

Therapeutic Alternatives and Clinical Outcomes in Peritonsillitis

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A retrospective study was conducted on 32 patients with the discharge diagnosis of peritonsillar abscess or peritonsillar cellulitis. Three had pre-existing chronic conditions that may have contributed to the peritonsillitis. The average duration of symptoms prior to diagnosis was 7.4 days. Most patients responded to penicillin given parenterally until the patients were able to take medication orally. Pus was obtained in 88 percent of the patients who underwent drainage procedures. Eight patients were treated with parenteral antibiotics without drainage, including three from whom pus was aspirated. All eight recovered without complication. The most common organism cultured was β -hemolytic streptococcus, group A (seen in 31 percent). There was no association between the dose or type of oral antibiotic used prior to diagnosis of peritonsillar cellulitis. The clinical outcome suggests that some patients with peritonsillitis may respond to parenteral antibiotics without drainage procedures or tonsillectomy.

Peritonsillitis is an infection causing swelling in the space around the tonsil. If pus is obtained at the time of aspiration or incision and drainage, the peritonsillitis can be labeled as a peritonsillar abscess. If no pus is obtained, it can be called peritonsillar cellulitis. Often it is initially diagnosed in a primary care setting and can be associated with a variety of complications.

The purpose of this paper is to present a retrospective review of 32 cases of peritonsillitis and to discuss the relevant literature on the subject. The underlying question in this study was whether the

choice of therapy influenced clinical outcome as reflected in patient charts.

Methods

A review was performed on all charts of patients discharged from the University of Missouri Health Sciences Center from 1975 through 1981 and carrying the discharge diagnosis of peritonsillar abscess or peritonsillar cellulitis. Patient names were obtained from the computer record of discharge diagnoses. Charts were reviewed for age, sex, days of illness, days of hospitalization, physical findings, diagnostic procedures, bacteriologic diagnoses, other laboratory data, prior tonsillitis or peritonsillitis, and therapy prior to and after diagnosis of the most recent peritonsillitis. The charts were also reviewed for evidence of compli-

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Table 1. Procedures for Peritonsillitis Cases—UMC Audit (n=32)

Procedure	No. Patients (%)	Patient Findings	
		With Pus No. (%)	No Pus No. (%)
Aspirated once	18 (56)	14 (78)	4 (22)
Aspirated twice	5 (16)	3 (60)	2 (40)
Incision and drainage alone	5 (16)	4 (80)	1 (20)
Incision and drainage, tonsillectomy	19 (53)	17 (89)	2 (11)
No incision and drainage, no tonsillectomy (intravenous antibiotics only, with good recovery)	8 (25)	3 (38)*	3 (38)*

*Two patients did not have aspiration

cations and relapse following treatment for the most recent episode. Average follow-up time, based on the duration between the diagnosis of peritonsillitis and the time of chart review, ranged from 10 to 65 months.

Results

Thirty-two charts were reviewed for information recorded in routine history, physical examination, and progress reports. Sixty-six percent of the patients were male. Mean age was 22.5 years (median, 19.5 years) with the youngest aged 1 year and the oldest aged 68 years. Seventy-two percent of the patients fell in the 15- to 30-year-old age group.

Recorded medical histories showed that 32 percent of the patients had a prior history of tonsillitis (self-reported and recorded in the chart), and that 9 percent had a history of prior peritonsillar abscess. Three patients had predisposing risk factors: 1 with acute lymphocytic leukemia, 1 with sickle cell anemia, and 1 with a history of intravenous drug abuse and hepatitis.

The patients had been ill for a mean of 7.4 days, with a range of 1 to 30 days of illness prior to the diagnosis of peritonsillitis. Most of the patients had received some prior therapy with antibiotics. One half (16) of the patients had received at least

one antibiotic, and three of these 16 had received two antibiotics. The most common treatment was penicillin (in 13 patients). Two had received cephalexin, and one had received ampicillin. Antibiotic doses ranged from 250 mg four times a day to 500 mg four times a day. There was no association between the type of prior therapy and severity of symptoms or course of the illness.

Objective data included physical examination and laboratory values. Peritonsillar swelling was most marked on the left in 13 patients, on the right in 18 patients, and was bilateral in one patient. Mean oral temperature on admission was 38° C with a range from 36.8° to 40.0° C. Mean total leukocyte count was 15,100/mm³ (median, 15,200), with a minimum of 1,200/mm³ in the patient with acute lymphocytic leukemia and a maximum of 38,700/mm³ in a two-year-old patient with sickle cell anemia. The mean band count was 4.3 percent and ranged up to 15 percent. Mean neutrophil count was 72 percent, ranging from 31 percent to 90 percent. A Monospot test was performed in 17 patients and was negative in all cases.

