

Role of microbiological studies in management of peritonsillar abscess

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Abstract

Introduction: Peritonsillar abscess (quinsy) is one of the most common ENT emergencies. A 2002 UK audit of quinsy management revealed that an average ENT department treated 29 cases annually; the most common treatment was needle aspiration with intravenous antibiotics, and culture of the aspirate was often performed routinely. The aims of our study were to evaluate the value of routine culture of quinsy aspirates, and to establish whether the information thus gained was clinically useful.

Methods: We examined the notes of patients admitted with quinsy to two hospitals in south-west England, from January 1998 to January 2004 in one hospital and from January 1995 to January 2005 in the other. A total of 577 cases was found. Aspirated pus had been sent for culture in 119 (21 per cent). These cases were examined in more detail.

Results: Of the 119 patients, 78.2 per cent (93/119) were treated with either a cephalosporin or penicillin, plus metronidazole. Streptococcal species were cultured in 43.7 per cent (52/119) and anaerobes in 23.5 per cent (28/119; of these cultures, 5.9 per cent (7/119) were pure anaerobes only). All the anaerobes were sensitive to metronidazole. One of the 119 cultures, growing aerobic bacteria, was resistant to penicillin; however, this patient improved clinically on a combination of penicillin and metronidazole. No patients had their treatment changed because of culture results.

Conclusions: There appears to be no need to routinely culture quinsy aspirates, based upon our findings (of 16 hospital years) and previous studies (which found no recorded episodes of treatment change as a result of culture sensitivities). The combination of penicillin or a cephalosporin, plus metronidazole appeared to be theoretically effective in 99.2 per cent (118/119) of our specimens; this finding is supported by other studies. However, the rare but potentially life-threatening complications of quinsy must be recognised.

Key words: Quinsy; Peritonsillar; Abscess; Antibiotics; Culture; Microbiology

Introduction

Peritonsillar abscess, also known as quinsy, is a relatively common infection of the peritonsillar space. Frequently reported as the most common site of head and neck infection, the peritonsillar space is located between the capsule of the palatine tonsil and the pharyngeal muscles.

Quinsy is one of the most common ENT emergencies. A 2002 UK audit of quinsy management found that an average ENT department treats 29 cases annually, the vast majority (94 per cent; 95/101) on an in-patient basis, with a median stay of two days. The most common treatment is needle aspiration together with intravenous antibiotics, and culture of the aspirate is often performed routinely.¹

Smaller studies have suggested that bacteriological investigations may be unnecessary in most patients.² However, as antibiotic resistance is internationally

variable and is becoming more prevalent, re-evaluation of this issue is necessary.

Healthcare budgets are under increasing scrutiny. It remains the responsibility of healthcare professionals, as the ultimate arbiters of quality, to ensure that any clinical investigation is not only evidence-based and clinically effective but also cost-effective.³ This constant process of re-evaluation is necessary so that finite and increasingly scarce resources may be most effectively utilised.⁴

The aims of the current study were to assess the value of routine culture of quinsy aspirates, and to establish whether the information thus obtained is clinically useful.

Materials and methods

A retrospective study of 577 patients admitted with quinsy was performed in two hospitals in south-west

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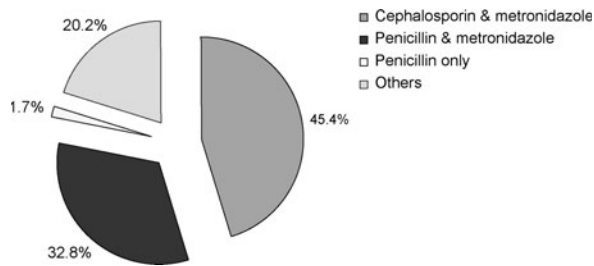


FIG. 1

Choice of antibiotics used for 119 quinsy patients with microbiological culture of aspirate.

England, from January 1998 to January 2004 in one hospital and from January 1995 to January 2005 in the other. Of these patients, 20.6 per cent (119/577) had aspirated pus sent for culture. These cases were examined in more detail.

For each episode of quinsy, the following information was recorded: duration of hospital stay; choice of antibiotic treatment; microbiological culture result and antibiotic sensitivities; availability of microbiological results prior to discharge; whether the microbiology results were referred to in the notes by the attending clinical team; whether any treatment changes were recorded in the notes as a direct consequence of the microbiology results; and whether any readmission occurred, within four weeks of discharge, with quinsy or complications.

Data were entered into a computerised spreadsheet (Excel® 2003; Microsoft, Redmond, Washington, USA) and then exported into the Statistical Package for the Social Sciences version 11.0 software (SPSS Company, Chicago, Illinois, USA) for analysis.

