A survey of attitudes towards methicillin-resistant Staphylococcus aureus bacteraemias amongst United Kingdom microbiologists

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Objectives: Methicillin-resistant Staphylococcus aureus (MRSA) bloodstream infections (BSIs) in the UK are common and associated with significant morbidity and mortality. Vancomycin is the usual first-line therapy. However, vancomycin treatment of BSIs due to MRSA strains with vancomycin MICs of 1–2 mg/L is successful in <10% of cases. No consensus exists on when to use newer agents, particularly when vancomycin MICs are >1 mg/L. We therefore surveyed UK practices of the management of MRSA BSIs due to isolates with increased vancomycin MICs.

Methods: Five hundred and seventy-one UK consultant microbiologists were contacted via e-mail and asked to take part in an online survey, hosted at www.surveymonkey.com. Responses were collated by the website, downloaded and analysed in a Microsoft Excel spreadsheet.

Results: One hundred and eight respondents participated in the survey. Only 32.7% routinely measure MICs, mostly by Etest. Forty-two percent use vancomycin alone for removable-focus infections, whilst for infections of cardiac or orthopaedic origin, 49% would add rifampicin. Few respondents use daptomycin, linezolid or tigecycline empirically. Sixty-nine percent would use linezolid as a second-line agent, with only 19% opting for daptomycin. For an isolate with a vancomycin MIC of 4 mg/L, respondents would use daptomycin (81%) or linezolid (91%) in patients with a poor clinical response.

Conclusions: Vancomycin is the mainstay therapy for MRSA BSIs, even when MICs are not measured or raised, despite evidence of high failure rates. The use of newer agents frequently does not follow European or US licensed indications, may be inappropriate and may result in avoidable deaths.

Keywords: MRSA, vancomycin, linezolid, daptomycin, antibiotics, management

Introduction

In the UK, there is a mandatory reporting scheme in place for all methicillin-resistant Staphylococcus aureus (MRSA) isolates from bacteraemic patients. MRSA bacteraemias are associated with significant morbidity and mortality, and are proving an increasing burden in healthcare-associated infections. Studies have demonstrated the poorer performance of vancomycin compared with the newer agents in vitro, and in patients suffering from methicillin-susceptible S. aureus as well as MRSA bacteraemias. Whilst newer agents targeted against Gram-positive bacteria are available, there is little consensus as to when these agents should be used. Whilst the BSAC has maintained the breakpoint for MRSA of vancomycin as 4 mg/L, the CLSI has lowered the breakpoint to 2 mg/L. Even this level has been brought into question, as studies indicate that MRSA infections due to strains with vancomycin MICs of 1–2 mg/L were treated successfully in <10% of cases. Recently published guidelines have recommended the use of vancomycin in the management of severe MRSA infection. We therefore also attempted to ascertain national practices of management of MRSA isolates with increased MICs of vancomycin.

The pharmacodynamics of vancomycin also appears to play a role in clinical outcomes and these can be determined by the serum vancomycin values. Moise-Broder et al. suggested that the steady-state 24 h area under the concentration–time curve (AUC24) divided by the MIC (AUC24/MIC) values of vancomycin should aim to be >400, in order that a favourable therapeutic outcome is achieved. We were also keen to see which serum levels of vancomycin UK laboratories were reporting as therapeutic.

It is widely accepted that the management of MRSA bacteraemias is multidisciplinary, involving clinicians, medical
Microbiologists, infection control teams and nursing staff. We wanted to establish who follows up these patients and who is involved in local root-cause analyses (RCAs).

Methods

Consultant microbiologists in the UK were contacted by e-mail. The e-mail contained the link to an online survey hosted at www.surveymonkey.com. Respondents were asked to answer the questions as individuals and not as laboratories, as differences in laboratory prescribing were a key part of this study. The survey questions are available as Supplementary data at JAC online (http://jac.oxfordjournals.org/).

Data were collated by www.surveymonkey.com, and responses were downloaded both as summaries and detailed Excel spreadsheets. The data were analysed by the authors using Microsoft Excel 2007.

Results

There are 744 members of the Royal College of Pathologists (RCP) who have indicated a specialty of medical microbiology (information supplied by the RCP membership department). Five hundred and seventy-one e-mails were sent out. There were a total of 108 respondents for the survey, of whom 47 (43.5%) completed the survey. The majority of respondents (71.6%) use BSAC methodology for susceptibility testing, with only 32.7% of respondents routinely measuring MICs, mostly by Etest. Out of those respondents that did measure the MICs, vancomycin and teicoplanin were the most common antibiotics tested. Twenty-one (19.4%) of the respondents would only measure the vancomycin MIC if a patient fails to respond clinically. The majority of serum trough levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the values are between 5 and 15 mg/L, with 73.7% of respondents stating that levels are reported as in range if the...
Transparency declarations
None to declare.

Supplementary data
The survey questions are available as Supplementary data at JAC online (http://jac.oxfordjournals.org/).

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