ORIGINAL ARTICLE

Peritonsillar Infections: Prospective Study of 100 Consecutive Cases

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Abstract

Introduction: Peritonsillar infection is the most frequent complication of acute tonsillitis. Peritonsillar infections are collections of purulent material, usually located between the tonsillar capsule and the superior constrictor of the pharynx. Peritonsillar infection can be divided into abscess and cellulitis.

Material and methods: We prospectively analysed the clinical data from 100 patients with peritonsillar infection from 2008 to 2010. The diagnosis of abscess or peritonsillar cellulitis was primarily based on obtaining pus through fine-needle aspiration.

Results: Seventy-seven percent of patients had no history of recurrent tonsillitis and 55% were receiving antibiotic treatment. Sixty-two cases were peritonsillar abscess and the rest were cellulitis. Trismus, uvular deviation and anterior pillar bulging were statistically associated with peritonsillar abscess (P<.005). All patients were admitted to hospital and treated with puncture-drainage, intravenous antibiotics (amoxicillin/clavulanate in 83% of cases) and a single dose of steroids. All patients were discharged on oral antibiotic therapy. The mean length of hospital stay was 3 days and the recurrence rate was 5%.

Conclusions: Due to the absence of clinical practice guidelines, there are different therapeutic protocols. According to our experience, puncture-aspiration and administration of intravenous antibiotics is a safe, effective way to treat these patients. To determine the efficacy and safety of outpatient management, controlled studies would be needed.

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Introducción

Peritonsillar infections are the most common infections of deep tissues of the head and neck region both in adults and children, with an incidence of approximately 30 cases per 100,000 population per year. Furthermore, despite the widespread use of antibiotics, they are the most common supplicative complication in tonsillar infections. The natural history of infections in the peritonsillar region is represented by 2 main entities: phlegmon and peritonsillar abscess. Each reflects a separate stage in the evolution of the inflammatory process originating from an exudative tonsillar infection. Peritonsillar abscess is defined as a purulent collection located between the tonsillar capsule, the superior constrictor muscle of the pharynx and the palatopharyngeal muscle. In the pathophysiology of peritonsillar infections, phlegmon would represent a stage prior to an abscess, in which the peritonsillar inflammation process is not limited.

Although group A β-haemolytic streptococcus (Streptococcus pyogenes) is usually the pathogen involved in the aetiology of this entity, in most cases the infection corresponds to a mixed flora of aerobic and anaerobic agents. Since there are no clinical guidelines for the management of this disease, treatment varies between countries and even between hospitals within the same country, in aspects such as treatment regime (outpatient or inpatient), method of drainage and antibiotic therapy employed. If peritonsillar infections are not treated properly there is a risk of developing serious complications such as thrombosis of the internal jugular vein, mediastinitis, pericarditis, pneumonia, formation of pseudoaneurysms and even sepsis. The mortality rate of patients who develop these complications can reach 42% in cases of mediastinitis or serositis. Nevertheless, although occasionally the development of peritonsillar infection is torpid, morbidity and mortality are low if it is treated correctly, and hence the importance of knowing its anatomical characteristics, triggering factors, clinical aspects and therapeutic alternatives.

The aim of this study is to review the diagnostic and therapeutic management of 100 consecutive cases collected at our service between the years 2008 and 2010.

Materiales y métodos

We performed a descriptive, prospective study of the management of patients who were diagnosed and treated for peritonsillar infection between April 2008 and October 2010.

The diagnosis of peritonsillar infection was mainly based on anamnesis and physical examination. We collected the following clinical variables: age, gender, history of recurrent tonsillitis, previous episodes of phlegmon/abscess, evolution, previous antibiotic therapy and its duration (the information was provided by patients or their relatives), symptoms at onset, physical examination findings and therapeutic procedure applied. We also recorded the length of hospital stay, treatment prescribed at discharge, recurrence of the process and performance of subsequent tonsillectomy.

Following the protocol used in our department for the management of peritonsillar infections, all patients attending the Emergency Service with symptoms and exploration consistent with the diagnosis of peritonsillar infection were...
admitted for intravenous antibiotic therapy, analgesia and possible intravenous corticosteroids. According to Szuhay and Tewfik, a diagnosis of phlegmon or peritonsillar abscess was based primarily on the obtention of pus with needle aspiration performed on patients upon admission, in the region of maximum peritonsillar bulging.11

The criteria for hospital discharge included clinical and analytical improvement of the patient. We used the statistical software SPSS 19.0 for Windows to conduct the statistical analysis.

