

Audit Article

Audit of the treatment of tonsillar and peritonsillar sepsis in an ear, nose and throat unit

G. MACDOUGALL, F.R.C.S., S. W. DENHOLM, F.R.C.S.

Abstract

We became aware that a range of antibiotics were being used in our unit to treat patients suffering from tonsillitis or peritonsillar abscess (quinsy). There appeared to be no rationale to determine which antibiotics were used, and we felt that we were possibly using expensive antibiotics when cheaper equally effective ones were available. An audit project was therefore devised to establish the current practice in the ENT Unit at the City Hospital at Edinburgh. Following a six-month prospective pilot study, a protocol for the treatment of tonsillar and peritonsillar sepsis was drawn up and subsequent practice and outcome was then audited, thus completing the audit cycle. As a result substantial savings in the cost of prescribed antibiotics have been made without compromising patient care.

Key words: Tonsillitis; Quinsy; Antibiotics

Introduction

Several authors in the past have commented on the number of different organisms grown from chronically infected and normal tonsillar tissue, with particular emphasis being placed on the role of anaerobic bacteria (Flodstrum and Hallander, 1976; Reilly *et al.*, 1981; Jokinden *et al.*, 1985).

This may explain why different practitioners prescribe different antibiotics in the treatment of tonsillar sepsis. There is no evidence that any of the broad spectrum antibiotics are more effective in treating such infections. Indeed, bacteriologists point out that the majority of anaerobes are sensitive to penicillin and conclude that it should be 'antibiotic of choice' (Flodstrum and Hallander, 1976; Jokinden *et al.*, 1985; Snow *et al.*, 1991). Even in cases where penicillin-resistant organisms are cultured, authors comment on the surprisingly good clinical response to surgical drainage, if there is an abscess, and to penicillin alone (Flodstrum and Hallander, 1976; Herbild and Bonding, 1981; Snow *et al.*, 1991). Despite this, we realized that even within one ENT unit, patients with tonsillar or peritonsillar sepsis were being treated with a wide variety of antibiotics.

The purpose of the present audit was therefore to determine which antibiotics were being prescribed, and to attempt to rationalize our management of tonsillar sepsis without compromising patient care.

Materials and methods

During the period June to December 1992, a pilot prospective study was conducted on 50 consecutive patients who were diagnosed as suffering from tonsillitis or quinsy and admitted to the ENT Department at the City Hospital, Edinburgh. The data collected consisted of the age and sex of the patient, any treatment instigated by the GP, the length of in-patient hospital stay, details of the medical and surgical treatment whilst the patient was in hospital, and the results of any bacteriological investigations.

A protocol for treatment was then devised (Figure 1) and distributed throughout the ENT unit. From February to August, 1993, the audit was repeated, with the protocol in place, using data available from a further 50 patients. The main aim of this second audit was to assess whether the protocol was being adhered to and whether there had been any effect on the outcome of treatment.

Results

From June to December, 1992, data was available from 28 patients with tonsillitis and 22 patients with quinsy (27 female and 23 male). Their ages ranged from six to 67 years old, with a median age of 23 years. This cohort made up the pilot study.

All the patients with tonsillitis were treated medically, i.e. with antibiotics, during their initial

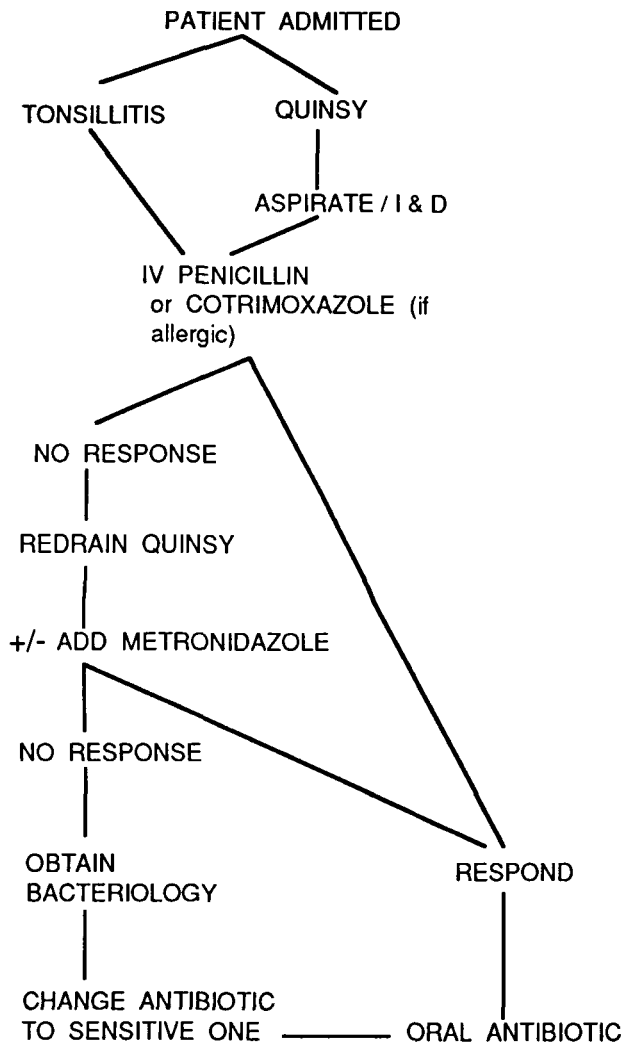


FIG. 1

Protocol for the treatment of patients with tonsillitis or quinsy.

admission to hospital. All cases of quinsy were treated medically, but in addition various surgical procedures were performed to drain the abscess. Twelve patients underwent simple aspiration of the abscess, five patients had incision and drainage of the abscess, three initially were aspirated but re-accumulation occurred and incision and drainage was subsequently performed, one patient was treated with antibiotics alone and one was treated with an immediate tonsillectomy (a so-called 'hot' procedure). Where indicated, an interval tonsillectomy was performed six weeks after discharge from

hospital.

