

THE MANAGEMENT OF PERITONSILLAR ABSCESS

Thin Thin Nwe

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By

THIN THIN NWE

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DECLARATION

I, Dr T.T. Nwe declare that the study, The management of peritonsillar abscess is my own unaided work and has not been submitted previously to this or any other university.

T.T. NWE

DEDICATION

I dedicate the Master of Medicine (Otol) dissertation to my parents Drs M Thein and M.M. Tin for their continuous support and encouragement they have given me in achieving all my goals in life.

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ABSTRACT

Over a four month period from 1st November 1998 to 28th February 1999 a randomised prospective study was undertaken in 75 patients with peritonsillar abscess (PTA) to determine the treatment modality that is most effective in alleviating the excruciating pain and discomfort associated with the condition.

The patients were divided into three treatment groups. There were 25 patients in each group. Group A patients were treated with intravenous antibiotics and intra muscular opiates, Group B aspiration and oral antibiotics and Group C incision and drainage and oral antibiotics.

Pain relief was objectively assessed with each treatment modality by measuring the upper to lower incisor distance, 15 mins, 24 hours and 48 hours and oral intake at 2 hours, 24 hours and 48 hours after the initial treatment.

The improvement of the mean upper to lower incisor distance 15 minutes after the initial treatment was 5% in Group A, 38% in Group B and 100% in Group C. Twenty four hours later the improvement was 30% in Group A, 111% in Group B and 125% in Group C.

None of the patients in Group A were able to take fluid orally at 2 hours. Only 2 patients (8%) could in Group B and 23 patients (92%) in Group C. 24 hours later, 15 patients (60%) could take fluid orally in group A, 19 (76%) in group B and 25 (100%)

in group C.

Treatment failures were those patients in whom the trismus, odynophagia and pyrexia failed to subside after 48 hours. There were 8 patients (30 per cent) in group A, 6 (24%) in group B and none in Group C. The 14 failures were successfully treated with incision and drainage.

The conclusion derived from this study is that incision and drainage is superior to intravenous antibiotic and aspiration in alleviating the pain and discomfort associated with peritonsillar abscess.

INTRODUCTION

Peritonsillar abscess is an extremely painful condition. The marked trismus coupled with severe odynophagia prevents oral intake; necessitating admission to hospital with intravenous feeding and intra muscular opiates to relief the pain. Besides the great deal of discomfort it can complicate into life threatening conditions such as airway obstruction, spontaneous rupture with aspiration pneumonitis, parapharyngeal abscess with internal jugular vein thrombosis. (Alan Kerr 1988) Surprisingly for a condition with such a high degree of morbidity no consensus has been reached on a single treatment modality. The recommended treatment modalities range from conservative management with intravenous antibiotic to needle aspiration, incision and drainage and abscess tonsillectomy with antibiotics. No matter which treatment is chosen complete recovery does occur and for this reason the treatment choice depends on the surgeons personal preference. This should not be the case, the treatment choice for the patient must be that which is most effective in alleviating the excruciating pain and discomfort associated with PTA. This study will try and determine which one of the treatment modalities is most effective in achieving this goal and in future this will assist the physician in making the correct choice for the patient.

BACKGROUND INFORMATION AND LITERATURE REVIEW

The four recommended treatment modalities for peritonsillar abscess are :

1. Conservative management with intravenous antibiotics, intramuscular opiates and intravenous fluid replacement
2. Needle aspiration and antibiotics
3. Incision and drainage and antibiotics
4. Abscess tonsillectomy and antibiotics

(1) Intravenous antibiotics and Rehydration

According to the authors of recommended text book Scott Brown's ear, nose and throat disease (Alan Kerr) and Otolaryngology Head and Neck Surgery (Paparella, Shumerick Gluckman, Meyerhoff) the treatment for peritonsillar abscess is intravenous antibiotics and rehydration. Incision and drainage are reserved for failures.

(2) Needle Aspiration

Needle aspiration of peritonsillar abscess as a sole initial surgical treatment was first advocated by King (1961). In 1981 Herzon and Aldridge reported 82% success with aspiration. Since then aspiration of peritonsillar abscess have been undertaken by many surgeons with success rate ranging from 85 to 100 per cent (King 1961, Strome 1973, Schechter et al 1982, Spires et al 1987, Stringer et al 1988, Ophir et al 1988, Maharaj et al 1991, Weinberg et al 1993,

Savolainen et al 1993, Wolf et al 1994).

