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Management of peritonsillar abscess

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Abstract

A prospective, randomized clinical trial was conducted on 60 patients with confirmed peritonsillar abscess to: (1) compare the safety and efficacy of permucosal needle aspiration with that of incision and drainage; (2) assess whether admission to hospital and treatment with intravenous antibiotics is necessary; (3) culture the pus obtained, in order to decide on a rational antibiotic regime.

Of the 60 patients, 30 were randomized to the needle aspiration group, and 30 to the incision and drainage group. The initial success rate was 87 per cent (26 of 30 patients) with needle aspiration, and 90 per cent (27 of 30 patients) with incision and drainage. Two patients required hospital admission, for rehydration and intravenous antibiotics. The commonest organisms cultured were streptococci (62 per cent); 97 per cent of all patients responded to penicillin. This study indicates that most patients with peritonsillar abscess may successfully and safely be treated by permucosal needle aspiration, and oral penicillin, on an outpatient basis.

Introduction

Peritonsillar abscess is a collection of pus between the fibrous capsule of the tonsil, and the superior constrictor muscle of the pharynx. The infection spreads to this potential space from the crypta magna of the tonsil. The abscess is usually related to the upper pole of the tonsil. Various regimens have been used for treatment of peritonsillar abscesses—tonsillectomy '*à chaud*', intravenous antibiotics, incision and drainage with intravenous or oral antibiotics and 3-point permucosal needle aspiration with intravenous or oral antibiotics.

Because of the need to restrict admission of patients to the crowded King Edward VIII Hospital in Durban, and because of the large numbers of patients with peritonsillar abscess seen there, a prospective trial was done to:

1. Compare the safety and efficacy of permucosal needle aspiration with that of incision and drainage;
2. To assess whether admission to hospital and treatment with intravenous antibiotics is necessary;
3. To decide on a rational antibiotic regime.

Patients and methods

Patients presenting to the ENT clinic with suspected peritonsillar abscess in the four months between March 1989 and June 1989, underwent permucosal needle aspiration at the point of maximal fluctuation. Those with negative needle aspirations were excluded from the study. Those in whom pus was aspirated were alternately placed in one of two groups—one to have needle aspiration alone, and one to have incision and drainage of the abscess. Each patient was assessed with regard to the presence of odynophagia, pyrexia, trismus and drooling. Needle aspiration was performed using a 10 ml plastic syringe, and an 18FG needle, after application of topical local anaesthetic, *viz.* lignocaine.

Needle aspiration was performed at three points:

1. Point of maximal fluctuation (usually the upper pole).
2. Mid-tonsillar region.
3. Lower pole.

Patients randomized to the needle aspiration group received no further surgical treatment. Patients randomized to the incision and drainage group underwent incision and drainage at the point at which pus was aspirated, using a guarded scalpel blade.

Both groups received antibiotics, *viz.* procaine penicillin, 3 ml intramuscularly as a stat dose, and penicillin VK 500 mg 6-hourly, orally, for 10 days. They were also given analgesics, and a mouthwash. Patients were reviewed on day 1, and on day 7. Those with reaccumulation of pus on day 1 were treated as they were initially.

Bacteriological technique

The pus was transported to the laboratory in a plastic syringe which was sealed with a rubber stopper after the air had been expelled (as recommended by Haeggstrom *et al.*, 1987). The majority of the specimens reached the laboratory within 1 hour. The rest were kept at room temperature and transported within 12 hours.

Using an aseptic technique, smears were made on sterile slides. Chocolate, blood, MacConkey and Hoyle's agar plates were innoculated for aerobes. The

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TABLE I

Age	Under 14	15–30	31–40	Over 40
Number	6	38	12	4
%	10	63	20	7

plates were incubated at 37°C aerobically (MacConkey and Hoyles' agar) or under 10 per cent carbon dioxide (blood and chocolate agar), and were examined 24 hours later. For the anaerobic organisms, amikacin plate (selective medium) and 10 per cent blood agar plate, which is an enriched medium, suitable for anaerobes, were used. The anaerobic plates were examined 48 to 72 hours later.

Results

Over the study period, 77 patients with suspected peritonsillar abscess were seen. Pus was aspirated in 60 patients (78 per cent). The 17 patients in whom needle aspiration was negative were excluded from the study. Of the 60 patients from whom pus was aspirated, 30 patients were randomized to needle aspiration alone, and 30 patients to incision and drainage. Sixty-three per cent of the patients fell into the 15–30 year age group (see Table I).

All patients presented with some degree of odynophagia and drooling of saliva; 38 patients had trismus and only 16 patients had pyrexia greater than 38°C.

Forty-nine patients (82 per cent) attended the clinic on day one. Four patients (13 per cent) required repeat needle aspiration. Three patients (10 per cent) required repeat incision and drainage.

Thirty-eight patients (63 per cent) attended the clinic on day seven. At this stage, the peritonsillar abscess had resolved in all cases.

Bacteriology

The commonest organisms cultured were streptococci (62 per cent of cases), and a large number (18.3 per cent) of anaerobes were also cultured (see Table III).