Diagnostic procedures usually included some attempt to document pus accumulation (Table 1). Twenty-three patients underwent needle aspirations. Five underwent two or more attempts. Yield in these attempts to obtain pus was 78 percent on the first attempt and 60 percent on subsequent attempts. Incision and drainage alone was utilized in five of the patients, yielding pus in four of these

Organism	Percentage of Cases
β -Hemolytic streptococcus (52 percent)	
Group A	
Pure culture	22
Mixed culture	
with aerobes	6
with anaerobes	3
Non-group A	
Pure culture	12
Mixed culture	3
β -Hemolytic streptococcus, not specified	6
No β -hemolytic streptococcus	6
Other streptococcus (9 percent)	
α -Hemolytic streptococcus	
Pure culture	3
Mixed culture (with anaerobes)	3
Mixed streptococcus	3
Normal flora	3
Anaerobes (pure culture)	3
No organism	6

five. Incision and drainage was performed at the time of tonsillectomy in 19 patients, yielding pus in 17. Overall, pus was obtained in 88 percent of the incision and drainage procedures.

Eight patients underwent no incision and drainage and no tonsillectomy, receiving intravenous antibiotics only. Of these 8 patients, 3 had pus on aspiration procedures, 3 had no pus on aspiration, and 2 had no aspiration attempted. Thus, open drainage appeared not to be necessary in the treatment of 8 of 32 patients, including 3 patients in whom pus had actually been demonstrated.

Tonsillectomy was performed in 19 of 32 patients, 10 immediately (within 3 days after diagnosis), 2 after an intermediate length of time (9 and 14 days), and 7 after a longer delay (30 to 130 days).

Cultures were obtained in most cases. The chart often did not clearly indicate the method by which a specimen was obtained. Microbiologic classification varied over the period studied (Table 2). Nineteen (61 percent) of the cultures grew some type of streptococcus, including 31 percent with some growth of β -hemolytic streptococcus, group A. Twenty-two percent of the patients grew pure

β -hemolytic streptococcus, group A. Anaerobes were identified in only two patients, but no special measures were taken to culture for anaerobes in this group of patients. Mixed cultures were seen in 18 percent (Table 2).

All but one of the patients were treated with parenteral antibiotics. Penicillin was used in 25 (81 percent), cephalothin in 5 (16 percent), and methicillin in 1 patient. The penicillin dosage varied from 0.6 to 7.5 million units per dose, given at four- to six-hour intervals, usually for one to four days.

A second parenteral antibiotic was added in four patients: gentamicin in the patient with acute lymphocytic leukemia, cephalothin in one patient, and streptomycin in two others. Two patients received intravenous steroids.

An oral antibiotic was recorded in the charts of 30 patients and was usually added when the patients were taking oral fluids well. Penicillin was used in 77 percent, cephalexin in 13 percent, and erythromycin, ampicillin, and cloxacillin in one patient each. The dosage of oral antibiotic ranged from 250 to 500 mg per dose for a duration of 7 to

30 days with a mean of 10.5 days of oral therapy. There was no correlation between dose of antibiotic and clinical outcome or between type of antibiotic used and clinical outcome.

One patient, a drug abuser, presented with a spontaneously draining tonsillar abscess. He did not undergo tonsillectomy or incision and drainage and relapsed three weeks after parenteral antibiotic therapy with penicillin (benzathine and procaine), 1.2 million units given intramuscularly.

Another patient, a 17-year-old man, had physical findings consistent with peritonsillitis, and was treated with 14 doses of intravenous penicillin followed by penicillin orally, 500 mg four times a day. On follow-up in clinic two weeks later, he still had tonsil enlargement with a sore throat and underwent tonsillectomy six weeks after the initial peritonsillitis episode, with uneventful recovery. Pathology specimens showed chronic tonsillitis.

One middle-aged woman was explored in the operating room for presumed peritonsillar abscess, but no pus was found despite several attempts under general anesthesia. She recovered uneventfully after receiving parenteral penicillin and streptomycin. Seven years later, she developed a documented peritonsillar abscess, which was drained in the operating room. She again received four days of parenteral penicillin, and underwent tonsillectomy with full recovery.