(3) Incision and Drainage

One of the first references to incision and drainage of peritonsillar abscess was by Hippocrates. Wolf et al in 1994 reported 100% success. Herzon (1995) undertook a national survey among the members of American Academy of Otolaryngology Head and Neck Surgery and found 54 per cent of the members undertook incision and drainage, 32 per cent needle aspiration and 14 percent abscess tonsillectomy.

(4) Abscess Tonsillectomy

Abscess tonsillectomy has been recommended as routine therapy for peritonsillar abscess by Winkler (1911), Baum (1926), Virtanen (1949), Grahne (1956), Volk and Brandon (1960) Lee et al (1973), Yung and Cantrell (1976), McCurdy (1977), Chowdhury and Bricknell (1992). In principle abscess tonsillectomy is basically incision and drainage of the PTA, but in addition tonsillectomy is performed. The disadvantage is accidental rupture of the abscess and aspiration during intubation.

PATIENTS AND METHODS

Over four month period from 1st November 1998 to 28th February 1999 a prospective study was undertaken in 75 patients with peritonsillar abscess with the approval of the Ethics Committee to determine which one of the recommended treatment modalities is most effective in alleviating the extreme discomfort and pain associated with the condition. There were 25 males and 50 females. The age ranged for 15-43 years (mean 22,5 years).

PATIENT SELECTION AND DIAGNOSIS OF PERITONSILLAR ABSCESS

1. Unilateral swelling of the tonsil and soft palate and medial displacement of the uvula
2. Fever, temperature greater than 37,5°C
3. Trismus with inability to open the mouth fully
4. Severe odynophagia with inability to swallow even saliva resulting in drooling

Exclusion criteria : Children and patients with complications

TREATMENT GROUPS

The patients were randomly divided into 3 treatment groups. In each group there were 25 patients (Table 1).

Groups	Age Range	Mean	Sex	
			F	M
A	15-33	18,4	16	9
B	16-43	26,3	17	8
C	15-33	22,7	17	8

Table 1 : Age and Sex of Patients

The peritonsillar abscess was predominantly on the left (Table 2).

Groups	L	R
A	15 (60%)	10 (40%)
B	14 (56%)	11 (44%)
C	14 (56%)	11 (44%)

Table 2 Site of Peritonsillar Abscess

TREATMENT METHODS

Group A

The patients were treated with intravenous soluble penicillin, 600 000 units six hourly and intra muscular injection of morphine 1mg/kilogram/day in four divided doses.

Group B

The peritonsillar abscess was aspirated with a 18FG needle and 10cc syringe after spraying the area with topical lignocaine and benzathine penicillin 2,4 million units was given intramuscularly as a single dose. Ten millilitres (mls) of paracetamol syrup was given every 6 hours for the pain.

Group C

The abscess was incised and drained under local anaesthesia, benzathine penicillin 2, 4 million units was given intra-muscularly as a single dose. Ten mls of paracetamol syrup was given every 6 hours for the pain.

Incision and drainage procedure

One cubic centimetre of lignocaine with 1 in 80 000 adrenalin was injected into the soft palate. A number 11 blade with adhesive tape guarding all but the tip was used to incise the mucosa of the palate at the point of maximum swelling. A pair of closed sinus forceps was used to dissect into the abscess cavity and on entry it was opened fully providing sufficient tract for drainage.

PARAMETERS USED TO ASSESS THE EFFECTIVENESS OF TREATMENT

1. Measurement of pain relief using the upper to lower incision distance

Distance between upper and lower incision teeth was recorded with the mouth maximally open before the commencement of treatment and then 15 minutes 24 hours and 48 hours after the initial treatment.

2. Measurement of pain relief using oral intake

Patients were given water to swallow two hours after initial treatment and then every 6 hours until the swallowing was pain free.

3. Daily body temperature recordings

Body temperature was recorded every 6 hours to determine at which point the fever subsided completely.

