

Peritonsillar infections: local experience

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ABSTRACT

Introduction: The disease pattern and management of peritonsillar infections in Singapore General Hospital are studied. Other objectives are to determine if a seasonal variation exists and to examine the role of routine bacterial cultures and interval tonsillectomy.

Methods: This is a retrospective review of the management and outcome of patients with peritonsillar infections who were admitted acutely to Singapore General Hospital over a three-year period.

Results: Of 185 patients studied, 151 (81.6 percent) had peritonsillar abscess or quinsy and 34 (18.4 percent) had peritonsillar cellulitis. There were 139 males and 46 females, with a racial predisposition among Malays (p value is less than 0.0005). There may be a seasonal variation with a bi-annual trend, though no correlation with upper respiration tract infections was noted. Treatment consisted mainly of incision and drainage (66 percent) or needle aspiration (34 percent). No significant difference in the length of stay was noted in patients receiving penicillin alone, penicillin with metronidazole, or broad-spectrum antibiotics (p value is equal to 0.062). Fourteen (7.6 percent) patients had recurrences, all of which occurred after the first month. Two patients (1 percent) had bilateral quinsy.

Conclusion: Peritonsillar infections remain a common admitting diagnosis to the Otolaryngology department. A single episode of infection should no longer be an indication for tonsillectomy as the incidence of recurrence is low.

Keywords: antibiotics, peritonsillar cellulitis, peritonsillar infections, quinsy, tonsillectomy

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INTRODUCTION

Peritonsillar infection describes a spectrum of diseases that range from peritonsillar cellulitis to peritonsillar abscess. Peritonsillar abscess (PTA), or quinsy, refers to a collection of pus located between the fibrous

capsule of the pharyngeal tonsil and the superior constrictor muscles of the pharynx. When there is inflammation with localised erythema and induration without evidence of pus, it is termed as peritonsillar cellulitis (PTC) or peritonsillitis. If inappropriately or not treated, it can progress to abscess formation. The true pathogenesis is unknown. The widely accepted theory is that it occurs as a complication of an acute exudative tonsillitis. Another theory proposes the involvement of Weber's glands, a group of salivary glands located in the supra-tonsillar space. Abscess formation of the glands results in quinsy⁽¹⁾.

It is the most common site of head and neck infection in adults^(2,3). The incidence of PTA in the United States is about 30 per 100,000 person-years, accounting for approximately 45,000 cases annually⁽⁴⁾. In United Kingdom, it averages 13 adult cases per 100,000 person-years⁽⁵⁾. There appears to be a seasonal variation in the occurrences of peritonsillar infection in temperate countries^(3,6-8). Spires et al found a strong seasonal variation as 70% of the patients were seen from October to February⁽³⁾. Other peaks have been reported during spring or autumn⁽⁷⁾.

Although surgical drainage of the abscess remains the cornerstone of therapy, other treatment options include needle aspiration and quinsy tonsillectomy. The choice of treatment is largely dependent on the preference of the individual practitioner. No consensus has been reached regarding the optimal treatment method. Controversies also exist regarding the use of antibiotics after drainage and the role of routine bacterial cultures and tonsillectomy. The objectives of this study are: 1) to review the disease pattern and its management in a tertiary hospital in Singapore, 2) to determine if a seasonal variation exists, and 3) to examine the role of routine bacterial cultures and interval tonsillectomy.

METHODS

Patients with peritonsillar infections who were admitted acutely to Singapore General Hospital from October 1997 to September 2000 were retrospectively reviewed.