Results

We analysed 100 consecutive patients diagnosed with peritonsillar infection at our hospital between April 2008 and October 2010. Table 1 shows the main clinical and epidemiological characteristics of patients included in the study.

The ages of the patients included in the study ranged from 4 to 81 years, with a mean value of 34 years. As for gender, the ratio in adults was 1.1/1 in favour of males (53 males and 47 females).

In total, 77% of patients had no documented history of repeated bacterial tonsillitis. In most patients (86%), the episode of peritonsillar infection was the first with these characteristics. However, in 9% of cases, the episode was a second occurrence and in 5% it was a third, fourth and even in 1 case, the fifth episode with the same characteristics. The vast majority (97%) had no prior history of tonsillectomy; nevertheless, 2 patients had undergone tonsillectomy in childhood.

The time elapsed between onset of symptoms and diagnosis of the episode was a minimum of 2 and a maximum of 6 days, with a mean latency of 3 days. Less than half of patients (45%) had not received any doses of antibiotic treatment before attending the Emergency Service. Within the group of patients (55%) who were being treated with antibiotics as prescribed by their primary care physician, the most frequently used drug (49 patients) was a combination of amoxicillin/clavulanate at a dose of 500 mg/125 mg in 42 patients and 875 mg/125 mg in 7 patients. Only 2 patients were prescribed a macrolide (azithromycin 500 mg) and 4 patients had taken both drugs consecutively before attending the Emergency Service. The mean duration of treatment prior to diagnosis was 2 days (range: 1–12 days).

Table 2 shows the clinical characteristics of patients. The clinical symptoms characterised by odynodysphagia, fever, trismus, bulging of the anterior pillar, deviation of the uvula to the contralateral side and laterocervical lymphadenopathy were present in 77% of cases. In 30% of patients we did not find fever and trismus was absent in 23% of cases. The absence of trismus did not rule out the presence of peritonsillar abscess. In the haemogram which patients underwent upon admission, the mean value of leukocytes was 16,922/µl (7300–33 400).

As mentioned previously, upon admission all patients underwent puncture-aspiration in the most convex part of the anterior tonsillar pillar. No purulent material was obtained in 62 cases (62%), leakage of pus was observed in 32 cases (32%), in 5 patients (5%) we noted a spontaneous drainage of purulent material and in 1 case (1%) puncture was not performed at the time of diagnosis due to trismus. Based on this result we classified patients into those with a diagnosis of phlegmon, when there was no discharge of pus (62%), or abscess, when puncture led to the leakage of purulent material (38%). Clinical signs significantly associated with the presence of peritonsillar abscess were the presence of trismus (P<.001), contralateral deviation of the uvula (P<.001) and bulging of the anterior pillar of the affected side (P<.001). We did not find a significant association with the rest of the clinical data recorded.

All patients were hospitalised and treated with intravenous antibiotics. The combination of amoxicillin/clavulanate 1000 mg/200 mg every 8 h was the most widely used antibiotic treatment (83% of patients), followed by the association between clindamycin 600 mg every 8 h and gentamicin 240 mg every 24 h (14% of patients). Three patients received amoxicillin/clavulanate according to the previous dosage but, due to lack of favourable evolution.

Table 2 Presentation Symptoms in 100 Patients With Peritonsillar Infection.

<table>
<thead>
<tr>
<th>Symptom/sign</th>
<th>No. of patients, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odynodysphagia</td>
<td>100 (100)</td>
</tr>
<tr>
<td>Bulging of anterior pillar</td>
<td>98 (98)</td>
</tr>
<tr>
<td>Contralateral displacement of uvula</td>
<td>95 (95)</td>
</tr>
<tr>
<td>Cervical lymphadenopathies</td>
<td>80 (80)</td>
</tr>
<tr>
<td>Fever</td>
<td>70 (70)</td>
</tr>
<tr>
<td>Trismus</td>
<td>77 (77)</td>
</tr>
<tr>
<td>Ptyalism</td>
<td>68 (68)</td>
</tr>
<tr>
<td>Dysphonia</td>
<td>40 (40)</td>
</tr>
<tr>
<td>Uvula hydrops</td>
<td>28 (28)</td>
</tr>
<tr>
<td>Dyspnoea</td>
<td>13 (13)</td>
</tr>
</tbody>
</table>

* Patients normally presented more than 1 symptom.

