

Staphylococcus aureus peritonsillar abscess in an 11-week old infant

MUSTANSAR J. AKHTAR, M.D.*, HENRY R. SHINEFIELD, M.D.†

Abstract

A case of *Staphylococcus aureus* peritonsillar abscess in an 11-week-old infant is described. The importance of peritonsillar abscess culture and its changing management is discussed.

Key words: Peritonsillar abscess; *Staphylococcus aureus*

Introduction

Peritonsillar abscess (PTA) is rarely encountered in young children and is extremely rare in infants. Our report describing a case of this disease in an 11-week-old male, is the youngest infant described in the English literature (Shenoy and David, 1993). This report reviews the literature regarding the clinical course, diagnosis, microbiology and management of peritonsillar abscess in infants and younger children. A variety of organisms may be the aetiological agents in this disease. In this case, penicillin-resistant *Staphylococcus aureus* was the causative organism, therefore it is important to culture pus obtained at aspiration for the proper selection of an antimicrobial agent. Because serious complications can occur early in the course of this disease early aggressive management of this condition is required.

Case report

An 11-week-old male infant was admitted to the paediatric ward of the Kaiser Permanente Medical Centre in San Francisco with intermittent pyrexia for three days, with a maximum temperature of 101°F. He presented with a muffled cry and slight amount of drooling. There was no history of trismus, dysphagia, torticollis, respiratory distress or profuse perspiration. He was a product of an uncomplicated full-term pregnancy. The neonatal course was uneventful. Past history was noncontributory for any recurrent infection or immunological deficits. Physical examination revealed an alert, irritable, fussy infant with five per cent dehydration and normal vital signs, who was in no acute distress but later found to be feeding poorly.

Throat examination revealed a large inflammatory peritonsillar mass anterosuperior to a moderately enlarged right tonsillar area with the uvula and soft palate displaced to the left. There were no other abnormalities. Nose and ear examination was normal. Right anterior cervical and right jugulodigastric lymph nodes were palpable, 2.5 to 3 cm and were nonfluctuant, tender, relatively mobile, with a soft to rubbery consistency.

Admission laboratory tests revealed leukocytosis of 25 100/mm³ with 65 per cent polymorphonuclear leukocytes, no band forms and 26 per cent lymphocytes. There was no evidence of retropharyngeal abscess on lateral neck X-ray. Intravenous fluids were started for rehydration. Within an hour of admission the abscess was aspirated by an otolaryngologist. The most fluctuant part of the abscess was entered with a 20 gauge needle on a 10 ml syringe, directed superiorly. About 3 ml of yellow purulent pus was obtained and intravenous (IV) penicillin was started. The baby improved within a few hours and started feeding without difficulty. Gram's stain of the pus revealed many white blood cells and gram-positive cocci. Pus culture after 24 to 48 hours grew *Staphylococcus aureus* which was resistant to penicillin. The antimicrobial was changed to intravenous nafcillin. Immunological work-up was normal and blood cultures including anaerobic pus cultures were sterile. Neither Group A β -haemolytic *Streptococcus* nor *Staphylococcus aureus* was isolated from throat culture prior to aspiration. The baby rapidly became afebrile and was discharged after two days on oral cephalexin. Upon follow-up he was doing well.

Discussion

Quinsy, a term used in the English literature for inflammation of the throat and tonsils, is derived from the Greek word *cynanche*. The first documented case of peritonsillar abscess (called Quinsy) was reported by Chassignac in 1859, which was managed with tonsillectomy at the time of disease. Peritonsillar abscess is a deep infection of the head and neck and is potentially fatal if untreated. It is usually the end point of the spectrum of disease which may progress from acute follicular tonsillitis to peritonsillitis to peritonsillar abscess.

Correct diagnosis is mandatory since untreated peritonsillar abscess can lead to fatal complications including airway obstruction and cerebral abscess. When the diagnosis is in doubt, intraoral ultrasonography can demonstrate with a high degree of accuracy the presence of an abscess, its volume, location and relationship to the carotid artery (Haeggström *et al.*, 1993). In cases where the

From the Department of Pediatrics*, Stanford University, Palo Alto, CA and the Paediatric Vaccine Study Center† and Department of Pediatrics‡, 2200 O'Farrell Street, San Francisco, CA 94115. USA.
Accepted for publication: 20 August 1995.

patient cannot open the mouth because of trismus, computerized tomography (CT) scan enhances diagnostic accuracy, and peritonsillar abscess localization (Patel *et al.*, 1992).

