microbiological investigation is both reliable and worthwhile for this clinical indication. *P. aeruginosa* was the most common causative organism in this series and was almost exclusively associated with high piercings and RTA. In one case, a pure growth of *S. aureus* was cultured; although commonly considered a contaminant, these bacteria are increasingly recognised as pathogens, even in the absence of prosthetic material. *P. aeruginosa* has previously been documented as a causative organism in the development of perichondritis and pinna abscesses as well as *S. aureus*. In a study by Stevenson EW, the commonest organism grown on microbiological culture was *Pseudomonas.*[6]

Various studies have indicated that residual deformity is usually associated with longer time before presentation, piercing of the cartilage and a growth of *Pseudomonas.*[7,8]

11 patients in our study developed postoperative complications. “Cauliflower ear” is recognised as a serious and disfiguring deformity leading to psychosocial distress to the patient and occurred in 4 of our patients. 7 patients had recurrent abscess. Other potentially life threatening complications such as endotoxic shock have also been reported in the literature. All 9 of the cases which grew *P. aeruginosa* had complications ranging from pain to cosmetic deformity leading to specialist plastic surgery referral. In a prospective cohort study by Dhar et al among 50 patients with auricular perichondritis, *P. aeruginosa* (48%) followed by *S. aureus* (20%) were the most common organisms isolated.[9] Sixty-eight percent developed residual deformities of the pinna with 50% being total and 18% being partial. In a study by Hussain et al, among 17 patients with pinna abscess, the commonest pathogen was *P. aeruginosa*, i.e. 5 patients and all of them developed a post-operative complication ranging from pain, repeated incision and drainage to gross cartilage necrosis and disfigurement requiring specialist plastic surgery referral.[10]

In recent times, there is increase in tendency for ear piercings especially in females. Often this involves “high” piercing, which requires puncture through the cartilage of the upper third of the pinna. Infection at this site results in auricular perichondritis. Cauliflower ear is more likely to occur with transcartilagenous ear piercings. The usual infective agent in auricular perichondritis is *P. aeruginosa*. In our study, 3 patients with pinna abscess had history of high ear piercing, all of them were females. Among these 3, one patient developed cauliflower ear and another patient developed recurrent abscess. Hanif et al, observed various complications related specifically to transcartilaginous ear piercings.[11] Transcartilaginous infections progress

rapidly, and aggressive management at the earliest opportunity is desirable.

In this study, one patient had history of endural tympanoplasty. In a study by Tseng and Shiao, in 8 patients with postoperative auricular perichondritis after an endural approach tympanoplasty, wide excision method was performed after the abscess localized.[12] The culture results found fungus in 4 patients. Multiple excision procedures were required in 4 patients. Two patients had stenosis of the external auditory canal resulting from repeated excision procedures

We conclude that *P. aeruginosa* is the common pathogen in the aetiology of pinna abscesses associated with RTA and high trans cartilage piercings. It is also evident that medical practitioners, including Otolaryngology surgeons, overlook this fact. Inappropriate empirical antimicrobial therapy is associated within an increased length of hospital stay, repeated interventions and also places them at risk of potential complications. Although it is not known whether earlier appropriate therapy would reduce the likelihood of a poor outcome, it seems reasonable to recommend that all pinna abscesses associated with RTA and high piercings have micro-biological sampling and empirical antibiotic therapy that covers *P. aeruginosa*. We recommend using ciprofloxacin which has the same bioavailability orally as it does intravenously. Patients with pinna abscess have a better outcome if treated by incision and drainage performed under a general anaesthetic.

CONCLUSION

We conclude that, in our experience, *P. aeruginosa* is the most common organism responsible for the pinna abscess particularly caused by trauma (RTA), high ear piercings. Complications like cauliflower deformity and recurrent abscess were noted, which can be reduced by early initiation of antibiotics with surgical intervention.

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