In those specimens from which no organisms were cultured, light microscopy revealed gram positive cocci in two, gram negative cocci in two, and no organisms in five. Results of antimicrobial sensitivities showed that all the streptococci were sensitive to penicillin VK, and that the *E. coli* and anaerobes were sensitive to ampicillin. The Klebsiella was sensitive to cotrimoxazole (see Table IV).

However, the anaerobes and *E. coli* responded to penicillin VK *in vivo*.

No patients exhibited allergy to penicillin

Two patients required admission to hospital for rehydration. Both these patients had undergone incision and drainage initially. The first patient settled on intravenous fluids and soluble penicillin intravenously. In this patient, anaerobes were cultured. The second patient did not settle on pencillin. In this patient a Klebsiella was cultured from the aspirate. Intravenous cotrimoxazole resulted in rapid resolution of the infection.

TABLE II

Symptoms and signs	No. of patients	%
Odynophagia	60	100
Temperature more than 38°C	16	27
Trismus	38	63
Drooling	60	100

Discussion

The management of peritonsillar abscess varies from centre to centre. The optimal treatment is controversial. Regimens used have varied from tonsillectomy *'à chaud'*, to incision and drainage with intravenous or oral antibiotics, to permucosal needle aspiration with intravenous or oral antibiotics. The advantage of outpatient treatment of peritonsillar abscess is its cost-effectiveness.

The advantages of needle aspiration over incision and drainage are:

1. it is easy to perform (Stringer *et al.*, 1988) (and easy to teach to non-otorhinolaryngologists);
2. it confirms the diagnosis with the minimum of trauma (and should, in any case, be done *before* incision and drainage);
3. it is well tolerated by patients (Stringer *et al.*, 1988);
4. it is less likely to injure adjacent structures;
5. it is easier to collect a pus specimen for microscopy and culture;
6. it provides immediate relief of symptoms in most patients;
7. because aspiration is performed at three points, there is less likelihood of missing a lower pole abscess.

In this study pus was aspirated in 60 out of 77 patients (78 per cent) with suspected peritonsillar abscess, a similar figure to that of Ophir *et al.* (1988) who had a positive aspirate in 72 per cent of patients.

The initial failure rate was 13 per cent (four of 30 patients) in the needle aspiration group, and 10 per cent (three of 30 patients) in the incision and drainage group. This compares well with the results of Stringer *et al.* (1988) who had an initial failure rate of 8 per cent (two of 24 patients) in the needle aspiration group, and 7 per cent (two of 28 patients) in the incision and drainage group.

Ophir *et al.* (1988) had a 15 per cent initial failure rate with needle aspiration. Schechter *et al.* in 1982, had a 10 per cent initial failure rate, as did Herzon *et al.* (1984).

The seven patients in whom pus had reaccumulated were all cured with a single retreatment. Only two patients (3 per cent) required hospitalization—both needed intravenous rehydration and intravenous antibiotics. In one of these patients, a Klebsiella was cultured, and intravenous cotrimoxazole was required before resolution occurred.

In Ophir's (1988) series, nine out of 75 patients (12 per cent) required hospitalization, because of severe ody-

TABLE III

Organism	Number		%	
1. Streptococcus—pyogenes	27)	37	45)	62
—other	10)		17)	
2. Anaerobes (*e.g.* bacteroides, peptostreptococcus)	11		18.3	
3. Nil	9		15	
4. *E. Coli*	2		3.3	
5. Klebsiella	1		1.6	

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TABLE IV

Organism	Antimicrobial
1. Streptococcus	Penicillin VK
2. *E. coli*	Ampicillin
3. Anaerobes	Ampicillin
4. Klebsiella	Cotrimoxazole

nophagia or systemic toxicity, and required intravenous hydration and penicillin. In the series of Stringer *et al.* (1988) one patient, with bilateral peritonsillar abscess, required hospitalization for airway obstruction, volume repletion and control of diabetes mellitus.

In this series, no patients developed airway compromise and there were no bilateral peritonsillar abscesses. The high incidence (18 per cent) of anaerobic bacteria cultured is in keeping with other series. Haeggstrom *et al.* (1987), using pus from 10 patients with peritonsillar abscess, isolated a total of 26 bacterial species, of which 19 were obligate anaerobes. In this series, all but the Klebsiella responded to penicillin VK; in Haeggstrom's series, all bacteria responded to penicillin VK, ampicillin and erythromycin when treated *in vitro*.

The relatively poor follow-up (82 per cent on day one and 63 per cent on day seven) is explained by the fact that King Edward VIII Hospital treats a socio-economically deprived, poorly compliant population, who attend hospital only when symptoms are severe. It is therefore likely that those patients who did not attend for follow-up visits, were cured by the initial treatment.

Conclusion

The results of this series compare favourably with those of other authors, and serve to confirm that outpatient management of peritonsillar abscess, using needle aspiration, and oral antibiotics, is a safe, efficacious and effective method of treatment.

Key words: Peritonsillar abscess

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