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Changing trends in Microbiology of periotonsillar abscess: A prospective study

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Abstract

Introduction: The patients with PTA without an ante ceding tonsillitis there is a higher incidence of older patients & there is abscess evolvement despite adequate antibiotic therapy. Peritonsillar abscess is known to be treated immediately & than cannot be await the culture & sensitivity reports. Hence, it is that desirable to know the organisms most commonly is isolated from the different cases of quinsy.

Materials & Methods: The present study was performed in a period of two years at the Department of Otorhinolaryngology and Head and Neck Surgery, Gujarat Adani Institute of Medical Hospital, Bhuj, Gujarat. The study group did consist of 60 consecutive patients (40 male and 20 female with the median age that of 38 years) with the Peritonsillar Abscess, who were undergoing tonsillectomy.

Results: The present bacteriologic studies showed that positive bacterial culture in 100% of cases. Gram-positive bacterial growth was seen in the 73.2% of all cases and the Gram-negative growth was seen in the 26.8%. The bacteria most commonly isolated were beta-hemolytic Streptococcus (60%) followed by Staphylococcus aureus (28.3%). Other isolates which were seen were alpha-hemolytic streptococci, Escherichia coli, Klebsiella, Pseudomonas.

Conclusion: The bacteria which was most commonly identified were beta hemolytic Streptococcus which was followed by S. aureus. Four points needle aspiration of pus was found to be equally efficacious in that relief of the pain as the incision & drainage in the initial management of the peritonsillar abscess.

Keywords: Bacteriology, Culture, Peritonsillar Abscess, Treatment

Introduction

The most commonly encountered abscess in upper aero-digestive tract which is the Peritonsillar Abscess also called as PTA. Peritonsillar absences is defined as the progression of a suppurative process with development of the purulent collection that is between the capsule of the tonsil and the fascia of the superior constrictor muscle.[(1)] When we look at the history it tells us that President George Washington was affected by peritonsillar abscess. Peritonsillar abscess is considered as a potential complication of acute tonsillitis. Tonsillitis is defined as the inflammation of the pharyngeal tonsils. In peritonsillar abscess, what happens is that there is pus trapped between the tonsillar capsule & lateral pharyngeal wall.[(2)]

Peritonsillar abscess is the localized accumulation of pus within a peritonsillar tissues, which does results from the acute tonsillitis & subsequent peritonsillar cellulitis. It is one of the most commonly encountered conditions found in ear, nose & throat all related to ENT emergencies. Clinical features of PTA include sore throat, trismus, muffed voice, dehydration, dysphagia, & intense pain. Owing to the clinical features admission to the hospital is required for some patients suffering from peritonsillar abscess. Intensive ^& emergency therapy may be required in some of the cases because it may lead to fatal complications which includes deep neck abscess & other as descending necrotizing mediastinitis.[(3)]

The course of the disease starts with first as acute follicular tonsillitis than progresses to peritonsillitis and lastly it results in formation of a peritonsillar abscess. It can also arise without previous history of tonsillitis. There is an another alternative theory which states the involvement of the Weber glands.[(4)] Weber glands are group of salivary glands which are found immediately above tonsillar area in soft palate. They are thought to play very minor role in clearing any of the trapped debris from surrounding tonsillar area. When there is tissue necrosis and formation of pus it results in production of abscess between the tonsillar capsule, lateral pharyngeal wall & the supratonsillar space. There is also scarring and obstruction of the various ducts that drain from the glands. Which results into the swelling of glands & they progress to abscess formation.[(5)]

Tonsillitis is considered as disease of children. Peritonsillar abscess usually affects teenagers and young adults but it can also occur in younger children. In the study done in Israel it was found that among the distinct cohort of people over 40 who were suffering from peritonsillar abscess had more severe symptoms & prolonged course. Tonsillitis is not always considered as a precursor to this condition and it sometimes occurred despite of the fact that prior adequate antibiotic therapy. Smoking is considered to be the risk factor. It is found to be most common in the month of November to December & April to May, which coincides with the highest incidence of streptococcal pharyngitis and exudative tonsillitis.[(5)]

