

## Acute tonsillectomy in the management of infectious mononucleosis

D. S. STEVENSON, F.R.A.C.S., G. WEBSTER, F.R.A.C.S., I. A. STEWART, F.R.C.S. (ED.), F.R.A.C.S.  
(Dunedin, New Zealand)

### Abstract

Life-threatening upper airway obstruction can be caused by tonsillopharyngitis secondary to infectious mononucleosis (IM). The administration of corticosteroids, emergency tracheostomy and acute tonsillectomy have been advocated as ways of managing this problem. In a series of 25 patients admitted over a five-year period with IM, 15 were judged to have symptoms severe enough to warrant the administration of corticosteroids. Six of these 15 patients had little improvement in their condition and thus underwent acute tonsillectomy. There were no significant complications of this surgery. A further three patients who received corticosteroids required tonsillectomy for recurrent tonsillitis later in the study period. By contrast, only one of the ten patients who did not receive corticosteroids subsequently required tonsillectomy. Acute tonsillectomy is of value in selected cases of IM tonsillopharyngitis. It may decrease the morbidity of recurrent tonsillitis after IM, in addition to averting the immediate risk of respiratory obstruction.

### Introduction

Tonsillopharyngitis is a common presentation of infectious mononucleosis (IM). The severity of symptoms varies considerably, but serious complications are uncommon. Both upper airway obstruction and peritonsillar abscess formation occur in approximately one per cent of cases (Johnsen *et al.*, 1984). Upper airway obstruction secondary to IM may be life-threatening or fatal (Wolfe and Rowe, 1980; Carrington and Hall, 1986; Fraser and Sharwood, 1986).

Opinions differ about the most appropriate way to manage patients with serious airway obstruction. The administration of corticosteroids, emergency tracheostomy and acute tonsillectomy have been advocated by various authors (Wolfe and Rowe, 1980; Catling *et al.*, 1984; Carrington and Hall, 1986; Sudderick and Narula, 1987; Zwaveling *et al.*, 1987).

The purpose of this paper is to present our approach to the management of severe tonsillopharyngitis secondary to IM, in the light of previous papers. Acute tonsillectomy has been used selectively in management.

### Patients and methods

During the period 1 January 1985 to 31 December 1990, 25 patients were admitted to Dunedin Hospital with tonsillopharyngitis secondary to IM as their principal diagnosis (15 males, 10 females, median age of 19 years, range 4–33 years).

Upper airway obstruction or dysphagia causing an inadequate oral intake were the main reasons for admission. One patient was found to have a complicating

viral pneumonitis, while a second patient developed serologically proven Epstein Barr Virus (EBV) meningoencephalitis. No other complications were noted.

All patients had a positive Paul-Bunnell or Monospot test, and/or the presence of atypical lymphocytes in a blood film.

The initial therapy was similar in all cases, namely intravenous rehydration, intravenous benzylpenicillin, and oral or rectal paracetamol (sometimes in combination with codeine).

Ten patients (Group A) required no other therapy, and in general were discharged within 48 hours of admission (the exceptions being the two patients who developed complicating conditions). One patient in this group subsequently required tonsillectomy for recurrent tonsillitis.

Fifteen patients (Group B) received intravenous corticosteroids (either hydrocortisone 200 mg six-hourly or dexamethasone 8 mg six-hourly) in addition to the therapy outlined above. This therapy was added immediately for patients with significant upper airway obstruction and as a secondary measure for those patients whose mild airway obstruction or severe dysphagia did not improve significantly within 24 hours of admission. One patient had an associated peritonsillar abscess treated by aspiration.

Six of the 15 patients in Group B (40 per cent) had severe upper airway obstruction, which did not improve over a period of one to three days. Obstructive sleep apnoea was noted in most cases, but was particularly prominent in the two paediatric cases (aged four and seven). In those cases where pulse oximetry was available, episodes of desaturation down to 80 per cent oxygen saturation were noted. These six patients underwent acute

tonsillectomy (adenotonsillectomy in one case). Haematological complications of IM were ruled out pre-operatively.

At operation, peritonsillar abscesses were present in three cases, while intratonsillar abscess formation was evident to varying degrees in all cases. Excessive bleeding was not encountered in any case.