In establishing the aetiological diagnosis of this disease, one can not rely on throat cultures since the results do not correlate with the results obtained from pus cultures. It has also been suggested that there is no need to culture peritonsillar abscess since the usual causative organism is group A β -haemolytic *Streptococcus* or oral flora which are sensitive to penicillin (Hoffman *et al.*, 1987). However, it is important to note that in our case, *Staphylococcus aureus* was isolated which was resistant to penicillin. Other organisms that have been isolated as a single organism or as mixed microbial flora include *Streptococcus pneumoniae*, α -haemolytic *Streptococcus*, group D *Streptococcus*, *Haemophilus influenzae* and *Haemophilus parainfluenzae*, coagulase negative staphylococci and *Moraxella catarrhalis*, and a variety of anaerobes (Dodds and Maniglia, 1988; Brook *et al.*, 1991; Snow *et al.*, 1991; Jousimies *et al.*, 1993).

Debate continues concerning the most appropriate method for treating acute peritonsillar abscess (Herzon, 1984; Kronberg *et al.*, 1987; Litman *et al.*, 1987; Ophir *et al.*, 1988). Management consists of general supportive treatment, antibiotics, needle aspiration or incision and drainage (I&D) and acute or interval tonsillectomy. Prior to aspiration and report of culture results, penicillin is the drug of choice in initiating antibiotic therapy. Erythromycin is the alternative for patients who are allergic to penicillin. Subsequent antimicrobial therapy depends on organisms isolated from peritonsillar abscess culture (Hoffman *et al.*, 1987; Morris *et al.*, 1988).

In the past, the acceptable treatment of peritonsillar abscess was incision and drainage and immediate tonsillectomy (Lockhart *et al.*, 1991). The major disadvantages for performing immediate tonsillectomy were the risk of rupturing the abscess on intubation, the risk of haemorrhage during dissection of the contralateral tonsil and the possibility of septicaemia and seeding of the organisms at distant sites.

During the 1970s and 1980s, the management of peritonsillar abscess underwent considerable change as concerns for health care costs, better utilization and outside nonmedical forces began to influence clinical decisions. Currently needle aspiration is the treatment of choice for peritonsillar abscess. Most of the cases of peritonsillar abscess resolve with simple aspiration of pus. (Spires *et al.*, 1981; Herzon, 1984; Morris *et al.*, 1988). Ophir *et al.* (1988) reported a prospective evaluation of the management of peritonsillar abscess using needle aspiration. From 1984 to 1987 he and his associates evaluated a total of 125 patients, three to 72 years of age. He concluded that in addition to obtaining material for diagnosis, this procedure provided immediate relief of symptoms and avoided the risks of surgery. In cases beyond infancy this can be done successfully as an outpatient procedure and is a suitable substitute for incision and drainage (Spires *et al.*, 1981; Morris *et al.*, 1988). The favourable results and lower incidence of further quinsies following needle aspiration alone were supported by another prospective three year follow-up study. The rate of recurrent tonsillitis/abscess among patients younger than 30 and 40 years was respectively 21 per cent and 14 per cent. The rate in the corresponding older age group was 10 per cent (Jakobsen, 1993).

The question of the need for, and the timing of, tonsillectomy remains controversial. Some authorities have continued to recommend immediate tonsillectomy, while others have suggested interval tonsillectomy at four

to 12 weeks after acute treatment of peritonsillar abscess (Yung and Catrell, 1976; McCurdy, 1977). Sørensen *et al.* (1991) suggested bilateral tonsillectomy in all cases younger than 30 years of age who suffer peritonsillar abscess irrespective of unilateral or previous tonsillar disease.

Conclusion

Peritonsillar abscess can occur in all age groups and it must be emphasized that antibiotic treatment of tonsillitis does not always prevent the formation of peritonsillar abscess. It is never clear why peritonsillar abscess is more common in adults than children while bacterial tonsillitis is more common in children. The changing microbiological flora of the tonsil with age may be a factor. Hibbert (1987) suggested that the proliferation of anaerobic organisms around the tonsil is one possible explanation. Flodstrom and Hallander *et al.* (1976) postulated a similar initiating role for anaerobic organisms. In their series of 11 cases of peritonsillar sepsis, which had grown streptococci together with anaerobic infection, there was no serological evidence substantiating a marker for streptococcal infection. This suggested that the streptococci were not the primary pathogenic organisms and simply represented a carrier state.

In summary, in most situations peritonsillar abscess can be successfully treated by outpatient needle aspiration, and pain medication. Needle aspiration is also useful for recovering the aetiological pathogen, when the administration of an appropriate antimicrobial becomes necessary. The need for and the timing of tonsillectomy remains controversial.

