

Microbiology of Peritonsillar Abscess: A Prospective Study

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Abstract

Introduction: Peritonsillar abscess remains a common deep infection of the head and neck. We performed culture and sensitivity studies on pus drained from a peritonsillar abscess. The objectives were to identify the bacterial flora and to compare the relative efficacies of three-point needle aspiration and incision and drainage in the initial management of peritonsillar abscess.

Materials and Methods: A total of 30 cases of peritonsillar abscess were randomly divided into two groups. One group underwent three-point needle aspiration and the other group incision and drainage. The pus obtained was sent to the laboratory for direct smear examination by Gram-stain and for culture and sensitivity studies.

Results: Bacteriologic studies showed positive culture in 73.3% of cases. The bacteria most commonly isolated was beta-hemolytic *Streptococcus* followed by *Staphylococcus*. Following intervention, immediate relief of pain in patients who underwent needle aspiration was 75%, and the same was 77.8% in patients who underwent incision and drainage.

Conclusion: The bacteria most commonly identified were beta-hemolytic *Streptococcus*. Three points needle aspiration of pus was found to be equally efficacious in relief of pain as incision and drainage in the initial management of peritonsillar abscess.

Key words: Culture, Gram-stain, Peritonsillar abscess

INTRODUCTION

A peritonsillar abscess remains the most common deep infection of the head and neck even today despite the liberal use of antimicrobial agents for pharyngeal infections. It is a common entity seen by otolaryngologists, occurring at a rate of approximately 30/100,000 persons-years.¹

A peritonsillar abscess (quinsy) is a collection of pus between the fibrous capsule of the tonsil, usually at its upper pole, and the superior constrictor muscle of the pharynx. It usually occurs as a complication of acute tonsillitis or it may arise *de novo* with no preceding tonsillitis.

Peritonsillar abscess is a potential life-threatening infection. The proper management of this serious infection is

important and requires surgical drainage as well as proper antimicrobial therapy.²

Peritonsillar abscess has to be treated immediately and cannot await the culture and sensitivity reports. Hence, it is desirable to know the organisms most commonly isolated from the cases of quinsy.

MATERIALS AND METHODS

A total of 30 patients of peritonsillar abscess were randomized prospectively into two groups; one group to be treated by incision and drainage and another to be treated by needle aspiration.

The patients to be treated by incision and drainage had application of 4% topical lidocaine hydrochloride over the oropharynx. Next, preliminary needle aspiration was done to get pus for culture and sensitivity. Then, incision and drainage of the abscess were done at the point of maximum fluctuance or bulging.

In patients to be treated with needle aspiration, aspiration was done sequentially at three different points with an

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18-gauge needle and syringe. The area lateral to the superior tonsillar pole was aspirated initially with two additional aspirations 1 and 2 cm inferior to the initial point.

After aspiration of pus, the needle is removed and the syringe is capped with a rubber cap to provide an air tight seal. The pus is then sent to the laboratory for direct smear examination by Gram-stain and for culture and sensitivity studies.

The patients with severe dysphagia, trismus, and fever were admitted to the hospital and put on parenteral antibiotics and analgesics and intravenous fluids. Patients who could take orally were sent home with oral antibiotics and analgesics. For comparison purposes, the time required for relief of pain after each procedure was documented.

RESULTS

Peritonsillar abscess was found to be more common in the age group between 21 and 30 years followed by 31-40 years group. There was a male to female ratio of roughly 2:1. There were no cases with bilateral peritonsillar abscess seen. The majority of cases were seen between the months of May to July.

Out of the 30 patients, 6 patients had a previous history of throat pain while in 24 patients it was *de novo*.

Bacteriologic studies showed positive culture in 73.3% of cases. Gram-positive growth was seen in 68.1% of cases and Gram-negative growth in 31.9%. The bacteria most commonly isolated was beta-hemolytic *Streptococcus* (40.9%) followed by *Staphylococcus aureus* (27.7%). Other isolates seen were alpha-hemolytic streptococci, *Escherichia coli*, *Klebsiella*, *Pseudomonas*, and *Acinetobacter* (Table 1).

Group-A beta-hemolytic *Streptococcus* was found to be 100% sensitive to ciprofloxacin. Sensitivity to amoxicillin was

66.66%. *S. aureus* showed 100% sensitivity to amikacin, ciprofloxacin, and ofloxacin. *Klebsiella* showed 100% sensitivity to ciprofloxacin and ofloxacin. Sensitivity to gentamicin was 50%. *Pseudomonas aeruginosa* showed 100% sensitivity to ciprofloxacin and cefotaxime.