Discussion

Previous studies have described peritonsillar cellulitis as a disease of young people, with most cases occurring between the ages of 20 and 40 years¹⁻³ with an age range from 6 to 86 years in one series.⁴ It has been well described among military recruits^{5,6} and dormitory residents.⁶

The pathophysiology of peritonsillitis has been incompletely elucidated. Predisposing factors mentioned in other reports include chronic lymphocytic leukemia,⁷ mononucleosis,⁸⁻¹⁰ and tonsilloliths.⁸ In a study by Chamovitz et al,¹¹ 7 of 395 patients with untreated streptococcal tonsillitis developed peritonsillar abscesses compared with none of 522 with antibiotic-treated streptococcal tonsillitis. Fried and Forrest¹ have proposed the concept of peritonsillar abscess and peritonsillar cellulitis as part of the same clinical continuum,

both manifestations of the same process. Dental infections are mentioned in one study¹ as an underlying cause in about one quarter of patients with peritonsillar abscesses and one sixth of those with peritonsillar cellulitis. The charts in this study were not sufficiently complete to assess dental infections as a risk factor. A history of peritonsillitis is reported in one third to one half of patients with peritonsillitis^{1,12} and is said to be more common in patients with cellulitis than in those with abscess.

Fried and Forrest¹ reported a recurrence rate of 5 percent with a 2.7-year follow-up of patients treated with incision and drainage plus antibiotics. McCurdy⁵ reported a 14 percent recurrence rate and a 9 percent rate of prior tonsillitis. Complications of peritonsillitis are numerous and can be quite serious, including aspiration, bacteremia, lung abscess, pneumonia, local extension, upper airway obstruction, thrombosis, carotid hemorrhage, and intracranial infection.¹ None of these complications was seen in this study.

Anatomic factors are important to consider in diagnosis and treatment. The right side is as commonly involved as is the left in other reports. Cellulitis is more likely than abscess to be bilateral.¹ The slight right-sided predominance of findings in this study is probably coincidental. Brandow¹³ has pointed out that in 156 patients with peritonsillar abscesses noted at the time of tonsillectomy, 30 percent had loculated pus in localized areas other than the superior pole of the tonsil, a location often said to be the ideal site for aspiration attempts. This may explain the frequent failure of needle aspiration.

It is often difficult by examination alone to determine whether an abscess is present. History and physical examination are helpful, but it is usually necessary to attempt aspiration or incision and drainage (either as part of tonsillectomy or as a separate procedure) to demonstrate the presence of an abscess. The real question, however, is whether at the time of initial presentation of severe pharyngitis demonstrating the presence of an abscess is essential for optimal treatment of the patient. There is some evidence, from the patients in this study who had pus accumulations but who underwent no drainage procedure and did recover, it might be justified to try treating with parenteral antibiotics before undergoing any drainage procedure.

The laboratory findings in this study are consis-

tent with other reports, except that others have found a higher incidence of anaerobic infections,¹⁴ which could be explained by the lack of control over culture techniques and growth media in this study. Templer et al⁴ reported a significant number of cultures with no growth after partial treatment with antibiotics—conditions present in this study. β -Hemolytic streptococcus is mentioned as a significant pathogen in 45 percent of cases described by Flodstrom and Hallander,¹⁴ and α -hemolytic streptococcus is mentioned in several studies.³⁻⁵ Other pathogens include *Staphylococcus aureus*,⁴ *Franscisella tularensis*,¹⁵ *Enterobacter cloacae*,³ and *Hemophilus influenzae*.^{1,3,5} None of these appeared as a pathogen in this study.

Therapy for peritonsillitis remains controversial. Most agree on parenteral antibiotics as a minimum, usually with penicillin, until patients are able to take oral antibiotics. Ampicillin, cephalothin, erythromycin, clindamycin, and vancomycin are alternative choices.³ Ten to 14 days of therapy is usually recommended.

A drainage procedure is recommended by most authors, although most acknowledge the risk of such a procedure (aspiration, predominantly). Incision and drainage plus daily debridement were employed in two studies.^{12,14} In a retrospective study, Fried and Forrest¹ compared incision and drainage, immediate tonsillectomy, and tonsillectomy after four to eight weeks. All patients received antibiotics. They questioned the need for mandatory tonsillectomy for peritonsillitis based on the low rate of recurrent pharyngitis (3 of 57) and recurrent peritonsillitis (1 of 57) in the group not undergoing tonsillectomy. Advocates of immediate tonsillectomy for peritonsillitis point to its lower cost in terms of hospitalization and disability days,^{3,5,12} the ease of drainage,^{3,5,6} and the immediate relief afforded by such drainage.⁵ Others advocate interval tonsillectomy a few weeks later because it can be done under controlled conditions with less risk of complication.^{1,12,16} The current debate seems to center not on when to perform a tonsillectomy, but on whether to perform one.

Conclusions

1. In this series of peritonsillitis cases, patients without other underlying illness did well regard-

less of whether medical or surgical therapy was employed.

2. Some patients with documented pus accumulation may recover without drainage procedures.

3. Mixed cultures are common in peritonsillitis. Without needle aspiration and special handling, few anaerobes will be recovered.

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