

Peritonsillar abscess after tonsillectomy: a review of the literature

SEJ Farmer, MA Khatwa, HMM Zeitoun

Department of Otolaryngology – Head and Neck Surgery, Glan Clwyd Hospital, Rhyl, UK

ABSTRACT

INTRODUCTION Peritonsillar abscess (PTA) is a common condition with a complicated aetiology. PTA after tonsillectomy is rare. This literature review of PTA in the absence of tonsil tissue aims to collate experience of these cases and examine the wider implications for understanding the aetiology of PTA formation.

METHODS A structured literature review was performed using Ovid MEDLINE®. Keywords ‘quinsy’ or ‘peritonsillar abscess’ were combined with ‘tonsillectomy’.

RESULTS The search resulted in 212 citations and the identification of 11 cases of PTA formation in the absence of tonsil tissue. The most common indication for tonsillectomy was recurrent tonsillitis or PTA. Nine patients had no interval peritonsillar infection (ie a peritonsillar infection after a tonsillectomy) prior to presenting with the PTA. The mean interval between tonsillectomy and PTA was 16 years. All patients were managed either by incision and drainage or by needle aspiration with or without antibiotics.

CONCLUSIONS PTA in the absence of tonsil tissue is rare. Potential sources of infection include congenital branchial fistulas, Weber’s glands and dental disease. These alternatives should also be considered in patients presenting with PTA formation in the absence of concurrent tonsillitis and may influence management decisions.

KEYWORDS

Quinsy – Peritonsillar abscess – Tonsillectomy

Accepted 11 April 2011

CORRESPONDENCE TO

Sarah Farmer, Department of Otolaryngology – Head and Neck Surgery, Glan Clwyd Hospital, Rhyl, Denbighshire LL18 5UJ, UK
T: +44 (0)7745 861 680; F: +44 (0)121 558 7829; E: sejfarmer@aol.com

Peritonsillar abscess (PTA) is a common otolaryngological emergency. Patients typically present with intense odynophagia and an inability to swallow saliva, fever, a characteristic quality to their voice and trismus. Clinical examination reveals marked asymmetry of the oropharynx with oedema and erythema of the superior peritonsillar tissues and soft palate with displacement of the uvula to the contralateral side.

A PTA usually occurs as a complication of acute tonsillitis when infection penetrates through the tonsil capsule.¹ However, the aetiology is almost certainly more complicated as PTAs also arise in patients with no previous history of tonsillitis and when there is no evidence of concurrent tonsillitis. The incidence of tonsillitis peaks in childhood while PTAs are most common in young adults. The bacteriology of tonsillitis is also different to that of a PTA.¹

Cases of PTA formation after tonsillectomy are rare, although they have been reported in the literature. This review aims to examine the details of these cases in order to collate experience of PTA after tonsillectomy. The review also aims to discuss the potential aetiology and anatomy of peritonsillar abscess formation in these cases and to examine the wider implications of this for understanding the aetiology of this condition in all patients presenting with PTA. The inspiration for this systematic review was a patient who

presented with a PTA after having had a tonsillectomy several years previously. We therefore present this case as part of the introduction.

Clinical case

A 15-year-old boy was admitted to hospital as an emergency with a sore throat. The patient gave a history of severe right-sided throat pain lasting for three days and associated with difficulty in swallowing and restricted mouth opening. His symptoms had worsened despite treatment with oral antibiotics. The patient had had an uncomplicated tonsillectomy three years earlier because of recurrent tonsillitis and a previous right-sided PTA. Clinical examination revealed a pyrexia and tachycardia. Examination of his oral cavity and oropharynx showed swelling of the right soft palate and the uvula was pushed to the left. There was no residual tonsil tissue. Approximately 4ml of pus was aspirated and cultures subsequently confirmed a heavy growth of mixed anaerobic flora. The patient was commenced on intravenous cefuroxime and metronidazole. He made a full recovery and was discharged home on oral antibiotics four days later. He was reviewed in clinic one week after discharge and a repeat examination showed no signs of infection and no evidence of remnant tonsil tissue.

Table 1 Summary of reported patients with peritonsillar abscess (PTA) following tonsillectomy with no residual tonsil tissue