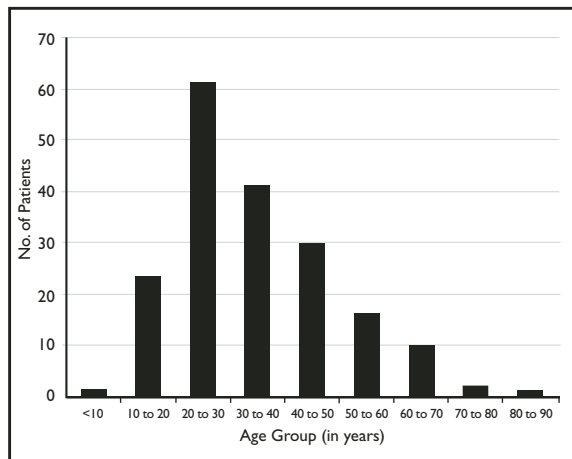
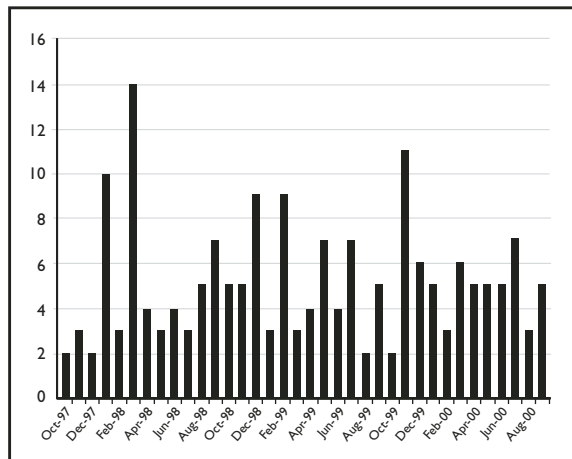
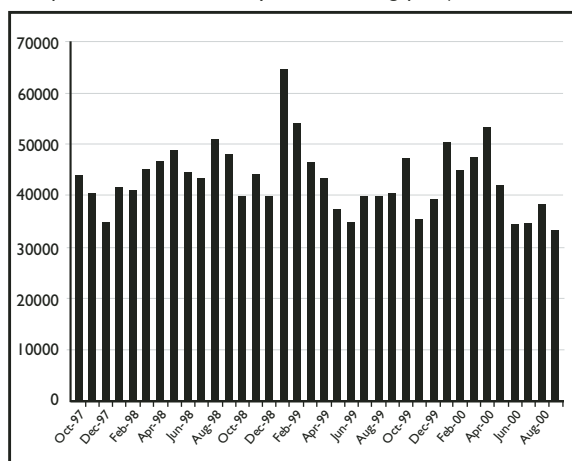
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Fig. 1 Age distribution of peritonsillar infections.**Fig. 2a** Annual distribution of occurrence of peritonsillar infections.**Fig. 2b** Annual cases of respiratory tract infections. (Data obtained with permission from Ministry of Health, Singapore)

The clinical records were analysed for the following variables: age, sex, race, previous history of tonsillitis or peritonsillar abscess, side of abscess, duration of symptoms, types of drainage procedure, antibiotic treatment, culture results, hospitalisation stay (including the day of admission and discharge), complications and interval tonsillectomy.

Incision and drainage was the main procedure undertaken. Following topical infiltration, a small curvilinear incision was made in the mucosa lateral to the junction of the uvula and the soft palate and extended inferiorly. A blunt hemostat was placed into the wound, spread until pus was encountered, and adequate drainage achieved. Some patients had a diagnostic aspiration done. If pus were aspirated, it would be followed by an incision and drainage. When this was negative for pus, patient would be treated as for peritonsillar cellulitis with intravenous antibiotics. When patient continued to be symptomatic, an incision and drainage would be performed.

