Use of Mastalex to detect methicillin resistance in coagulase-negative staphylococci

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Sir,

The British Society for Antimicrobial Chemotherapy (BSAC) has provisionally recommended a method to detect methicillin resistance in coagulase-negative staphylococci (CNS) that requires incubation of isolates for 48 h.1 A more rapid susceptibility test may reduce dependence on glycopeptides for CNS infection allowing the use of β-lactams with their better pharmacokinetic properties and lower associated costs and toxicity.

Methicillin resistance in staphylococci is due to the presence of the penicillin binding protein 2’ (PBP2’) which is encoded by the meca gene. Amplification of meca by PCR enables rapid detection of the resistant genotype. This technique, although sensitive, is not readily accessible to most microbiology laboratories and it would be advantageous to use a commercially available slide agglutination kit. Detection of PBP2’ production by Staphylococcus aureus using a latex agglutination kit allows determination of methicillin resistance, but this test is not validated for CNS. Andrews et al.2 have recently compared MIC data from 200 strains of CNS with Mastalex (Mast Diagnostics, Bootle, UK) a rapid latex test for PBP2’ or by PCR when discordant results were obtained. They found only two isolates in which there was disagreement between the latex and PCR results and in both cases the latex test was positive and PCR was negative. We decided to evaluate this latex agglutination test on a group of CNS with known sensitivities and meca PCR results in order to determine the usefulness of this test in clinical practice.

Twenty-nine clinically significant isolates from blood cultures were analysed, of which 25 were methicillin resistant using the BSAC method. PCR was performed on a capillary air thermal cycler (BioGene Ltd, Kimbolton, UK) as described previously.3 Latex agglutinations were performed using the Mastalex kit as per manufacturer’s instructions for S. aureus; the observer was blinded to previous meca and sensitivity results. Initial studies showed a poor correlation and were repeated, taking colonies from around the methicillin disc (again the observer was blinded) to see if this aided detection by the latex method.

All three meca-negative isolates did not agglutinate and were sensitive on disc testing. Out of the 26 meca-positive isolates only four were positive initially; this figure increased to 14 following exposure to methicillin, and all but one were resistant on sensitivity testing.

As methicillin-resistant CNS possess PBP2’ it would be expected that the latex agglutination test could be used to determine resistance. Marriott et al.4 found that three of 16 CNS that possessed the meca gene were negative by a latex agglutination kit (Denka Seiken Co., Niigata, Japan). Similar results were found by Cavassini et al.5 for whom the sensitivity of this test varied from 50 to 88% when 26 isolates were tested on three separate occasions. Specificity varied from 59 to 86% and agglutination reactions were noted to be weak and poorly reproducible. The time of mixing had to be prolonged to 10–15 min and resulted in a number of false positive results. In our study we used the manufacturer’s recommended time limit of 2 min and this probably explains the low number of positive results obtained. Exposure to methicillin may facilitate detection of resistant strains of CNS by increasing expression of PBP2’ (unpublished data). We recommend that the Mastalex kit should not be used to determine methicillin resistance in CNS.

References