The details of the antibiotics prescribed, both by the GP and in hospital are set out in Table I. Specimens were sent for bacteriological examination in only 20 cases; two specimens yielded anaerobes and one grew *Staphylococcus spp.*, the remainder were either negative or grew *Streptococcus spp.* (11 cases). The length of hospital stay ranged from one to four days, with a median of three days.

From February to August 1993, data was obtained from a further 50 patients who were treated according to the protocol shown in Figure 1. They were a similar population mix as in the pilot study (median age 25 years, range four to 45 years; 28 males, and 22 females), but there was a greater proportion of patients suffering from peritonsillar abscess (18 with tonsillitis and 32 with quinsy). Surgical treatment of the abscess group was also similar: one patient was treated with antibiotics alone, 26 by aspiration, four by incision and drainage, and in one patient the abscess drained spontaneously before arrival at the hospital. The antibiotics used are recorded in Table I, with a striking change in hospital prescribing practice compared with the pilot study. Specimens for bacteriological examination were sent in 11 cases in which only four were positive: one for anaerobes, two for *Streptococci* and one for *Streptococci* and anaerobes. The length of in-patient stay again ranged from one to four days, with a median of three days.

With the protocol in place, 43 patients were treated with penicillin alone, but four required the addition of metronidazole. Two of these had re-accumulation of the quinsy, the other two did not respond clinically to penicillin and continued with pyrexia until metronidazole was added to the regimen. Three patients were allergic to penicillin and therefore treated with cotrimoxazole.

Discussion

Several investigators have attempted identification of the organisms responsible for peritonsillar and tonsillar sepsis and have found that the commonest organism grown is a beta-haemolytic *Streptococcus sp.* (Flodstrum and Hallander, 1976; Brook and Yocum, 1984; Snow *et al.*, 1991). Snow *et al.* (1991) obtained a positive culture in 60 per cent of peritonsillar abscesses of which just over half were

TABLE I

Antibiotic prescribed	Pilot study (June–December 1992)		With protocol (February–August 1993)	
	GP	Hospital	GP	Hospital
Penicillin	20	6	25	43
Penicillin/metronidazole	0	26	0	4
Erythromycin	6	2	6	0
Cotrimoxazole	0	0	0	3
Augmentin	0	6	3	0
Unknown	11	7	1	0

TABLE II

Antibiotic		Cost	
Intravenous	Augmentin	1.2 g t.i.d.	£8.10 per day
	Metronidazole	500 mg t.i.d.	£10.50 per day
	Cotrimoxazole	960 mg b.d.	£6.36 per day
	Erythromycin	1 g bd	£19.96 per day
	Penicillin G.	600 mg q.i.d.	£1.35 per day
Oral	Augmentin	375 mg t.i.d.	£7.35 for 7 days
	Metronidazole	400 mg t.i.d.	£1.45 for 7 days
	Cotrimoxazole	960 mg b.d.	£4.25 for 7 days
	Erythromycin	250 mg q.i.d.	£1.21 for 7 days
	Penicillin V.	500 mg q.i.d.	£0.93 for 7 days

pure growths of beta-haemolytic *Streptococcus spp.*; only in specimens with bacteroides was resistance to penicillin significant. Perhaps more significantly, patients who had cultures of a mixture of penicillin-resistant and sensitive organisms all did well following treatment by incision and drainage and penicillin alone. Of the five patients who grew exclusively penicillin-resistant organisms, two required additional treatment with flucloxacillin, and two with metronidazole.

Flodstrum and Hallander (1976) and Hibbert (1987) both postulated that the presence of anaerobes may be the initiating factor in the formation of a quinsy as opposed to simple tonsillitis, but even though mixed organisms are common in peritonsillar abscess, the majority of organisms are penicillin-sensitive and Snow *et al.* (1991) state that this is the 'antibiotic of choice'.

The range of cost of antibiotic therapy is demonstrated in Table II (British National Formulary, 1994). Despite having to add metronidazole to the treatment of four patients we have demonstrated that it is cheaper to use penicillin alone as the first choice of antibiotic and that no benefit in terms of a shorter hospital stay or faster resolution of symptoms is conferred by using more expensive broad spectrum antibiotics.

As our pilot study shows, and as Tucker (1982) also demonstrated, doctors do not always prescribe in a rational way based on available bacteriological studies. It is very easy to prescribe a broad spectrum antibiotics on the basis that there 'might be something resistant'. This is not cost effective, however,

and by rationalizing our ENT Unit prescribing for the treatment of tonsillar and peritonsillar sepsis, we have saved money without compromising the outcome.

Therefore, the mainstay of antibiotic treatment in these patients is penicillin alone initially, with the appropriate drainage of pus, and the addition of metronidazole in the few patients who do not respond. Cotrimoxazole is a suitable alternative in patients who are allergic to penicillin.

Conclusions

The 'antibiotic of choice' in the treatment of peritonsillar sepsis is penicillin and cotrimoxazole is a suitable alternative for patients who are allergic to penicillin.

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Address for correspondence:
Dr G. MacDougall,
Department of Otolaryngology,
The Lauriston Building,
Royal Infirmary,
Edinburgh EH3 9EN.