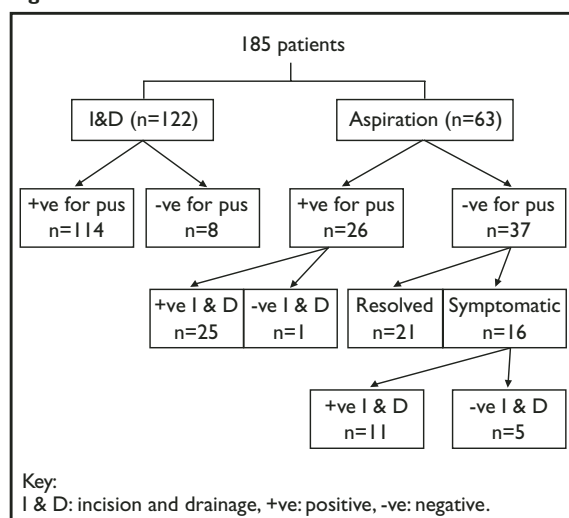
All patients were hospitalised for intravenous antibiotic therapy and hydration. It also allowed for close follow-up of the patients with regards to oral intake, and need for further procedures. Intravenous antibiotics administered included penicillin, penicillin with metronidazole, or broad-spectrum antibiotics such as ceftriaxone, cefuroxime, amoxicillin-clavulanic acid, clindamycin and cefepime. The different treatment regimes were prescribed based on the treatment preference of individual attending doctor. Statistical analyses were performed using one sample χ^2 test and Mann-Whitney test.

RESULTS

A total of 185 patients were admitted over the three-year period. Of these, 151 (81.6%) had peritonsillar abscesses and 33 (18.4%) had peritonsillar cellulitis. Either side was equally affected (left 92 and right 91). There were two cases (1%) with bilateral peritonsillar abscesses. Males (139) outnumbered females (46) by a ratio of 3:1. The age ranged from nine to 82 years, with a mean of 34.7 years (SD \pm 14.4 years) (Fig. 1). The racial distribution of the study cohort and the national population are shown in Table I. It occurred more frequently in Malays than in the general population ($p < 0.0005$). Twenty-three patients (12%) gave a history of recurrent tonsillitis.

In the annual distribution of the occurrences of cases, there were peaks from January to March 1998, December 1998 to February 1999 and November 1999. A second rise occurred in September 1998, from May to July 1999, and in July 2000 (Fig. 2). Sore throat (100%), fever (92.4%) and odynophagia (82.2%) were the three most common presenting symptoms. The mean duration of symptoms prior to consultation was four days. Seventy-two patients (37%) had received antibiotics from their family physicians prior to presentation.

One hundred and twenty-two patients (66%) underwent incision and drainage, while 63 patients had needle aspiration (34%) (Fig. 3). Following

Fig. 3 Distribution of cases and outcome of treatment methods.**Table I. Comparison of racial demographics between the study cohort and the national population.**

	Series	National population
Chinese	115 (62.2%)	76.8%
Malay	45 (24.3%)	13.9%
Indian	16 (8.6%)	7.9%
Others	6 (4.9%)	1.4%

Table II. Length of stay of patients according to antibiotics given.

	Group 1 (penicillin+ metronidazole)	Group 2 (penicillin)	Group 3 (others)
Median length of stay	3 days	3 days	3 days
90 th percentile	2-7 days	2-5 days	1.2-4.8 days

Table III. Studies comparing needle aspiration vs incision and drainage.

Authors (year)	No. of patients	Method	Initial failure rate no. (%)	Recurrence rate (%)
Herzon (1984)	41	Asp	4 (10)	–
Spires et al (1987)	41	Asp	2 (4.8) **	–
	21	I & D	0	–
Stringer et al (1988)	24	Asp	2 (8) **	0
	28	I & D	2 (7)	–
Ophir et al (1988)	75	Asp	36 (48)	11 (15)
Maharaj et al (1991)	30	Asp	4 (13) **	–
	30	I & D	3 (10)	–
Savolainen et al (1993)	98	Asp	9 (9.2)	17.3
Wolf et al (1993)	86	Asp	62 (72.1)	11 (12.8) *
	74	I & D	8 (10.8)	3 (4.1)

Key: Asp: needle aspiration, I & D: incision and drainage

* recurrence rate significant at $p=0.0024$.

** no statistical significance between Asp and I & D.

needle aspiration, 26 cases yielded pus, and incision and drainage were performed. The remaining 37 cases were treated as for peritonsillar cellulitis. Twenty-one cases resolved while 16 continued to be symptomatic and needed re-explorations with incision and drainage. Pus were drained in 11 patients.