MICROBIOLOGY

Pus swabs were performed in 39 patients, 25 patients in Group C, and 14 failures from Groups A and B.

Culture result

In three patients the pus swab results were not available

The results in the 36 patients were as follows

Streptococcus species	23 (64%)
– pyogenes	11
– viridans	6
– malleri	2
– pneumonia	4
Staphylococcus aureus	2 (6%)
Anaerobes	4 (11%)
Mixed anaerobes and aerobes	4 (11%)
No growth	3 (8%)

Sensitivity

All species of streptococci and staphylococcus aureus were sensitivitie to penicillin

RESULTS OF TREATMENT

1. Mean upper to lower incisor distance

There was a 5% improvement in the mean upper to lower incisor distance 15 minutes after initial treatment in patients in group A. The comparable figure for patients in group B was 38% and group C, 100%. At 24 hours there was 30% improvement in Group A, 111 per cent in Group B and 125 per cent in Group C. It is apparent from these findings that the most effective method of alleviating of pain associated with trismus in patients with PTA is incision and drainage.

	15 minutes	24 hours
Group A	5%	30%
Group B	38%	111%
Group C	100%	125%

Table 3 Improvement of the mean upper to lower incision distance 15 minutes and 24 hours after initial treatment

2. Fluid intake

Two hours after initial treatment none of the patients in Group A were able to swallow fluids. In the same time two patients (8%) in Group B and 23 patients (92%) in Group C were able to swallow fluids. After 24 hours, 15 patients (60%) in Group A were able to swallow fluid, 19 (76%) in Group B and 25 patients (100%) in Group C.

Groups	2 Hours	24 Hours	48 Hours
A	0%	15 (60%)	17 (68%)
B	2 (8%)	19 (76%)	19 (76%)
C	23 (92%)	25 (100%)	25 (100%)

Table 4 Oral fluid intake 2, 24 and 48 hours after initial treatment

3. Temperature recording

Temperature returned to normality after 24 hours in 24% of patients in Group A, 64% in Group B and 96% in Group C and after 48 hours 68% of patients in Group A, 76% in Group B and 100% in Group C.

Groups	Range	Mean	(No. of patients)	
			24 hours	48 hours
A	37.5 - 39°C	38.3	6 (24%)	17 (68%)
B	38 - 38.9°C	38.5	16 (64%)	19 (76%)
C	37.5 - 39°C	38.4	24 (96%)	25 (100%)

Table 5 : Body temperature recording 24 and 48 hours after initial treatment

4. Treatment outcome

Treatment failures were in patients in whom the trismus and pyrexia persisted 48 hours after the initial treatment. There were eight patients in Group A and six in Group B. All were successfully treated with incision and drainage.

Group	Success (%)	Failure (%)
A	17 (70)	8 (30)
B	19 (76)	6 (24)
C	25 (100)	nil (0)

Table 6 Treatment outcome

DISCUSSION

Peritonsillar abscess (PTA) is very prevalent in the local population. In 16 weeks 75 patients presented with PTA, the majority (77 per cent) were in the 15-30 years age group with mean age of 22.5 years. Maharaj et al (1991) and Savolainen et al (1993) reported 63 and 97 per cent incidence respectively in a similar age group. Interestingly although recurrent and chronic tonsillitis is disease of the first decade, peritonsillar abscess commonly occurs in patients in the second and third decade of life.

In the present series PTA was twice as common in females than in males. This is direct contrast to the report by Snow et al (1990) who reported higher incidence in males.

The clinical features of PTA are very consistent. In this study all patients presented with sore throat and difficulty in swallowing ranging from one to three days and on examination all patients were pyrexial and had trismus , odynophagia, and palatal swelling on the affected side.

The trismus is thought to be due to inflammation of the medial pterygoid muscle which lies lateral to the tonsil.

The spasm produces severe excruciating pain preventing the mouth from opening fully and hence the patients are unable to eat or drink, and drooling is common. As the spasm diminishes opening of the mouth becomes easier. This manifests as an increase in upper to lower incisor distance.

Therefore by serially measuring this distance one is able to assess the effect of any treatment on trismus and consequently pain.