Following intervention, immediate relief of pain in patients who underwent needle aspiration was 75%, and the same was 77.8% in patients who underwent incision and drainage. Chi-square value was 0.0311; $P > 0.5$ was not statistically significant. Hence, needle aspiration is as efficacious in producing relief of pain as incision and drainage.

DISCUSSION

A peritonsillar abscess (quinsy) is a collection of pus between the fibrous capsule of the tonsil, usually at its upper pole, and the superior constrictor muscle of the pharynx. It usually occurs as a complication of acute tonsillitis or it may arise *de novo* with no preceding tonsillitis.

Peritonsillar abscess is a potential life-threatening infection that often complicates acute tonsillitis. If not treated, it may rupture spontaneously with a risk of aspiration or progress to parapharyngeal space and along the neck vessels to the mediastinum. The proper management of this serious infection is therefore of paramount importance and requires surgical drainage as well as proper antimicrobial therapy.²

The drug of choice in the antimicrobial therapy should ideally be based on the culture and sensitivity reports of the pus drained from the abscess. However, peritonsillar abscess has to be treated immediately and cannot await the sensitivity reports. Hence, it is desirable to know the organisms most commonly isolated from cases of peritonsillar abscess so that the antibiotic to which most of these are sensitive can be used as standard drug.

According to Scott-Brown,³ the bacteriology of acute tonsillitis and peritonsillar abscess is different. Although beta-hemolytic *Streptococcus* is frequently isolated, it is rarely isolated on its own. Mixed aerobic and anaerobic flora are found. Beta-lactamase producing organisms are recovered. Snow *et al.*, in their study,⁴ on 91 patients with peritonsillar abscess obtained a positive culture in 55 patients. Forty patients had pure growth of a single organism, the remaining 15 patients had mixed growth. The most common organism isolated was beta hemolytic streptococci.

Table 1: Culture results obtained from pus samples in 30 patients with peritonsillar abscess

Bacterial flora	N (%)
Beta hemolytic streptococci	9 (30.0)
<i>Staphylococcus aureus</i>	5 (16.7)
<i>Escherichia coli</i>	2 (6.7)
<i>Pseudomonas</i>	2 (6.7)
<i>Klebsiella</i>	2 (6.7)
<i>Acinetobacter</i>	1 (3.3)
Alpha hemolytic streptococci	1 (3.3)
No growth	8 (26.7)
Total	30 (100)

Another important aspect is the type of intervention used in the initial management of peritonsillar abscess. Incision and drainage are the time honored and accepted form of treatment. But increasingly, surgeons have suggested that per mucosal needle drainage of pus is equally efficacious, less distressing for the patient and cost effective. In most patients, aspiration of pus can bring about immediate relief of odynophagia and trismus, so that hospitalization for intravenous administration of fluids is not necessary. In a study by Ophir *et al.*,⁵ only 12% of the patients who underwent aspiration had to be hospitalized. In 85% of patients, the abscess resolved without further therapy. They concluded that aspiration of pus, along with oral antibiotics is a reasonable alternative to incision and drainage or hot 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 most commonly identified were beta-hemolytic *Streptococcus* followed by *S. aureus*. Per mucosal three points needle aspiration of pus was found to be equally efficacious in relief of pain as incision and drainage in the initial management of peritonsillar abscess.

REFERENCES

1. Cherukuri S, Benninger MS. Use of bacteriologic studies in the outpatient management of peritonsillar abscess. *Laryngoscope* 2002;112:18-20.
2. Brook I, Frazier EH, Thompson DH. Aerobic and anaerobic microbiology of peritonsillar abscess. *Laryngoscope* 1991;101:289-92.
3. Cowan DL, John H. Acute and chronic infection of the pharynx and tonsil. In: John H, editor. *Scott-Brown's Laryngology and Head and Neck Surgery*. 6th ed., Vol. 5. Oxford: Butterworth and Co., Ltd.; 1997. p. 5/4/3, 5/4/4, 5/4/17.
4. Snow DG, Campbell JB, Morgan DW. The microbiology of peritonsillar sepsis. *J Laryngol Otol* 1991;105:553-5.
5. Ophir D, Bawnik J, Poria Y, Porat M, Marshak G. Peritonsillar abscess. A prospective evaluation of outpatient management by needle aspiration. *Arch Otolaryngol Head Neck Surg* 1988;114:661-3.

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