

167 Comparison of MRSA isolated from patients in two paediatric CF centres

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Objectives: MRSA is being increasingly cultured from the respiratory tract of patients with CF. This study aimed to characterize MRSA isolates cultured from paediatric CF patients in Northern Ireland and the USA to study epidemiology in different centers.

Methods: 22 isolates cultured from 21 patients attending the Belfast Paediatric CF centre (BPCF), and 11 isolates cultured from 7 patients attending the CF centre at the University of North Carolina (UNC), were compared. MRSA isolates were characterized by typing of the SCCmec complex and pulsed field gel electrophoresis (PFGE) and analysis of banding patterns. Presence of the PVL gene in each isolate was determined by PCR.

Results: All isolates cultured from CF patients in Belfast were SCCmec IV, whilst UNC isolates were SCCmec II (n=8) or IV (n=3). By PFGE, all BPCF isolates except 1, formed a distinct cluster of >60% similarity. The UNC isolates and the remaining BPCF isolate, also formed a cluster of >70% similarity to each other, but with <50% similarity to the BPCF isolates. BPCF isolates included isolates from 2 sibling pairs; one pair were identical, with exact banding pattern matches, while the other pair had a one-band difference. Furthermore, duplicate isolates from one patient, obtained 18 months apart, were similar, but not identical (a 2-band difference). No BPCF isolates were PVL positive, but isolates from 2 UNC patients were.

Conclusion: This study highlights the need for further molecular epidemiological studies on MRSA isolates obtained from CF patients, to more accurately determine prevalent MRSA strains.

168 Characterization of SCC mec types involved in persistent MRSA infections in cystic fibrosis patients

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MRSA is increasingly recognized in health-care associated (HA-MRSA) and community-acquired (CA-MRSA) infections. Recently, there has been an alarming epidemic and severe infections caused by CA-MRSA. The characterization of CA-MRSA and HA-MRSA is based on SCCmec typing, however the genetic background of MRSA strains isolated from CF patients is not known. Forty-nine CF patients attending the CF center of Florence infected by MRSA have been studied. Eight out of 49 patients were persistently infected by MRSA and the median length of the infection period was 6 years (range 4–10 years). Forty-four MRSA (one strain/year) have been collected from these 8 patients and all have been analysed to assess their SCCmec type. Five out of 8 patients were persistently colonized by HA-MRSA (SCCmec I); 3 patients were mostly colonized by HA-MRSA (SCCmec I) but experienced infection period (from 1 to 2 years) with CA-MRSA (SCCmec IV). These data show that HA-MRSA accounted for most of persistent infections in studied CF patient. CA-MRSA were not responsible for persistent infections, probably they are cleared due to their good susceptibility to antibiotics. In spite of worrisome evidence regarding pathogenic potential of CA-MRSA strains in different settings included the CF population, only HA-MRSA are responsible for prolonged infection periods. Recent findings demonstrated the correlation between persistent infection with MRSA and a more rapid rate of decline in lung function, therefore the genetic background of MRSA involved in long term infections should be further investigated

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169* Community-Acquired MRSA causes earlier infection than Hospital-Acquired MRSA in patients with cystic fibrosis

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Methicillin-resistant *S. aureus* (MRSA) is a public health problem due to the increasing rate of infection in several settings as well as in CF patients. MRSA was first recognized as being acquired from hospitalised patients (HA-MRSA), but the onset of MRSA infection outside the hospital setting, in community-associated strains (CA-MRSA), has been described with increasing frequency. CA-MRSA strains are replacing HA-MRSA strains and causing severe infections. Characterisation of the SCCmec cassette is needed to properly estimate the prevalence of CA-MRSA. However, data is limited regarding the genetic background of these pathogens in the CF population. An Italian study investigates epidemiology, SCCmec type and clinical impact of MRSA strains isolated from nine Italian CF centres. MRSA strains (n=178) were collected from 178 out of 2362 (7.5%) patients. A high prevalence (36%) of CA-MRSA (SCCmec IV) strains was found. Preliminary data showed that the mean age of the first infection was 11.8 years and 19.2 years in patients infected by CA-MRSA (n=28) and in patients infected by HA-MRSA (n=37) respectively. This difference was statistically significant (p<0.05). These findings show that CA-MRSA is now widespread also in CF population. CA-MRSA strains lead to an earlier onset of the first pulmonary infection compared with HA-MRSA. This data could have important implications for prevention and treatment of infection of such potentially pathogenic strains in CF patients.

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170* Eradication of methicillin resistant Staphylococcus aureus in cystic fibrosis

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Objective: To identify CF patients with a detection of methicillin resistant Staphylococcus aureus (MRSA) since 1998 and to assess the measures taken for eradication of this organism.

Patients: All microbiological results from all 505 CF patients who were followed at the Munich CF centre since 1998 were analysed focusing on the detection of MRSA.

Methods: Retrospective chart analysis of MRSA positive CF patients regarding eradication outcome.

Results: We identified 29 patients with a MRSA detection (5.7%), mean age 17.1±11 years (range: 0.8 to 38), consequently giving an overall incidence of 0.5 per 100 CF patients per year. Eradication was suggested to all patients, however only 26 gave their consent to the following approach: screening of patients and close contact persons (swabs from nose, throat, axilla, inguinal, perineal) and subsequent eradication therapy according to resistance using a combined dual iv antibiotic treatment accompanied by hygienic directives and topic therapy over 3 weeks. This was followed by a 6 week period with double oral antibiotic therapy and additional inhalation with vancomycin. Positive contact persons were treated over a 3 weeks period topically and orally. 24 of these 26 patients were followed for more than 6 months: eradication was successful in 21 of 24 patients (87%).

Conclusion: Although MRSA detection usually is not accompanied by clinical signs of deterioration it implicates hygienic measures of complex and expensive nature which often are not well accepted by patients. Despite the universal increase of MRSA, eradication of this organism therefore is reasonable. Aggressive therapy regimens may be successful to eradicate MRSA in patients with CF and established lung disease.