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High rate of early recurrence of peritonsillar abscess among adolescents and young adults

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ABSTRACT

Background: Peritonsillar abscess (PTA) can be treated with aspiration or incision for drainage, but a subsequent PTA can occur if tonsillectomy is not performed. Better understanding is needed of when tonsillectomy should be performed to avoid PTA recurrence.

Objective: This study investigated the recurrence rate of PTA following aspiration or incision for drainage and evaluated the risk factors for recurrence.

Methods: The medical records of 292 patients treated for PTA were reviewed. Recurrence of PTA and elective or quinsy tonsillectomy were the primary endpoints. A Cox proportional hazards regression model for PTA recurrence was constructed with sex, age, and PTA history as predictors.

Results: Young age was the only significant predictor of PTA recurrence. Patients aged 15 to 24 years had a 30-day recurrence rate of 15.5% and a total recurrence rate of 26.6%. The total recurrence rate among patients over 30 years of age was significantly less at 4.0% (Fisher's exact test, p < .05).

Conclusion and Significance: Based on our results, tonsillectomy should be considered for PTA in patients between 15 and 25 years of age and, to effectively avoid future recurrence of PTA, should be performed urgently.

Introduction

Peritonsillar abscess (PTA), also known as quinsy, is the most common abscess-forming pharyngeal infection [1] and is usually a complication of tonsillitis [2]. Though a consensus has been reached on the need for surgical abscess drainage to alleviate acute symptoms, treatment methods vary [3]. At the ENT clinic at the University Hospital of Umeå, the most common approach is to perform both needle aspiration and incision for drainage under local anaesthesia, with follow-up until pus formation subsides. If aspiration or incision for drainage fails, urgent bilateral tonsillectomy (quinsy tonsillectomy) is planned.

Tonsillectomy provides complete resolution, whereas aspiration or incision and drainage have resolution rates of 82-100% when combined with antibiotics [2]. The recurrence rate of PTA after tonsillectomy is very low [4], whereas recurrence after drainage with aspiration or incision has been reported to be 0–23% [5–7]. If, and when, tonsillectomy should be performed following PTA remains controversial, with some advocating for immediate quinsy tonsillectomy [8], interval tonsillectomy to varying degrees, or no tonsillectomy at all [6]. Age under 30 years [9,10], history of tonsillitis [5,10], and smoking [11] have been reported as risk factors for recurrence. In one Finnish cohort, 25% of patients who had suffered PTA underwent tonsillectomy within 5 years due to PTA or other indications for tonsillectomy [9].

Patients treated with aspiration or incision for drainage for PTA at our institution are generally considered for interval tonsillectomy when there is a perceived risk of recurrence with a patient history of previous PTA or when there are additional indications for tonsillectomy, such as chronic tonsillitis. Without such a history, the tendency is to avoid tonsillectomy. The authors observed that a high number of patients had recurrent PTA, some while waiting for interval tonsillectomy. In the present study, we aimed to determine how common PTA recurrence is following needle aspiration or incision for drainage and when recurrence is most likely to occur. We hope that this knowledge can facilitate decisions about when tonsillectomy should be recommended after PTA.

Methods

We conducted a medical record review of a cohort of patients diagnosed with PTA at the ENT clinic at the University Hospital of Umeå in Västerbotten County, Sweden, during the 5 years from 1 January 2011 to 31 December 2015. This is the only ENT clinic that treats PTA in Västerbotten County, a county with 276,000 residents in an area of 55,431 km².

The study population was identified using ICD-10 code J36, which includes both PTA and peritonsillar cellulitis (Figure 1). Only patients with a documented presence of
peritonsillar pus during attempts at surgical drainage were included. Thus, patients with probable peritonsillar cellulitis without abscess formation were excluded. We had full access to relevant medical records for patients aged ≥15 years. Due to limitations in accessing the medical records of patients younger than 15 years of age, we chose not to include them in the continuation of the present study. Patients who received part of their treatment outside of Västerbotten County were also excluded. Finally, we excluded patients who were diagnosed with a concurrent infection in deep cervical space.

We recorded any occurrence of PTA or tonsillectomy performed within Västerbotten County from the start of the study period until 31 October 2017, along with data on patient age, sex, and any noted history of previous PTA. We defined quinsy tonsillectomy as a tonsillectomy performed resulting in peritonsillar abscess drainage, where no drainage had been previously performed with other methods during the same acute illness.

We defined a patient as planned for interval tonsillectomy following the PTA if a decision to perform tonsillectomy was made within 14 days after the PTA, with no other tonsillar infection occurring between the last follow-up visit for the PTA and the time of decision for surgery. If prior PTA history was not clearly documented in the patient's medical record, the main author followed up with patient telephone interviews.

We also recorded the incidence of post-operative haemorrhage in the quinsy tonsillectomy and interval tonsillectomy groups. Post-tonsillectomy haemorrhage was defined as any unplanned patient contact due to pharyngeal bleeding in the 14 days following tonsillectomy.