Complications of peritonsillar abscess occurred in one patient, a 42-year-old Chinese man with a history of diabetes mellitus. He had presented with right quinsy for which an incision and drainage was performed. However, he did not improve and developed progressively-enlarging right neck swelling. Urgent computed tomography of the face and neck showed a huge right retropharyngeal abscess extending from C1 to C4 cervical vertebral levels with compression of the airway. He underwent an emergency tracheostomy, and a vertical incision made in the post-pharyngeal wall released a large amount of pus. He was treated with antibiotics and discharged after seven days. On follow-up after two months, he had fully recovered.

Bacterial cultures of pus were performed in 43 patients. Four cases yielded positive cultures consisting of alpha-haemolytic Streptococcus (1), Klebsiella (1), and Streptococcus group A (2). Of the 39 negative growths, almost one-half (19 patients) had taken antibiotics prior to admission. Antibiotics used were penicillin (90 patients, 49%), penicillin with metronidazole (72 patients, 39%), or other broad-spectrum antibiotics (23 patients, 18%). The patients were classified into three groups, based on the antibiotics given and the length of stay compared. There was no significant difference between the three groups of patients in terms of the length of stay in hospital ($p=0.062$) (Table II).

There were 14 (7.6%) cases with recurrences, of which four cases (2.2%) recurred in the second month while the other 10 cases (5.4%) recurred from one to three years. Thirty-one patients (17%) underwent interval tonsillectomy, five of which were for recurrent peritonsillar abscess while 10 were for recurrent tonsillitis.

DISCUSSION

Peritonsillar infection is a disease usually affecting young adults. The majority of patients are aged between 10 and 40 years^(1,3,7,9). They are rare in infants and children. Both equal and a 2:1 male ratios have been described^(2,3). In our series, men in their twenties or thirties were most commonly affected and there appeared to be a racial predisposition among Malays. Peritonsillar abscess occurred in 81.6% while PTA occurred in 18.4% of the cases in the series. This is similar to that reported by Maharaj et al and Ophir et al with 78% and 72% cases of PTA in their series, respectively^(10,11). Either the right or left tonsil may be equally affected⁽²⁾. Bilateral peritonsillar abscess had been reported in up to 7% of cases⁽²⁾. In our series, two (1%) cases had bilateral peritonsillar abscesses.

In our series, peritonsillar infections had a bi-annual trend, with the predominant peak towards the year-end. When we correlated this with the rates of respiratory tract infection seen nationwide, there was only one peak from December 1998 to February 1999 that correlated with the rise in upper respiratory tract infection in January 1999 (Fig. 2). There did not appear to be a relationship between the occurrences of peritonsillar infections with those of upper respiratory tract infections. Common symptoms of peritonsillar infections include the triad of sore throat, odynophagia and fever, followed by dysphagia, trismus and otalgia. Patients in our study most commonly presented four days after the onset of symptoms, with 37% of patients having been prescribed antibiotics by their family physicians prior to consultation in the hospital.

The most serious complication of peritonsillar abscess occurred prior to the advent of antibiotics in 1930s. Infections can spread along the carotid sheath and result in fatal neurological sequelae. They can also involve other deep spaces of the neck, and eventually spread to the mediastinum⁽²⁾. When treated early with the appropriate antibiotics and drainage, these complications have become rare. In our series, we had one patient with diabetes mellitus in which the peritonsillar abscess progressed to retropharyngeal abscess. Potential complications can still arise in these patients with co-morbidities.

The key element in therapy is effective abscess drainage followed by antibiotics. This brings about a

rapid improvement in the patient's condition. Drainage can be achieved in three ways, namely: incision and drainage, needle aspiration or abscess tonsillectomy. Incision and drainage is the most common method of drainage used⁽⁴⁾. The first reported incision and drainage of a peritonsillar abscess was by a French surgeon, Guy de Chauliac, in 1362⁽⁸⁾. The incision is made over the point of maximum bulging and fluctuance, which is usually in the region just above the superior pole of the tonsil in the soft palate. The pain disappears almost immediately⁽¹⁾. It gives a wider and more thorough drainage than needle aspiration, and is always used when needle aspiration fails. Reported complications include aspiration of purulent material and rarely, false aneurysm of the internal carotid artery, but these appear to be uncommon⁽³⁾. There was no reported complication as a result of the procedure in our series.