### Table 1 Main Clinical and Epidemiological Characteristics.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th></th>
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<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>53 (53%)</td>
</tr>
<tr>
<td>Female</td>
<td>47 (47%)</td>
</tr>
<tr>
<td><strong>Mean age</strong></td>
<td>34 years (4–81 years)</td>
</tr>
<tr>
<td><strong>Repeated tonsillitis</strong></td>
<td>23 (23%)</td>
</tr>
<tr>
<td><strong>Previous peritonsillar Infection</strong></td>
<td>14 (14%)</td>
</tr>
<tr>
<td><strong>Laterality</strong></td>
<td></td>
</tr>
<tr>
<td>Left</td>
<td>59 (59%)</td>
</tr>
<tr>
<td>Right</td>
<td>41 (41%)</td>
</tr>
<tr>
<td><strong>Mean latency until diagnosis</strong></td>
<td>3 days (2–7 days)</td>
</tr>
<tr>
<td><strong>Prior antibiotic therapy</strong></td>
<td>55 (55%)</td>
</tr>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
</tr>
<tr>
<td>Phlegmon</td>
<td>62 (62%)</td>
</tr>
<tr>
<td>Abscess</td>
<td>38 (38%)</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
</tr>
<tr>
<td>Intravenous amoxicillin/clavulanate</td>
<td>83 (83%)</td>
</tr>
<tr>
<td><strong>Mean hospital stay</strong></td>
<td>3 days (1–7 days)</td>
</tr>
<tr>
<td><strong>Recurrences</strong></td>
<td>5 (5%)</td>
</tr>
<tr>
<td><strong>Subsequent tonsillectomy</strong></td>
<td>26 (26%)</td>
</tr>
</tbody>
</table>
after 5 days, were changed to a combination of clindamycin and gentamicin as described above. In all cases, antibiotic treatment was carried out empirically and duration of intravenous therapy varied between 1 day (only 1 case was treated for 24 h) and 7 days. Most patients (82%) received intravenous antibiotic treatment for at least 3 days. All patients were given a dose of intravenous corticosteroids (methylprednisolone 1 mg/kg) upon admission, as well as intravenous analgesia. All patients evolved satisfactorily and we did not observe progress of the infection to more serious complications.

All patients received oral antibiotic therapy at discharge for 7 days. Treatment consisted in amoxicillin/clavulanate 1000 mg/62.5 mg, in 2 tablets every 12 h in 83% of cases and clindamycin 300 mg every 6 h in 17% of cases.

These cases of peritonsillar infection were the first collected during the time of study in 95% of patients, whilst 1% experienced a new episode and 4% presented 2 consecutive episodes. In 26 cases (26%) we suggested performing tonsillectomy after the episode of peritonsillar infection.

Discussion

Most studies published in current literature are based on a retrospective analysis of cases. Thus, their results reflect the management of this condition in 10–15 years evolution. In order to reduce the heterogeneity inherent to most retrospective series, we have chosen to analyse prospectively 100 consecutive cases treated at our hospital according to the same diagnostic and therapeutic protocol.

In our series, 55% of patients were receiving antibiotic therapy for the treatment of pharyngotonsillitis. This finding is more consistent with the classical concept that peritonsillar infection is due to a torpid evolution of bacterial tonsillitis. However, this percentage is higher than that described in the literature, where prior pharyngotonsillar infection was only reported in between 11% and 45% of cases. The absence of prior tonsillar infection would support the theory that the origin of peritonsillar infection is cellulitis of Weber’s salivary glands. These small mucous glands are located in the superior pole of the tonsillar bed and the soft palate. When cellulitis of these glands takes place and inflammation progresses, it leads to symptoms which are clinically indistinguishable from those caused when a tonsillar infection does not evolve favourably. This observation would also justify the development of peritonsillar infections in patients who had undergone prior tonsillectomy.

The diagnosis of this entity is simple and is based on clinical data and physical exploration. It is characterised by the presence of unilateral inflammatory signs and symptoms, even in the absence of febrile syndrome. The presence of trismus, bulging of the anterior pillar and deviation of the uvula to the contralateral side can help to distinguish between a phlegmonous early stage and peritonsillar abscess without requiring puncture. While this datum confirms the reports published by Kilty et al., it should be taken with caution since, as seen in our study, up to 23% of cases do not present significant trismus. Some authors advocate the use of ultrasound for diagnosis and to conduct guided punctures, as well as computed tomography (CT) in uncooperative paediatric patients.

