Brief Communication

Molecular Epidemiology of Methicillin Resistant Coagulase-negative Staphylococci Isolates from Blood Specimens at a Tertiary Hospital in the Caribbean

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Coagulase-negative Staphylococcus (CoNS) is a major component of the normal human body flora. Isolates of CoNS encountered in blood cultures are contaminants predominantly, however CoNS may also be a significant cause of bacteraemia (1, 2). Methicillin resistant strains of coagulase negative Staphylococcus (MRSE) has been implicated in nosocomial infections increasingly (1). The importance of the infections caused by MRSE is emphasized by observation that these infections are associated with increase in morbidity and high mortality (3). Molecular epidemiological studies of MRSE provide important information on its spread in healthcare facilities and the clinical significance in individual patients (4).

We report the results of a study which investigated the clonal relatedness of MRSE isolates from blood cultures obtained from inpatients at the University Hospital of the West Indies (UHWI), a 526 bed tertiary teaching hospital, over a six-month period, July–December 2003.

Fifty-four MRSE isolates from clinical blood specimens submitted at the microbiology laboratory, representing 10% of all MRSE isolated from blood cultures during the study period, were analyzed. An automated blood culture system (Bactec 9240, Becton Dickinson & Co, Loveton Circle, Sparks Maryland, USA) was used and identification, speciation and antibiotic susceptibilities of isolates were determined using standard microbiological procedures and the Vitek automated system (BioMerieux Vitek, Inc., Hazelwood, Missouri, USA.). Methicillin resistance was confirmed by the disk diffusion method using 1µg oxacillin disc according to the Clinical and Laboratory Standards Institute (CLSI) guidelines (5). Positive blood cultures from the same patient with the same species of MRSE and the same antimicrobial susceptibility pattern within five days were counted only once. Pure isolates of MRSE were stored in Brain Heart Infusion (BHI) broth with 20% glycerol at -70°C until required for further analysis. Quality control was performed using reference strains *S aureus* ATCC 25923, *S epidermidis* ATCC 12228, and MRSA ATCC 43300.

Genotyping of the MRSE isolates was by the Pulsed Field Gel Electrophoresis (PFGE) method. The PFGE was carried out using the CHEF Mapper XA system (Bio-Rad Laboratories) on *Sma*1 digest of the MRSE isolates according to the procedure described previously with some modifications (6). Following electrophoresis, the agarose gel was stained with ethidium bromide and photographed under UV illumination. The resulting PFGE band patterns were analyzed by visual inspection following established criteria (7). Briefly, strains with banding patterns identical in size and number of bands were considered genetically indistinguishable and assigned to the same clonal type. Strains with banding patterns that differed by three or fewer bands were considered closely related and described as subtypes of a given clonal type; and strains with banding patterns that differed by four or more bands were considered different and assigned to separate clonal types (7).

The species distribution and hospital locations of the 54 isolates of MRSE are shown in Table 1. The PFGE revealed several different and diverse banding patterns among the isolates. No clonal relatedness was found among the 54 isolates regardless of species, patient or hospital source.

The genotypic heterogeneity and absence of predominant clones in the blood culture isolates of MRSE observed in the present study was also observed in MRSE isolates from blood and other specimens of patients at other hospitals (8, 9). In contrast, in a study conducted at a hospital in Sweden, clonal relatedness of MRSE isolates from clinical specimens were reported (10). The findings from our study suggest that blood isolates of MRSE were more likely contaminants than causes of invasive infection and provided no evidence of single clonal spread of MRSE in the UHWI. This study endorses the usefulness of PFGE in infection control initiatives in different hospital settings.

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Table 1: Species and hospital distribution of 54 clinical blood isolates of methicillin-resistant coagulase-negative Staphylococcus**.**

	Methicillin resistant coagulase negative Staphylococcus species						N
Facility	**S epidermidis**	**S haemolyticus**	**S simulans**	**S auricularis**	**S capitis**	**S warneri**	
Surgical	10	3	2	1	0	0	16
Medical	5	8	2	2	1	1	19
Neonatal	4	0	0	0	0	0	4
ICU	3	1	0	0	0	0	4
Casualty/ A & E unit	2	2	0	1	0	1	5
Paediatrics	2	0	0	0	1	0	3
O & G	0	0	1	1	0	0	2
Total	**26**	**14**	**5**	**5**	**2**	**2**	**54**

ICU = intensive care unit; A & E = accident and emergency; O & G = obstetrics and gynaecology

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