

Indications for Antimicrobials in Acute Otitis Media

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Acute otitis media is a condition affecting all age groups, particularly children, which commonly presents to the General Practitioner. Although correctly diagnosed by the majority of doctors, otitis media is very commonly treated indiscriminately with wide-spectrum antibiotics. This is undoubtedly playing a major role in the increasing emergence of resistant micro-organisms in the Maltese community. We hereby seek to provide a comprehensive guide for the judicious prescription of antimicrobial treatment in acute otitis media for the Maltese Islands.

INTRODUCTION

Acute otitis media (AOM) in the Maltese Islands is commonly managed by immediate prescription of wide-spectrum antibiotics. AOM however has been shown to resolve spontaneously in 80% of cases even without the use of antibiotics.^{1,2} This means that a large number of patients are receiving wide-spectrum antibiotics unnecessarily. As a consequence, we are promoting the emergence of increasingly drug resistant organisms in the Maltese community.

In the Netherlands, routine initial management of AOM involves treatment of symptoms without prescription of antimicrobials³ and this has been shown to be associated with decreased emergence of resistant forms of the organisms commonly found in otitis media.⁴ This approach is also now being adopted in Iceland.⁵

Here we outline the major studies and reviews on the subject, outlining the indications and recommendations for judicious antimicrobial use.

EFFECTIVENESS OF ANTIMICROBIAL TREATMENT

The percentage of patients that are prescribed antibiotics varies markedly between different countries, ranging from 31.2% in The Netherlands to 98.2% in Australia. Acute otitis media however is a self-limiting illness with about 80% of cases resolving within 3 days even without antibiotic treatment.^{1,2}

A recently updated Cochrane systematic review combined seven high-quality clinical trials with a total of 2202 children from developed countries.² It showed that:

- Children given antibiotics had a 28% relative reduction in pain at 2-7 days
- Use of antibiotics did not appear to reduce the incidence of complications including hearing problems
- Progression to mastoiditis was reported in only 1 child (from a penicillin-treated group)
- Antibiotics were associated with increased adverse effects, such as nausea and diarrhoea

In the Netherlands, a study of 4860 consecutive patients with acute otitis media who were not given antimicrobials showed that only two experienced mastoiditis and both of them responded to treatment with oral antibiotics without needing admission.⁶

The frequency of adverse effects seen with antibiotics used to treat AOM may be as high as the number needed to treat (NNT) required to produce a clinical benefit; that is, for every child who benefits from antibiotics, another suffers from adverse effects.⁷

INDICATIONS FOR ANTIMICROBIAL PRESCRIPTION

Important risk factors for poor outcome appear to be young age and day care centre attendance.⁸ In a study of two groups of children with AOM, more penicillin resistant strains of *Strep. pneumoniae* were isolated in those younger than 18 months.⁹ Decreased rates of resolution^{1,10} and increased rates of recurrence,¹¹ adenoidectomy, and insertion of a tympanostomy tube¹² were other consequences reported in those younger than 2 years of age.

In another study of predictors of poor outcome it was found that in children with AOM, antibiotic treatment had little benefit in the absence of fever and vomiting.¹³ It appears that in selecting those children with systemic features like high temperature and vomiting, one would be targeting those patients at a high risk of poor outcome.

In a delayed treatment trial, children aged six months to 10 years were allocated to one of two treatment strategies; "immediate antibiotic therapy" or "antibiotic administration after 72 hrs only if the child has not improved."¹³ The trial concluded that:

- Prescribing immediate antibiotics provided symptomatic benefit only after the first 24hrs, when the symptoms were already resolving
- Immediate antibiotics increased incidence of diarrhoea by 10%
- Only 24% of the parents in the delayed prescription group actually used antibiotics

A "wait-and-see" approach therefore appears to be a good compromise; it is feasible and acceptable to most parents and results in a 76% reduction in the use of antibiotics.^{13,14} A prescription for antibiotics can be given to the patient on the day of the visit, but only used if the condition has not resolved after 72 hours.

Indications for *immediate* commencement of antimicrobial therapy can therefore be summarised as follows:^{15,16,17}

- Children under 2 years of age
- Bilateral AOM
- Systemic symptoms, including high temperature (more than 38.5 degrees Celsius) or vomiting
- Local signs that suggest the infection is severe, such as a particularly bulging or inflamed tympanic membrane.

CONCLUSION

Based on the large number of studies in the literature together with the most recent Cochrane reviews, we suggest the following guidelines for the treatment of acute uncomplicated otitis media:

- Use of a "wait-and-see" approach where a prescription for antibiotics is given to the patient on the day of the visit, but only used if the condition has not resolved after 72 hours.^{13,14}
- Immediate antimicrobial therapy in the following patients:^{15,16,17}
- Children under 2 years of age
- Bilateral AOM
- Systemic symptoms, including high temperature (> 38.5°C) or vomiting
- Local signs suggesting severe infection such as a particularly bulging or inflamed tympanic membrane.

The foreseen advantage of these guidelines is a reduction in unnecessary antibiotic prescriptions. This will consequently lead to a reduction in antibiotic related complications like diarrhoea and allergic reactions, decreased emergence of resistant strains commonly associated with AOM and finally reduced expenditure on antibiotics both by the general population, and by the National Health Service.

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