One of the hypotheses which we considered at the beginning of the study was that an inappropriate use of antibiotics in the treatment of pharyngitis favoured the development of complications, specifically the use of macrolides, due to the high rate of resistance among the Spanish population. However, although most patients were taking antibiotics at the time of diagnosis of peritonsillar infection, we found that only 3% of patients who had taken antibiotics previously had taken a macrolide and most were being treated adequately with amoxicillin/clavulanate. Nevertheless, we believe that not taking the appropriate dosage or failure to adequately comply with the correct antibiotic pattern could be a favouring factor since most authors report a higher rate of peritonsillar infections in patients treated with macrolides. In our series we found no relationship between a history of repeated pharyngotonsillitis and the development of peritonsillar infection. This coincides with the findings in other series. However, we did observe a relationship between suffering repeated pharyngotonsillitis and suffering more than one episode of phlegmon/abscess.

Management on an outpatient basis or hospitalisation of these patients is a source of disagreement between various authors (Table 3). While in countries such as the United Kingdom the vast majority of patients are admitted, in the United States they are mostly managed as outpatients. In our series, following the protocol at our service, we admitted these patients in order to administer intravenous antibiotics and provide hydration and nutritional support. Nevertheless, we believe that, following the therapeutic regime of Al Yaghchi et al., certain patients without risk factors could benefit from outpatient management.

Drainage of the purulent material is part of the treatment (Table 3). The most appropriate method for this task remains controversial, although both puncture-aspiration and incision-drainage seem to be equally effective. In our action protocol, we use puncture-aspiration at the time of diagnosis. According to the leakage or not of purulent material, we classify the infection as phlegmon or abscess. The management guide for peritonsillar abscesses proposed by Herzon et al. suggests that puncture-aspiration can be used as the only drainage procedure, as it obtains a resolution rate of 96%, and leaves incision-drainage as an alternative for cases of failure of the first technique. These authors emphasise the scarce discomfort, technical simplicity and low cost of the technique, as well as the fact that it does not require specialised equipment. Some authors advocate performing tonsillectomy immediately after draining the abscess (quinsy or hot tonsillectomy) due to the low rate of complications and recurrences. In our study, most patients evolved adequately without having to repeat the puncture or perform an incision for drainage.

Antibiotic treatment was established empirically, with the first option being intravenous amoxicillin-clavulanate at high doses. This treatment progressed adequately in 84% of cases, including those previously treated with this same combination. From this we can conclude that most resistances remain dose-dependent. We believe that a combination of clindamycin and gentamicin may be an adequate alternative in cases of β-lactam allergy or unfavourable evolution with the first option. Other authors advocate the
use of cefotaxime or penicillin alone or combined with metronidazole, with similar results.\textsuperscript{15,27} We believe that administration of a single dose of corticosteroids can be very useful, having observed, like other authors, a faster improvement of symptoms such as dysphagia, pain and trismus.\textsuperscript{28}

In accordance with other authors,\textsuperscript{29} we believe that microbiological identification studies are unnecessary, since empirical therapy is generally effective before culture results are obtained. In addition, many patients take antibiotics previously, so, very often, the results of the culture do not identify the causative agent. Conducting cultures and antibiograms would only be useful in cases of infections with very unfavourable evolution and in immunocompromised patients.

According to Wikstén et al. the risk of recurrence is 10\%-15\% depending on the follow-up period. This rate increases to 50\% in patients younger than 40 years and in those with a history of repeated infections.\textsuperscript{30} Our recurrence rate was 5\%, which would confirm the effectiveness of our protocol.

Regarding the indication for tonsillectomy after an episode of peritonsillar infection, as described in the literature,\textsuperscript{9,31} we do not consider having suffered such an episode as an absolute criterion for the intervention. However, in patients with repeated pharyngotonsillitis and in those cases with more than one peritonsillar event, we support the indication of delayed tonsillectomy.

We have not collected any cases of serious complications during this time period, since cases of mediastinitis, necrotising fasciitis or septic embolism are more common in severely immunocompromised patients or in those who have suffered a major delay in diagnosis.\textsuperscript{32}

\section*{Conclusions}

Peritonsillar infection is the most common complication of bacterial pharyngotonsillitis. Although this entity is likely to cause high morbidity and mortality, it has an excellent prognosis when properly treated.

Due to the absence of clinical practice guidelines for the management of this disorder there are various treatment protocols. From our experience, we believe that puncture-aspiration in the most convex peritonsillar region and administration of intravenous antibiotics represents a safe and effective protocol in the management of these patients. Further, controlled studies would be required in order to determine the efficacy and safety of management on an outpatient basis compared to hospital admission.

\section*{Conflict of Interests}

The authors have no conflicts of interest to declare.

\section*{References}

10. Herzon