In this study there was 100% improvement of the mean upper to lower incisor distance in the incision and drainage group, 15 minutes after the procedure, whilst in the conservative and aspiration treatment groups there was only 5% and 38% improvement respectively (Table 3). The conclusion derived from these facts is that incision and drainage is very effective in relieving the trismus associated with PTA.

The odynophagia or pain on swallowing is due inflammation of the superior constrictor muscle of the pharynx. The muscle forms the lateral wall of the tonsil and during swallowing its contraction produces severe excruciating pain. The magnitude of the pain is such that the patients are afraid to swallow, even their own saliva, resulting in drooling.

Oral intake only commences when the pain subsides, and therefore by giving the patient water to drink at regular intervals one can determine the point at which the pain has subsided sufficiently to enable the patient to swallow. This was used as an indirect determinant of the effectiveness of the various treatment methods on odynophagia.

In the incision and drainage group 92% of patients were able to swallow water two hours after the procedure. None of the patients in the conservative treatment group and only 8% in the aspiration group were able to do so 2 hours after commencement of treatment (Table 4). This is a very important when considering treating patients with

PTA as outpatients. The prerequisites for outpatient treatment are that patients must be able to take fluids and antibiotics orally. According to this study 92% of the patients in incision and drainage treatment group could be treated as outpatients and only 8% in the aspiration group.

It is evident from these facts that incision and drainage is superior to intra venous antibiotics and aspiration in relieving the odynophagia associated with PTA, thus permitting 92 per cent of the patients to be treated as outpatients.

Temperature was recorded to objectively determine which treatment modality was most effective against the systemic effects of the infection. The temperature returned to normality within 24 hours in 96% of patients in the incision and drainage group, 68% in the aspiration and only 24% in conservative treatment group, thus displaying that incision and drainage is most effective in relieving the pyrexia associated with PTA (Table 5).

The bacteriology of the PTA revealed aerobic and anaerobic organisms. The commonest bacteria was streptococcus species (64 per cent). This is similar to the 62% and 70% reported by Maharaj et al (1991) and Savolainen (1993) respectively.

Importantly all streptococcus species were sensitive to penicillin thus making it the drug of choice for patients with PTA. A similar finding was reported by Haeggstrom et al (1987).

Treatment failures were patients in whom, the trismus, odynophagia and pyrexia persisted after 48 hours of treatment. There were eight patients (32 per cent) in conservative treatment group and six in aspiration group and none in incision and drainage group. All were successfully treated with incision and drainage (Table 6).

In this study the success with aspiration was 76%. This is slightly lower than the 90% reported by Schechter et al (1982), Herzon (1984) and Wolf et al (1994) and 85% by Ophir (1988). The lower success rate may be due to the fact that patients were treated with single aspiration only.

The success with incision and drainage was 100%, similar to that report by Wolf et al (1994).

Most published papers in the literature on the PTA has compared the success rate of one form of treatment with another. In this study we went a step further and tried to determine which treatment is most effective in alleviating the agonising pain associated with PTA and explaining the possible factor that is responsible for the pain and the best method of relieving it.

The presence of pus in the peritonsillar space is responsible for the pain because as soon as the abscess cavity is decompressed and the pus evacuated, the pain subsides. This effect was noted in all patients with incision and drainage and in also the, nine patients in the conservative treatment group who reported instantaneous pain relief when the abscess ruptured spontaneously.

The same effect can be achieved with abscess tonsillectomy but the main disadvantages are it requires hospital admission, and the services of a competent anaesthetist and there is an unavoidable delay ranging from 8 to 72 hours to get the patient into operating theatre (Bonding 1970 and Harle 1988). There is also the risk of spontaneous abscess rupture and aspiration pneumonitis on induction of anaesthesia or instrumentation during intubation. The other factor is the increase in cost. For these reasons abscess tonsillectomy is not recommended for PTA.

CONCLUSION

Incision and drainage is a superior treatment modality to intravenous antibiotic and aspiration because not only does it give 100% success but is most effective in relieving the pain and discomfort associated with PTA. In addition patients can be treated as outpatients preventing unnecessary occupation of hospital beds and making them available to patients whose illnesses warrant inpatient treatment. This is a very important consideration in developing countries where the bed occupancy rate in provincial hospitals is extremely high and at times patients are refused admissions because all the beds are occupied.

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