A Cox proportional hazards regression model was used to analyse the risk of subsequent recurrence, with sex, age, and PTA history as predictors. The statistical analysis was performed using R (R Foundation for Statistical Computing, Vienna, Austria). Ethical approval was granted by the Regional Ethics Committee in Umeå, diary number 2013-285-31 M and 2017-371-32 M.

Results

A total of 292 patients were included in the study (Figure 1 and Table 1). Our PTA patients were mostly adolescents and young adults, with 44% (128/292) younger than 25 years of age and 54% (159/292) younger than 30 years of age. All patients were prescribed antibiotic treatment. 184 patients have prescribed phenoxymethylpenicillin (with 28 recurrences), and 98 had clindamycin (21 recurrences), with no significant difference in PTA recurrence between these antibiotic treatments (Fisher's exact test, \(p = .19\)). Ten patients had a variety of other antibiotic treatments. We categorized cases according to the first surgical intervention (i.e. primary intervention), quinsy tonsillectomy or aspiration/incision, that resulted in pus drainage. PTA drainage by aspiration or incision was performed in 274 patients; PTA recurred in 51 (18.6%), with a median time to recurrence of 34 days. The most common intervention was a combination of aspiration and incision, with needle aspiration directly followed by incision, but sometimes only aspiration or only incision with or without blunt debridement was performed. Most patients (\(n = 204\)) had at least one follow-up visit (1–5, median 1) with repeated aspiration, incision, or debridement, whereas 70 had only one visit. We found no significant difference in the rate of PTA recurrence between these two subgroups, at 20.0% (41/204) and 14.8% (10/70), respectively (Fisher's exact test, \(p = .38\)).

Quinsy tonsillectomy was the primary intervention in 6.2% (18/292) of cases. In addition, three patients in the aspiration or incision group had a later quinsy tonsillectomy performed following a first recurrence (i.e. secondary intervention), and one patient after two recurrences, bringing the total incidence of quinsy tonsillectomy performed in our cohort to 7.5% (22/292). The quinsy tonsillectomies were performed within 0–3 days (mean 1 day) of admission.

At the end of the study period, the total rate of tonsillectomy surgery (quinsy, interval tonsillectomy, or other indication) among patients in our PTA cohort was 34.5% (101/292), with no recurrence of PTA following surgery.
Using a Cox proportional hazards regression model, lower age was determined to be a significant risk factor for the recurrence of PTA, whereas sex and history of PTA were not associated with any change in risk (Table 2). Data for patients who had a recurrence of PTA following aspiration or incision are presented in Figure 2. There was a visible tendency towards early recurrence among young PTA patients, those under 25–30 years of age, compared to the more sporadic recurrences seen among older PTA patients. In Table 3, we present the cumulative incidence of PTA recurrence and tonsillectomy performed after PTA for different age groups. There was a higher incidence of PTA recurrence in the young age groups, and the majority of recurrences occurred within 30 days after the primary drainage intervention of the inclusion PTA.

There was no difference in the rate of post-tonsillectomy haemorrhage after quinsy tonsillectomy (6/30) and after interval tonsillectomy (16/71) (Fisher’s exact test, p < .05).

**Discussion**

The main finding in the present study was a high rate of recurrence of PTA among adolescents and young adults treated with aspiration or incision for drainage in combination with antibiotics. Neither sex nor a history of previous PTA significantly influenced the risk of suffering a subsequent PTA; young age was the only significant predictor. Earlier studies demonstrated that tonsillectomy is an effective method for preventing future recurrence of PTA [4,6,8], and this study confirms those findings, as we had no case of post-tonsillectomy recurrence. Also in line with earlier findings, we did not observe a difference in post-operative haemorrhage between quinsy tonsillectomy and interval tonsillectomy [12].

The present study demonstrates the urgency in performing tonsillectomy when planned for adolescents and young adults following PTA. Of the 25 PTA patients younger than 25 years of age planned for interval tonsillectomy at the time of their PTA, 11 had a recurrence while waiting for surgery. In our cohort, the median waiting time for interval tonsillectomy was 74 days. As illustrated in Figure 2, performing tonsillectomy earlier would have reduced the risk of PTA recurrence. In contrast, among patients ≥30 years of age, recurrences occurred significantly less frequently and rarely within the first weeks after the initial PTA.