Reference	Age, sex	Indication	PTA interval (time after surgery)	Interval infection	Management
Stankiewicz and Talland, 1988 ²	18 F	Multiple unilateral PTA	4 years	Peritonsillitis x2	Aspiration + penicillin 6/12 prophylactic penicillin
Stankiewicz and Talland, 1988 ²	26 F	Tonsillitis	20 years	No	Incision and drainage + dicloxacillin
Stankiewicz and Talland, 1988 ²	36 M	Airway obstruction	15 years	PTA x2	Incision and drainage + cefaclor
Stankiewicz and Talland, 1988 ²	43 F	Not stated	35 years	No	Incision and drainage
Roos and Lind, 1990 ⁴	50 F	Tonsillitis, PTA	35 years	No	Incision and drainage
Al-Kindy, 2002 ⁵	20 M	Not stated	13 years	No	Incision and drainage + intravenous antibiotics
Randall and Jefferis, 1984 ⁶	35 M	Tonsillitis, PTA	7 years	No	Incision and drainage
Cannon and Lampton, 1996 ⁷	32 F	Not stated	27 years	No	Aspiration + antibiotics
Cannon and Lampton, 1996 ⁷	26 M	Not stated	Not stated	No	Aspiration + antibiotics
Al-Barrak, 2003 ⁸	45	Not stated	2 months	No	Aspiration
Our case	15 M	Tonsillitis, PTA	4 years	No	Aspiration + intravenous cefuroxime + metronidazole, oral antibiotics for 1/52

Methods

A structured search of the Ovid MEDLINE® online database (1950 to August 2010) was performed. Keywords 'quinsy' or 'peritonsillar abscess' were combined with 'tonsillectomy'. The criteria for inclusion of citations were English language case reports of PTA (with confirmation of pus formation) after tonsillectomy, in the absence of remnant tonsil tissue. The references of all articles were also searched for additional relevant case reports. Clinical information was recorded from the details provided in each case report.

Results

The search strategy resulted in 212 citations. Following screening, seven of these articles were found to be relevant for inclusion. One further paper was identified by cross-referencing. These eight papers reported ten cases of PTA after tonsillectomy. The addition of our case meant that 11 cases were examined in this review (Table 1).

An analysis of these cases shows that the mean patient age at presentation was 31 years (range: 15–50 years). Six male and four female patients have been reported (sex not specified in one report). In four patients the reported indication for tonsillectomy included a previous PTA. In all of these cases the post-tonsillectomy abscess was on the ipsilateral side. The majority of patients (82%) had no obvious history of interval peritonsillar infection (ie a peritonsillar infection after a tonsillectomy) prior to the PTA prompting

the case report. However, two patients (18%) had had recurrent ipsilateral peritonsillar infections after tonsillectomy. Both patients had had multiple episodes; one patient had had two episodes of peritonsillitis and the other had had two previous PTAs.

The interval between the tonsillectomy and presentation with the post-tonsillectomy PTA ranged from 2 months to 35 years, with a mean of 16 years. Six patients (55%) were treated with incision and drainage of the PTA and five (45%) were treated with needle aspiration with or without antibiotics. Computed tomography performed in two cases confirmed absent tonsil tissue.² One patient received six months of prophylactic antibiotics to prevent a recurrence.²

Discussion

PTA has been reported in patients who have undergone tonsillectomy.^{2–10} However, the majority of cases reported in the literature were found to have remnant tonsil tissue providing a potential source of infection and an associated remnant peritonsillar space walled off by scarring following surgery. Although it is appreciated that remnant tissue may be very small and not always obvious on clinical examination, eleven cases of PTA have been reported in patients without apparent residual tonsil tissue (Table 1).^{2–8} The additional case presented in our paper is the youngest patient reported to date and the only paediatric case.

This review suggests that patients may present with a

PTA many years after a tonsillectomy has been performed and in the absence of a prior history of PTA. However, when the indication for the tonsillectomy is stated, two patients (33%) had no previous history of tonsillitis. One of these patients had a tonsillectomy performed for a recurrent PTA, suggesting an alternative source of infection preoperatively. Most patients have no infection following their tonsillectomy. A minority have a recurrent infection or suppuration in the peritonsillar tissue. The review suggests that patients respond well to conventional treatment in the form of needle aspiration or incision and drainage with antibiotics.

Peritonsillar abscess after tonsillectomy may appear to be a contradiction in terms, assuming tonsil tissue is removed and the peritonsillar space is obliterated (although in reality, it is very difficult to completely remove all tonsil tissue when performing a tonsillectomy, particularly at the lower pole and tongue base). The areolar tissue in the peritonsillar space can be divided into layers superiorly.⁷ If the tonsil capsule is not completely removed during the tonsillectomy, this may explain the development of a PTA in a superior location. Even if the tonsil capsule is completely removed, there may be suppuration in any remnant peritonsillar tissue. Pus may collect between the superior constrictor muscle and any fibrosis resulting from the tonsillectomy.