Needle aspiration has become more popular in United States since the 1980s. It is considered to be simple, easy to perform and more cost-effective. Advocates claim resolution rates of up to 96%^(4,9,12). Several trials have been performed to compare the efficacy of needle aspiration to incision and drainage. These compared the initial treatment failure rate of both methods, which is defined as the need for daily repeated drainage procedure (Table III). In most cases, the initial treatment failure rates were similar between the two methods. Two studies by Wolf et al and Ophir et al, however, showed high immediate failure rate with needle aspirations^(6,11).

Penicillin is the initial antibiotic of choice^(13,14). It targets the Streptococcus species (particularly Lancefield group A beta-haemolytic Streptococci), which are most commonly isolated. Haeggenstrom et al tested the antibiotic susceptibility of bacteria cultures in peritonsillar abscess and found that all bacteria were susceptible to penicillin V, ampicillin and erythromycin⁽¹⁵⁾. In the light of several studies that found both anaerobes and b-lactamase-producing agents to be common, there have been recommendations that first line antibiotic therapy against peritonsillar infections should be both penicillinase-stable and effective against anaerobes^(4,16,17). Others have questioned these recommendations.

Kieff et al showed that broad-spectrum antibiotics had not been shown to influence the length of stay, and concluded that penicillin was as efficacious as broad-spectrum therapy⁽¹⁴⁾. Wolf et al recommended the use of penicillin, even in cases in which in-vitro studies demonstrated penicillin resistance as patients almost always improved after drainage was performed⁽⁶⁾. When we compared the length of stay between patients receiving penicillin, penicillin and metronidazole, and

broad-spectrum antibiotics, there did not appear to be a significant difference in terms of the length of stay. We concur with Kieff et al who suggested the use of intravenous penicillin as the first line antibiotics in patients requiring parenteral antibiotics after drainage.

Cultures of abscess fluid often have little bearing in the clinical management of PTA, as most patients improved with empirical antibiotics^(4,11,12,14,15,18). Furthermore, the wide use of antibiotics prior to admission could result in a high percentage of negative growth in bacteriological studies, as reflected in our study. Hence, routine culture need not be performed except in cases of immunosuppressed patients. The recurrence rate of patients following a single episode of peritonsillar abscess ranges from 0% to 22%^(4,5,19,20). Most recurrences occurred within the first two months of the original PTA^(6,9,11). These may be considered as residual diseases and not true recurrences. There may also be a difference in recurrence rate with different drainage methods employed. Wolf et al reported a higher incidence of abscess recurrence in cases of needle aspiration when compared to incision and drainage⁽⁶⁾.

History of either recurrent tonsillitis (at least 2-3 episodes of tonsillitis per year) or peritonsillar abscess are important factors that affect the further management of this disease. The incidence of recurrent tonsillitis prior to a peritonsillar infection can vary from 21% to 56%^(6,9,11,21,22). The significance in this group of patients is that peritonsillar abscess tends to occur at a higher rate⁽²²⁾. Savolainen et al reported that patients with more than three prior episodes of PTA had a significantly higher recurrence rate⁽⁹⁾. Hence, interval tonsillectomy should be done selectively only on patients with a history of recurrent tonsillitis prior to a peritonsillar infection, and two or more attacks of peritonsillar infections^(5,9,23). Patients younger than 40 years old may also be considered for tonsillectomy as they have a higher incidence of abscess recurrences^(20,22). This is similar to that reported in our series where 11 of the 14 patients with recurrences were below the age of 40 years.

In conclusion, peritonsillar infections remain a common admitting diagnosis to the Otolaryngology department. A racial predisposition among Malays has been identified. For cost-effective management, routine bacterial cultures are not needed and intravenous penicillin is the antibiotic of choice. A single episode of peritonsillar infection should no longer be an indication for tonsillectomy as the incidence of recurrence is low.

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