The post-operative course was straightforward in five of the six cases. Extubation was complicated by laryngospasm in one case but reintubation was not required. A subsequent chest radiograph showed changes consistent with aspiration of secretions, but these changes resolved quickly and did not delay discharge. All patients were discharged within two days of surgery.

Histological examination of the resected tonsils showed widespread acute inflammation with extensive areas of necrosis.

Of the nine patients in Group B who did not undergo acute tonsillectomy, three patients developed recurring episodes of acute tonsillitis during the study period, requiring subsequent tonsillectomy.

## Discussion

The clinical picture of IM is well known, but requires confirmation by serological and haematological tests. The potential complications of IM include hepatic dysfunction, splenic injury, neurological disorders, pneumonitis, pericarditis and haematological disorders, as well as airway obstruction (Penman, 1970). These complications should be sought in patients admitted to otolaryngology units with tonsillopharyngitis secondary to IM.

Airway obstruction arising from tracheobronchitis and supraglottic oedema has been reported (Penman, 1970; Cartwright and Rucklidge, 1985). These conditions need to be differentiated from the more common complication of airway obstruction secondary to hypertrophy of the lymphoid tissue in Waldeyer's ring.

The most appropriate way to manage tonsillopharyngitis secondary to IM remains contentious. Most otolaryngologists would admit only patients with obstructive symptoms or severe dysphagia and institute symptomatic measures namely intravenous fluids and analgesic/antipyretic medications. In addition, we add intravenous penicillin to provide cover against secondary infection by oropharyngeal flora (Penman, 1970). This treatment is also effective against peritonsillar cellulitis, if present. It may reduce the likelihood of peritonsillar abscess formation (Johnsen, 1981; Portman *et al.*, 1984). Ten of our patients required only these simple measures.

We add intravenous steroids to this regimen in two situations; immediately for patients with upper airway obstruction, and as a secondary measure for those patients whose condition does not improve significantly within 24 hours of admission. The use of corticosteroids in IM is based on data from studies in the 1950's and 1960's (Schumacher *et al.*, 1963; Bender, 1967). These studies were not well controlled, and give limited evidence to support the efficacy of corticosteroids in IM. However corticosteroids now appear to be widely used to treat airway obstruction and fever in this condition. Sudderick and Narula (1987) describe 'a dramatic recovery' in their recent uncontrolled series of patients managed with parenteral hydrocortisone or dexamethasone.

Although some authors have implicated steroid administration in the development of a peritonsillar abscess in IM, the evidence for this is scanty (Johnsen, 1981; Portman *et al.*, 1984). Peritonsillar and intratonsillar abscesses may occur more commonly in IM than is recognized. We diagnosed a peritonsillar abscess in only one patient at presentation, but all those who underwent acute tonsillectomy had intratonsillar or peritonsillar collections.

Six of the 15 patients to receive corticosteroids subsequently underwent acute tonsillectomy. All had persisting upper airway obstruction. We did not encounter supraglottic oedema or tracheobronchitis in this small series, and do not feel the incidence of these conditions is so frequent to preclude considering acute tonsillectomy. Despite the tonsillar enlargement, indirect or fiberoptic laryngoscopy is usually possible in adults, allowing assessment of the supraglottic airway.

None of our patients came to surgery in extremis, in contrast to previous reports. Close observation allowed surgical intervention before respiratory failure became imminent, with no patient requiring a preliminary tracheostomy.

As in a quinsy tonsillectomy, an experienced anaesthetist is essential. Facilities to perform a tracheostomy were available, but oral intubation was achieved in all cases. Nasal intubation was not attempted. Previous papers have commented on haemorrhage occurring from friable adenoid tissue after failed nasal intubation (Zwaveling *et al.*, 1987).

The resolution of airway obstruction, dysphagia and systemic toxicity after acute tonsillectomy in IM is prompt. Much of the systemic toxicity may be due to the necrotic tonsillar tissue and associated abscesses. The condition of all of our patients improved quickly post-operatively, allowing discharge within two days.

Of the 15 patients who received steroid therapy (Group B), six underwent acute tonsillectomy, while three subsequently underwent tonsillectomy for recurrent acute tonsillitis. By contrast, only one of the nine patients who did not receive steroids (Group A) subsequently underwent tonsillectomy. It appears those patients with symptoms severe enough to consider treatment with steroids may be more likely to suffer recurrent tonsillitis than those whose condition improves with simple measures. This observation is in agreement with our opinion that a severe bout of IM (sometimes managed in the community) often predates the onset of recurrent tonsillitis in early adulthood.