In recent studies the highest incidence of PTA was found in the adults 20 to 40 years of age. The usual causative bacteria seemed to alter from gram-positive cocci to anaerobes and gram-negative rods.[(6)] A recent

study did reported an increased incidence along with more aggressive presentation of PTA among the pediatric population. During recent years, we have encountered more patients with PTA without any anteceding tonsillitis, a higher incidence of older patients & abscess evolvement despite the regular adequate antibiotic therapy.[7] To obtain better prognosis peritonsillar abscess needs to be treated immediately & cannot await the culture and sensitivity reports to start the treatment. Hence, it is required to know which organisms are most commonly isolated from the cases of quinsy.

Material & Methods

The prospective study was performed between a period of two years at the Department of Otorhinolaryngology and Head and Neck Surgery, Gujarat Adani Institute of Medical Hospital, Bhuj, Gujarat. The study group consisted of 60 consecutive patients (40 male and 20 female with median age of 38 years) with Peritonsillar Abscess, undergoing tonsillectomy. Before the start of the study, the ethical clearance certificate was obtained from the ethical committee of the medical institute in which the study was planned. All the participating patients were informed about the purpose of the study and to obtain the approval they were then asked to sign the informed consent.

The patients suffering from peritonsillar abscess were than randomly divided into two groups; one group consist of patient to be treated by incision & drainage and other group of patients were to be treated by needle aspiration. The group of patients who were to be treated by incision and drainage method had topical application of 4% lidocaine hydrochloride over the area of oropharynx. Next procedure includes the preliminary needle aspiration which was done to get pus for bacterial culture and drug sensitivity. Later on the incision and drainage of the abscess was done to the point of maximum fluctuance or bulging.

In the group of patients who were to be treated with only needle aspiration, the aspiration was done sequentially at the three different points in the area with an 18-gauge needle and syringe. The area which is present lateral to the superior tonsillar pole was first aspirated with three additional aspirations which were 1 & 2 cm inferior to the initial point. After the initial aspiration of the pus, the needle was removed & the syringe was capped with the rubber cap to provide an air tight seal. The pus obtained was sent to laboratory for direct smear examination by different Gram-stain & also for bacterial culture and drug sensitivity studies. The patients with clinical symptoms of severe dysphagia, trismus, and fever were admitted to the hospital and were put on parenteral antibiotics & analgesics. Patients who were able to take orally were then sent home with prescribed oral antibiotics & the analgesics. For comparison purposes between the two, the documentation of the time required for relief of pain after each procedure was done.

Results

On the assessment of the results it was found that the peritonsillar abscess was found to be more common in the age group between 21 and 30 years it was then followed by 31-40 years group. The male to female ratio was found to be of roughly 2:1. Out of the total 60 patients, 12 patients did had the previous history of throat pain while in other 48 patients it was considered as de novo. Positive bacteriological culture was found in all 100% of cases. Gram-positive bacterial growth was seen in 73.2% of cases and Gram-negative bacterial growth was found in 26.8%. The bacteria most commonly isolated were beta-hemolytic Streptococcus (60%) which were followed by Staphylococcus aureus (28.3%). Other isolates which were seen were alpha-hemolytic streptococci, Escherichia coli, Klebsiella & Pseudomonas as shown in Table 1.

Group-A which consists of beta-hemolytic Streptococcus was found to be 100% sensitive to drug cefpodoxime. Sensitivity to drug amoxicillin was found to be 71.34%. S. aureus showed 100% sensitivity to drug named amikacin, cefpodoxime and ofloxacin. Klebsiella showed 100% sensitivity to drug named cefpodoxime and ofloxacin. Sensitivity to drug named gentamicin was found in 50% of cases. Pseudomonas aeruginosa showed 100% sensitivity to drug named cefpodoxime and cefotaxime. Following treatment immediate relief of pain in patients who underwent needle aspiration was found to be 85%, and same was 87.8% in patients who did underwent incision and the drainage. Chi-square value was found to be 0.0256; where $P < 0.05$ was found to be statistically significant. Hence it can be said that needle aspiration is as efficacious in producing relief of pain along with that of incision and drainage.

