

R247

**Publication Only**

**Molecular biology, including diagnostics: Molecular bacteriology**

**Resistance and virulence of *Staphylococcus aureus* isolated from patients with chronic venous leg ulceration from southern Poland**

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Objective

Leg ulcers are the most common manifestation of advanced (usually untreated) chronic venous insufficiency.

The aim of this study was to analyze the virulence and drug resistance among *Staphylococcus aureus* (SA) clinical isolates obtained from chronic venous leg ulcers from patients with wounds requiring dressing change (with new symptoms of infection).

Methods

A total of 65 *S.aureus* isolates coming from leg ulcers were analyzed. Isolates came from the residents of long-term care facilities (LTCF) (3), outpatients(20) and hospitalized patients (10 different units, 42 isolates). Drug resistance was determined by E-test for tigecycline and

disc diffusion method for other antibiotics (according to EUCAST guidelines). The presence of selected virulence factors (*tsst*, *lukE*, *pvl*, *eta*) and resistance genes (*mecA*) was determined by polymerase chain reaction (PCR).

Results

The average age of the patients was 65.2 years, women represented 61.8%. All isolates from LTCF were methicillin-resistant SA (MRSA). In community associated MRSA isolates represented 10% and in hospital acquired MRSA isolates there were 7.1%. There was no significant association between age and gender and the risk of MRSA.

Eight isolates (12.3%) were identified as MRSA (all of them had *mecA* gene). Macrolide, lincosamide and streptogramin B (MLSB) resistance was observed in 11 isolates (16,9%), five of them exhibited both (MRSA and MLSB) mechanisms. The most isolates were resistant to aminoglycosides (29.2 % to tobramycin, 21,5% to amikacin and 18,5% to gentamicin). 23% were resistant to tetracycline. Among MRSA isolates 62,5% were resistant to moxifloxacin. All strains were susceptible to linezolid and tigecycline.

Among the studied virulence genes the most frequently detected was leukocidin (*lukE*) gene – 73,4%. Six SA isolates (9,2%) had gene for toxic shock syndrome toxin (*tsst*). *EtA* gene (exfoliative toxin) was present in 2 SA isolates (3%).

Only one MRSA was positive for *pvl* gene (Panton-Valentine leukocidin).

Conclusion

Epidemiological and molecular studies of SA isolates allowed to detailed insight into the problem of staphylococcal leg ulceration infections, which mainly affects older people, both in outpatient care and hospitalized.

No correlation was detected between virulence factors and the types of patients: LTCF/CA/HA-MRSA. Detected SA resistant strains was not an issue therapeutic problem.

2011/03/B/NZ7/01911