Results and analysis

We analysed the case notes of all 119 quinsy cases with pus cultures, occurring over a 16-year period. Of these patients, 78.2 per cent (93/119) had been

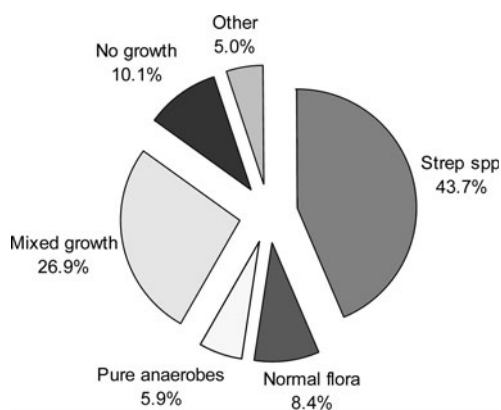


FIG. 2

Results of microbiological culture of 119 quinsy aspirates.

treated with either a cephalosporin or penicillin, plus metronidazole (see Figure 1).

Streptococcal species were cultured in 43.7 per cent of the quinsy cases (52/119) (see Figure 2). Normal flora was cultured in 8.4 per cent (10/119). Anaerobes were cultured as part of the growth in 23.5 per cent (28/119); only 5.9 per cent (7/119) of cultures showed a pure, unmixed growth of anaerobes. One hundred per cent (28/28) of the anaerobes grown (28/119) were sensitive to metronidazole. One of the aerobic cultures (0.84 per cent; one of 119) grew a penicillin-resistant strain of *Haemophilus para-influenzae*; however, this patient improved clinically on a combination of penicillin and metronidazole.

In 75.6 per cent of patients (90/119), the culture result was not available before discharge, and only 20.7 per cent (six of 29) of the culture results that were available were documented as checked before discharge, representing 5.0 per cent (six of 119) of the total cultures analysed. Patients' mean hospital stay was 2.4 days. No patients had their treatment documented as changed because of the culture results.

Of the 119 cases, none had a documented treatment plan based on microbiological culture and sensitivity results. Furthermore, none of the documented and checked microbiology results changed the documented management of any individual case.

Of the organisms grown, 99.2 per cent (118/119) were sensitive to a combination of penicillin and metronidazole. One hundred per cent (28/28) of anaerobes cultured were sensitive to metronidazole.

There were two readmissions with a further quinsy on the same side within four weeks of discharge. Both of these patients' initial cultures had grown bacteria sensitive to the initially prescribed antibiotics, and the patients made uneventful recoveries.

Discussion

No patient in our study of 577 cases had any treatment decisions changed based on microbiological studies. Our study is the largest in the world literature to examine antibiotic use and culture sensitivities for quinsy. In a similar study in Detroit, Michigan, USA, which examined 221 case notes, only 17 aspirates had antibiotic sensitivities reported.

In the UK, microscopy, microbiological culture and antibiotic sensitivity testing are estimated to cost the National Health Service approximately £7.50 per sample sent (Royal Devon and Exeter Hospital, unpublished data).⁵

We cannot extrapolate conclusions about the rare complications of quinsy (e.g. mycotic aneurysms, necrobacillosis, necrotising fasciitis and deep neck space abscess) from our data, as there were no such adverse events in our cohort.

Given the size and duration of our study and the lack of complications, we estimate that data would be needed from numerous centres, over tens of years, in order to provide enough complications to yield evidence-based recommendations.

Empirically, however, it may be clinically prudent to perform microbiological studies for patients at higher risk of infection or those with complications from existing co-morbidity, e.g. diabetics, immunocompromised patients, and those with suspected deep neck space infection or recurrence of quinsy. However, we have no direct evidence to support this assertion.

- **A 2002 UK audit of quinsy management found that an average ENT department treated 29 cases annually**
- **The same audit found that the most common quinsy treatment was needle aspiration together with intravenous antibiotics; culture of the aspirate was often performed**
- **The current audit study found no evidence to support routine culture of quinsy aspirates**
- **The current audit (of 16 hospital years) found no recorded treatment change as a result of culture sensitivities**

It is possible that rare complications may be missed if cultures are not taken. For example, the culture of an aggressive bacterium (e.g. *Fusobacterium necrophorum*)⁶ in association with clinical deterioration would probably influence management. However, the absolute risks are small, and subsequently the cost of identifying such potentially hazardous complications is large.

How much of our finite resources are we willing to spend on largely irrelevant tests in order to detect and possibly benefit one such case?

Conclusion

There appears to be no need to routinely culture quinsy aspirates, based upon our audit findings (of 16 hospital years) and previous studies² (which found no recorded treatment change as a result of culture sensitivities).

The combination of penicillin or a cephalosporin, plus metronidazole appears to have been effective *in vitro* in 98 per cent of our cases, and this finding is supported by other studies.⁷ However, quinsy does have recognised potential complications. We therefore recommend that bacteriological studies should still be undertaken for patients with suspected deep neck space infection, diabetes mellitus, immunocompromise or recurrent peritonsillar abscess.

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Mr C Repanos takes responsibility for the integrity of the content of the paper.

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