Table 1: Culture results obtained from pus samples in 60 patients with Peritonsillar Abscess

Sr. No.	Bacterial Flora	N (%)
1.	Beta Hemolytic Streptococci	36 (60%)
2.	Staphylococcus Aureus	17 (28.3%)
3.	Escherichia Coli	3 (5%)
4.	Pseudomonas	2 (3.2%)
5.	Klebsiella	1 (1.6%)
6.	Alpha Hemolytic Streptococci	1 (1.6%)
7.	Total	60 (100%)

Discussion

PTA is a collection of pus found between the capsule and the surrounding soft tissue and muscles. Most abscesses develop in the superior part, but

abscesses of the inferior and middle parts are also possible, infratonsillar abscesses remain rare.[8]

The surgical opening of a peritonsillar abscess (PTA) using incision and drainage (ID) was first described in 1362 by a French surgeon, Guy de Chaliac. In 1859, another French surgeon, Chassaignac, introduced immediate tonsillectomy (TE) as a treatment modality; this method became popular in the beginning of the 20th century ([Chassaignac 1859], Herzon 1995).[9]

PTA, a potentially fatal infection, is the most frequent otorhinolaryngological (ORL) infection requiring special health care management (Rusan et al. 2009). Although most often associated with acute tonsillitis (AT), PTA may also originate from an infection in the dental area or minor salivary glands (Georgalas et al. 2002, Passy 1994). Due to these aetiological factors, as well as geographical, methodological, and even seasonal factors, microbiological findings in PTA vary. No consensus has been reached on which of the microbes found in bacteriological studies are pathogenic, although the most prevalent of them have been identified.[8]

Certain bacterial groups have special behavioural patterns, leading some researchers to suggest that different subtypes of PTA exist. Although patient characteristics, such as smoking, young age, male gender and poor oral hygiene, are associated with a higher incidence of PTA, only a few studies have demonstrated an association between different pathogens and the clinical features of PTA.[8,10]

Peritonsillar abscess is considered as potential life-threatening infection that can often results into complication of acute tonsillitis. If it is not treated early in time, it may lead to rupture of the lesion with a risk of aspiration or it can progress to parapharyngeal space & also along the neck vessels to the area of mediastinum. The proper treatment of this so considered serious infection is therefore important and it also requires surgical drainage as well as proper antimicrobial therapy.[11]

The drug to be used for the treatment in the antimicrobial therapy should be based on the culture & drug sensitivity reports of the pus which is drained from the abscess.[12] However, peritonsillar abscess needs to be treated immediately and one cannot await the sensitivity reports to come to start the treatment. Hence, doctor should know the organisms which are most commonly isolated from different cases of peritonsillar abscess so that the antibiotic effective against the sensitive bacteria can be used as standard drug.

Other important thing is the type of intervention which is used for the initial treatment of peritonsillar abscess. Incision and drainage are the accepted form of treatment. But with time and based on various research work, surgeons have suggested that per mucosal needle drainage of pus is equally effective, less distressing for the patient and is also very cost effective.[11] In most of the patients, aspiration of pus can result into immediate relief of odynophagia and trismus, so that hospitalization for the administration of intravenous fluids is not necessary. In a study done by researcher named Ophir et al., only 12% of the patients who underwent aspiration were needed to be hospitalized. In other 85% of patients, the abscess resolved without any further therapy. They did concluded that aspiration of pus, along with the oral antibiotics can be considered as a reasonable alternative to incision and drainage or tonsillectomy. Our study correlates well with these findings regarding per mucosal needle aspiration of pus being equally efficacious, less distressing for the patient and cost-effective compared to incision and drainage in the initial management of peritonsillar abscess.

Conclusion

The bacteria which were most commonly identified were betahemolytic Streptococcus followed by S. aureus. Treatment by per mucosal four points needle aspiration of pus was found to be equally efficacious in relief of pain as compare to incision and drainage in the initial management of peritonsillar abscess.

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