A prospective, community-based study is underway to examine this issue more closely.

The pathological basis of recurrent tonsillitis after IM is not clear. Yamanaka and Kataura (1984) showed chronic EBV infection can occur in tonsillar lymphocytes. They suggested EBV reactivation could lead to recurrent viral tonsillitis, or local immunosuppression could lead to recurrent bacterial infections. At a simpler level, we suggest the degree of derangement of the normal tonsillar architecture seen in the tonsils we resected may be sufficient to predispose to recurring infections.

## Conclusion

In accordance with Wolfe and Rowe (1980), we support the selective use of acute tonsillectomy in IM. We suggest

it is the optimal therapy in those patients with upper airway obstruction secondary to tonsillopharyngitis whose condition does not improve rapidly after the administration of parenteral corticosteroids. Pulse oximetry is a valuable adjunct to careful assessment by nursing and medical staff. A preliminary tracheostomy should be performed under local anaesthesia if the patient is *in extremis*, but tracheostomy can otherwise be avoided. Expert anaesthetic assistance is essential.

In our series acute tonsillectomy was well tolerated, and followed by prompt recovery and discharge. In selected cases operative intervention allows avoidance of the likelihood of developing recurrent tonsillitis, in addition to averting the more immediate risk of the development of respiratory obstruction.

#### References

- Bender, C. E. (1967) The value of corticosteroids in the treatment of infectious mononucleosis. *Journal of the American Medical Association*, **199**: 97–99.
- Carrington, P., Hall, J. I. (1986) Fatal airway obstruction in infectious mononucleosis. *British Medical Journal*, **292**: 195.
- Cartwright, P. D., Rucklidge, M. A. (1985) Airway obstruction in infectious mononucleosis. *Anaesthesia*, **40**: 387–388.
- Catling, S. J., Asbury, A. J., Latif, M. (1984) Airway obstruction in infectious mononucleosis. *Anaesthesia*, **39**: 699–702.
- Fraser, S. J. C., Sharwood, G. H. (1986) Fatal airway obstruction in infectious mononucleosis. *British Medical Journal*, **292**: 485.
- Johnsen, T. (1981) Infectious mononucleosis and peritonsillar abscess. *Journal of Laryngology and Otology*, **95**: 873–876.
- Johnsen, T., Katholm, M., Stangerup, S. -E. (1984) Otolaryngological complications in infectious mononucleosis. *Journal of Laryngology and Otology*, **98**: 999–1001.
- Lee, M. D. (1969) Respiratory obstruction in glandular fever. *Journal of Laryngology and Otology*, **83**: 617–622.
- Penman, H. G. (1970) Fatal infectious mononucleosis: A critical review. *Journal of Clinical Pathology*, **23**: 765–771.
- Portman, M., Ingall, D., Westenfelder, G., Yogev, R. (1984) Peritonsillar abscess complicating infectious mononucleosis. *Journal of Pediatrics*, **104**: 742–744.
- Schumacher, H. R. T., Jacobson, W. A., Bemiller, C. R. (1963) Treatment of infectious mononucleosis. *Annals of Internal Medicine*, **58**: 217–228.
- Sudderick, R. M., Narula, A. A. (1987) Steroids for airway problems in glandular fever. *Journal of Laryngology and Otology*, **101**: 673–675.
- Wolfe, J. A., Rowe, L. D. (1980) Upper airway obstruction in infectious mononucleosis. *Annals of Otolaryngology*, **89**: 430–443.
- Yamanaka, N., Kataura, A. (1984) Viral infections associated with recurrent tonsillitis. *Acta Otolaryngologica*, (**Supplement**), **416**: 30–37.
- Zwaveling, J. H., Ruding, P. J. W., Nortier, H. W. R., Wijngaart, W. S. I. M. (1987) Airway obstruction: An unusual complication of infectious mononucleosis. *Critical Care Medicine*, **15**: 333.

#### Address for correspondence:

D. S. Stevenson, F.R.A.C.S.,  
Dept. of Otolaryngology,  
Queen Elizabeth Hospital,  
Edgbaston,  
Birmingham B15 2TH.  
Fax: 021 627 2302

**Key words:** Infectious mononucleosis; Tonsillectomy