Whether to choose quinsy tonsillectomy or interval tonsillectomy has been debated [3,6,8,12]. For children under 15 years of age, quinsy tonsillectomy is often the preferred treatment [13]. We also recommend quinsy tonsillectomy for adolescents and young adults, alternatively interval tonsillectomy if the patient is still being administered antibiotics, as our data suggest that the risk of recurrence increases sharply thereafter. There was no recurrence of PTA in the

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>CI</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower age</td>
<td>1.06</td>
<td>1.03–1.10</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Having a history of PTA</td>
<td>1.39</td>
<td>.72–2.68</td>
<td>.223</td>
</tr>
<tr>
<td>Female sex</td>
<td>1.16</td>
<td>.67–2.02</td>
<td>.602</td>
</tr>
</tbody>
</table>

**Table 1.** Study population characteristics.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean age (SD)</th>
<th>Median age (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>292</td>
<td>33.4 (16.7)</td>
<td>27.8 (15.2–89.4)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>162</td>
<td>35.8 (17.9)</td>
<td>29.9 (15.2–89.4)</td>
</tr>
<tr>
<td>Female</td>
<td>130</td>
<td>30.5 (14.5)</td>
<td>24.9 (15.2–84.6)</td>
</tr>
<tr>
<td>PTA history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>59</td>
<td>30.7 (13.6)</td>
<td>26.7 (15.6–76.3)</td>
</tr>
<tr>
<td>No</td>
<td>206</td>
<td>32.4 (15.6)</td>
<td>27.0 (15.2–87.5)</td>
</tr>
<tr>
<td>Unknown</td>
<td>27</td>
<td>47.3 (23.1)</td>
<td>41.4 (17.9–89.4)</td>
</tr>
<tr>
<td>Primary surgical intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quinsy tonsillectomy</td>
<td>18</td>
<td>33.8 (16.5)</td>
<td>28.9 (15.8–65.1)</td>
</tr>
<tr>
<td>Aspiration and/or incision</td>
<td>274</td>
<td>33.4 (16.7)</td>
<td>27.8 (15.2–89.4)</td>
</tr>
</tbody>
</table>

**Table 2.** Cox proportional hazards model of PTA recurrence.

Figure 2. Time to recurrence of PTA among patients treated with aspiration or incision. The horizontal axis is a logarithmic scale of the days to recurrence of PTA, where the vertical axis is a linear scale for patient age in years. One outlier was excluded (34.1-years-old, 1230 days to recurrence).
cumulative incidence of Pt A recurrence at days 15, 30, and 100 and
at the end of the study and rate of tonsillectomy at the end of the study for
patients treated with aspiration or incision, stratified into three age groups.

<table>
<thead>
<tr>
<th></th>
<th>15d</th>
<th>30d</th>
<th>100d</th>
<th>End of study</th>
<th>Tonsillectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;30 years</td>
<td>124</td>
<td>0.0%</td>
<td>1.6%</td>
<td>4.0%</td>
<td>15.3%</td>
</tr>
<tr>
<td>&lt;30 years</td>
<td>150</td>
<td>4.7%</td>
<td>18.0%</td>
<td>20.0%</td>
<td>26.0%</td>
</tr>
<tr>
<td>&lt;25 years</td>
<td>120</td>
<td>5.0%</td>
<td>16.7%</td>
<td>22.5%</td>
<td>28.3%</td>
</tr>
</tbody>
</table>

*Median follow-up 1626 days (670–2492 days).
*Rate of tonsillectomy among Pt A patients regardless of indication.
*Tested with Fisher’s exact test vs. >30 years old, and was significantly different, p < .05.

first 10 days, the standard prescription time for antibiotics in our
cohort.

Of the patients <25 years of age initially treated with aspiration or incision, 21% (25/120) were planned for interval
tonsillectomy at the time or their PTA, but 47% (56/120) had undergone tonsillectomy by the end of the study period.
The majority (21/31) of these additional tonsillectomies followed a recurrence of PTA. In total, 50% (64/128) of patients
aged 15–25 years had a tonsillectomy performed during the study period, including the 8 patients initially treated with
quinsy tonsillectomy.

In our clinic, we treat most PTA patients in an outpatient setting with aspiration or incision for abscess drainage, all
are prescribed peroral antibiotics, and in most cases, one or more follow-up visits are made for repeated aspiration or
debridement of the abscess. In patients aged ≥15 years, quinsy tonsillectomy is usually only performed if aspiration or incision fails, and repeated attempts are often made. In adolescents and adults, quinsy tonsillectomy is rarely chosen as the primary intervention for abscess drainage, usually only if patient cooperation is not obtained to perform aspiration or incision. Our low rate of quinsy tonsillectomy and long waiting times for interval tonsillectomy should result in a higher total rate of PTA recurrence compared with institutions with a higher rate of quinsy tonsillectomy or interval tonsillectomy performed within a shorter waiting time.

**Conclusion**

Based on our results, PTA patients in adolescence or young adulthood, 15–25 years of age, should be considered for tonsillectomy to avoid the recurrence of PTA. This recommendation should be made regardless of whether a history of previous PTA exists. To be effective, surgery should be performed urgently as a quinsy tonsillectomy or early interval tonsillectomy while the patient is still receiving antibiotic treatment.

**Acknowledgements**

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**Disclosure statement**

No potential conflict of interest was reported by the author(s).

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