

Successful treatment of MRSA otorrhoea: a case report

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Abstract

Infection with methicillin-resistant *Staphylococcus aureus* (MRSA) is increasing. It may be community or hospital acquired and is characteristically difficult to eradicate. Here we report a case of a two-year-old girl who sustained a traumatic tympanic membrane perforation following a minor burns injury. She was seen as an out-patient in a burns unit and subsequently developed MRSA otorrhoea. This was treated with a two-week course of fusidic acid topical drops. At three-week follow up the tympanic membrane had healed and the infection had healed completely. Fusidic acid is safe and effective in the treatment of MRSA otorrhoea. We need to maintain vigilance in the treatment of otorrhoea, as MRSA may become an increasingly common pathogen in the future.

Key words: *Staphylococcus aureus*; Methicillin Resistance; Fusidic Acid; Otorrhoea

Introduction

Over the last 20 years MRSA (Figure 1) has become a common cause of hospital-acquired infection and is currently responsible for up to 61 per cent of all staphylococcal infections.¹ Commonly, the bacteria are carried in the nose and skin of up to 20 per cent of the population. Medical personnel can be carriers too, acting as reservoirs for patient infection. Halley and colleagues² have described this as the 'house-staff-patient transfer circuit'. The significance of this lies in the difficulty of treating resistant strains. Often this includes resistance to cloxacillin, oxacillin, naticillin and cephalosporins, as well as methicillin.³ There is some evidence that prevalence in the community is on the increase.⁴ Santos *et al.*⁵ reported three cases of community-acquired MRSA otologic infection, including otitis externa, mastoiditis and acute otitis media. These cases showed a familial pattern of transmission and the patients had no other risk factors. Outside the UK nosocomial MRSA infections differ from those acquired in the community, exhibiting a wider pattern of resistance. Community-acquired MRSA tends to be more susceptible to a greater selection of antibiotics.⁵ We report a case of MRSA otitis media and externa following a traumatic perforation and minor burns injury.

Case report

A two-year-old girl presented with bloody discharge after a firework injury when she sustained a minor burn injury to the ear and face. She was initially seen at a burns unit as an out-patient and was discharged. Three days later she developed otorrhoea and was treated with erythromycin by her general practitioner. This failed to improve the situation and she was then seen in ENT out-patients.

Physical examination demonstrated a small left-sided tympanic membrane perforation and evidence of canal wall inflammation. The right ear was unremarkable. A microbiology swab revealed moderate growth of MRSA and mixed flora sensitive to fusidic acid, teicoplanin and rifampicin, but resistant to penicillin, erythromycin, flucloxacillin, gentamicin, ciprofloxacin, mupirocin, tetracycline and trimethoprim.

After discussion with a microbiologist she was treated with a two-week course of topical fusidic acid. Generally, with resistant bacteria, multiple antibiotics are used. However, this course of treatment was successful, and further examination at two-week follow up revealed no discharge and a completely healed tympanic membrane.

Discussion

MRSA infection is increasing. However, to date MRSA infection has been a rare cause of ear pathology. In the UK the most common pathogen is thought to be *Pseudomonas* species, although studies from Japan and Taiwan suggest that *Staphylococcus aureus* has replaced *Pseudomonas* as the most common pathogen of both chronic otitis media^{6,7} and acute otitis externa. This change in bacteriology may be due to improvements in public health, the decreased severity of ear disease and the use of antimicrobial therapy. Outside the UK there have been studies suggesting that the rate of MRSA otorrhoea is 12.2 per cent,⁶ but this is not the experience of the authors in the UK. It is possible that owing to the spectrum of sensitivities of MRSA strains in the UK, current regimens are treating this adequately and that the true incidence of MRSA otorrhoea is unknown. It is not common practice for ENT surgeons to swab all patients suffering from otorrhoea at the first consultation,

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FIG. 1

Electron scanning micrograph of methicillin-resistant *Staphylococcus aureus*.

and treatment is empirical. Swabs are generally reserved for resistant cases only. This practice could lead to emerging resistance.

In our region two strains of MRSA (types 15 and 16) are prevalent in the community and hospital (Justin Bendig, personal communication). Both nosocomial and community-acquired infections respond to a similar spectrum of antibiotics and are often treated with several simultaneously to combat the development of further resistance. In Taiwan and Japan treatment options have been various: admission for intravenous antibiotics such as vancomycin; a combination of topical antibiotics such as ofloxacin and lomefloxacin (NY-198); or oral minocycline and fusidic acid.

Intravenous antibiotics can be costly, and when using toxic drugs such as vancomycin constant monitoring is essential as toxicity may limit their use.

The use of new fluorinated quinolones such as ofloxacin and lomefloxacin in the treatment of MRSA is controversial. Although these antibiotics have shown good *in vitro* activity,⁸ MRSA is still a common post-operative complication despite the use of ofloxacin-soaked packing.³

We have successfully used topical fusidic acid for two weeks to clear infection without the need for hospital admission or oral antibiotics. As MRSA increases in prevalence we need to be vigilant, as this may become a more common cause of otorrhoea in the future.

Conclusion

Although most ENT specialists in the UK do not routinely send ear swabs for microbiology, this should be done for resistant cases. We need to maintain vigilance in the treatment of otorrhoea, as MRSA may become an increasingly common pathogen as a cause for otorrhoea in the future. This will bring new challenges for the treatment of otorrhoea and we recommend close liaison with a microbiologist. The use of topical fusidic acid in this case was safe and effective.

- Methicillin-resistant *Staphylococcus aureus* (MRSA) is increasing in incidence. Treatment is uncertain and sometimes controversial
- This case report highlights MRSA as a potential pathogen causing otorrhoea
- Topical fusidic acid is safe and effective when indicated on bacteriological evidence

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