The aetiology of PTA formation after tonsillectomy remains uncertain but there are a number of potential explanations, assuming that there is no remnant tonsil tissue infection. Embryologically, the tonsil is derived from the second internal pharyngeal pouch. The membrane between the pouch and the cleft may rupture during development and result in an internal branchial fistula between the tonsil and the superior constrictor muscle.¹¹ It has been claimed that a tonsillectomy may predispose patients with this congenital fistula to recurrent abscesses by resulting in scarring that obstructs drainage of an infected tract or cyst.^{2,5}

Weber's glands are tubular mucous glands located above the capsule of the superior pole of the tonsil.¹² The glands send a common duct to the tonsil and secrete saliva on to the surface of the tonsillar crypts.¹⁵ The glands may be left behind following a tonsillectomy and are therefore a potential source of suppuration after surgery.⁵

It has been proposed that dental disease may play a role in the aetiology of PTA formation. In a review of 84 patients (with tonsils) presenting with peritonsillitis, Fried and Forrest found that 27% gave a history of recent dental infection.¹⁴ Patients with a PTA have an increased prevalence of periodontal disease compared with patients with recurrent tonsillitis.¹⁵ There have also been reports of PTA formation following dental extraction and local anaesthetic infiltration.²

Infections of peritonsillar tissue secondary to trauma, foreign bodies, tubercular granulomas and syphilitic gumata have also been reported as potential causes of PTA formation in patients with tonsils.² Furthermore, it has been suggested that tonsillectomy results in local immunological change that predisposes to local infection.²

Although the reported incidence of a PTA in the absence of tonsil tissue remains very low, understanding the aetiology is important. It challenges the widespread belief

that PTA formation is the complication of tonsillitis and has wider implications for aiding our understanding of the complex aetiology of PTA formation in general. In particular, it might explain the source of infection in patients with a PTA without concurrent tonsillitis. The possibility of a congenital branchial fistula, Weber's glands and dental disease should be considered as potential sources of infection in all patients presenting with a PTA in the absence of tonsillitis. This may influence patient management as additional examinations and investigations may be required accordingly. Where surgical intervention is warranted, attention to an adequate tonsillectomy with excision of Weber's glands and appropriate management of branchial anomalies is important.

Conclusions

PTA formation after tonsillectomy is rare. Successful treatment involves needle aspiration or incision and drainage of the abscess and antibiotics. However, peritonsillar infection following a tonsillectomy can be recurrent. In the absence of remnant tonsil tissue, potential causes include infection of a second branchial cleft fistula, infection of Weber's glands and dental disease. Although PTA formation is generally considered to occur secondary to tonsillitis, these alternative causes should also be considered in all patients presenting with PTA formation in the presence of non-infected tonsils.

References

1. Macnamara M. Acute and Chronic Pharyngeal Infection. In: Gleeson M, ed. *Scott-Brown's Otorhinolaryngology, Head and Neck Surgery*. 7th edn. London: Hodder Arnold; 2008. pp1,891–2,024.
2. Stankiewicz JA, Talland C. Peritonsillarlike lateral oropharyngeal abscess after tonsillectomy. *Arch Otolaryngol Head Neck Surg* 1988; **114**: 1,181–1,183.
3. Papadas T, Batistatou A, Ravazoula P *et al*. Late post-tonsillectomy quinsy report of three cases and review of the literature. *Int Congr Ser* 2003; **1,240**: 741–743.
4. Roos K, Lind L. Peritonsillar abscess in spite of adequately performed tonsillectomy. *Arch Otolaryngol Head Neck Surg* 1990; **116**: 205.
5. Al-Kindy S. Post tonsillectomy quinsy. *Saudi Med J* 2002; **23**: 240–241.
6. Randall CJ, Jefferis AF. Quinsy following tonsillectomy. *J Laryngol Otol* 1984; **98**: 367–369.
7. Cannon CR, Lampton LM. Peritonsillar abscess following tonsillectomy. *J Miss State Med Assoc* 1996; **37**: 577–579.
8. Al-Barrak H. Post tonsillectomy quinsy. *Saudi Med J* 2003; **24**: 315.
9. Tsang WS, Marshall JN, van Hasselt CA. Peritonsillar abscess in a tonsillectomized patient. *J Otolaryngol* 2003; **32**: 409–410.
10. Bugti AH. Quinsy following tonsillectomy. *J Pak Med Assoc* 1996; **46**: 19.
11. Sadler TW. *Langman's Medical Embryology*. 6th edn. Baltimore, MD: Williams & Wilkins; 1990.
12. Licameli GR, Grillone GA. Inferior pole peritonsillar abscess. *Otolaryngol Head Neck Surg* 1998; **118**: 95–99.
13. Passy V. Pathogenesis of peritonsillar abscess. *Laryngoscope* 1994; **104**: 185–190.
14. Fried MP, Forest JL. Peritonsillitis. Evaluation of current therapy. *Arch Otolaryngol* 1981; **107**: 283–286.
15. Georgalas C, Kanagalingam J, Zainal A *et al*. The association between periodontal disease and peritonsillar infection: a prospective study. *Otolaryngol Head Neck Surg* 2002; **126**: 91–94.