References

- Brook, I., Frazier, H. E., Thompson, H. D (1991) Aerobic and anaerobic microbiology of peritonsillar abscess. *Laryngoscope* **101**(3): 289–292.
- Chassaignac, E. (1859) Trait pratique de la suppuration et du drainage chirurgical Vol. 2, Masson, Paris.
- Dodds, B., Maniglia, A. J. (1988) Peritonsillar and neck abscesses in the pediatric age group. *Laryngoscope* **98**: 956–959.
- Flodstrom, A., Hallander, H. O. (1976) Microbiological aspect of peritonsillar abscess. *Scandinavian Journal of Infectious Disease* **8**: 157–160.
- Haeggström, A., Gustafsson, O., Engquist, S. (1993) Intraoral ultrasonography in the diagnosis of peritonsillar abscess. *Otolaryngology – Head and Neck Surgery* **108** (3): 243–247.
- Herzon, F. S. (1984) Perimucosal needle drainage of peritonsillar abscess: a five year experience. *Archives of Otolaryngology* **110**: 104–105.
- Hibbert, J. (1987) Acute infection of the pharynx and tonsils. In *Scott Brown's Otolaryngology*, 5th Edition. Volume 5. (Stell, P. M., Kerr, A. G., eds.), Butterworth and Co., London, p 78.
- Hoffman, S., Sorensen, C. H., Vimpel, T. (1987) Influence of antibiotic treatment on the isolated rate of group A beta-hemolytic streptococcus from peritonsillar abscess. *Acta Oto-laryngologica* **140**: 360–362.
- Jakobsen, M. H. (1993) Peritonsillar abscess treatment with puncture and aspiration, a prospective three year follow-up. *Ugeskrift for Laeger* **155**(43): 3480–3482.
- Jousimies, S. H., Savolainen, S., Makitie, A., Ylikoski, J. (1993) Bacteriologic findings in peritonsillar abscess in young adults. *Clinical Infectious Disease* **16** (suppl 4): S-292–298.
- Kronberg, J., Wolf, M., Leventon, G. (1987) Peritonsillar abscess, recurrence rate and indication for tonsillectomy. *American Journal of Laryngology* **8**(2): 82–84.
- Litman, R. S., Hausman, S. A., Sher, W. H. (1987) A retrospective study of peritonsillar abscess. *Ear, Nose and Throat Journal* **66**(2): 53–55.

- Lockhart, R., Parker, G. S., Tami, T. A. (1991) The role of quinsy tonsillectomy in the management of peritonsillar abscess. *Annals of Otolaryngology, Rhinology and Laryngology* **100**: 569–571.
- McCurdy, J. A. Jr. (1977) Peritonsillar abscess, a comparison of treatment by immediate tonsillectomy and interval tonsillectomy. *Archives of Otolaryngology* **103**: 414–415.
- Morris, M. R., Ellis, M. B., Arnold, J. E., Woody, E. A., Smith, D. B. (1988) Treating peritonsillar abscess in the office. *Emergency Medicine* **20(5)**: 87–93.
- Ophir, D., Bawnik, J., Poria, Y., Porat, M., Marshak, G. (1988) Peritonsillar abscess, a prospective evaluation of out patient management by needle aspiration. *Archives of Otolaryngology–Head and Neck Surgery* **114**: 661–663.
- Patel, K. S., Ahmad, S., O’Leary, G. (1992) The role of computerized tomography in the management of peritonsillar abscess. *Otolaryngology – Head and Neck Surgery* **107**: 727–732.
- Shenoy, P., David, V. C. (1993) A case of quinsy in fifteen-month-old child. *Journal of Laryngology and Otolaryngology* **107**: 354–355.
- Snow, D. G., Campbell, J. B., Morgan, D. W. (1991) The microbiology of peritonsillar sepsis. *Journal of Laryngology and Otolaryngology* **105**: 553–555.
- Sorensen, A. J., Godballe, C., Anderson, H. N., Jørgensen, K. (1991) Risk of disease in the remaining tonsil after unilateral tonsillectomy, à Chaud. *Journal of Laryngology and Otolaryngology* **105**: 442–444.
- Spires, J. R., Owens, J. J., Woodson, G. E. (1981) Treatment of peritonsillar abscess, a prospective study of aspiration vs. incision and drainage. *Archives of Otolaryngology – Head and Neck Surgery* **89**: 907–909.
- Yung, A. K., Catrell, R. W. (1976) Quinsy tonsillectomy. *Laryngoscope* **86**: 1714–1717.

Address for correspondence:
Dr Mustansar J. Akhtar, M.D.,
112 Anchorage Road,
Sausalito, CA 94965 USA.

Fax: (415) 563-9700