**Genotypic and phenotypic differences between nosocomial and commensal Staphylococcus epidermidis isolates from northern Portugal**


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*Staphylococcus epidermidis* is a common causative agent of relapsing and persistent hospital-acquired infections, not only because this bacterium belongs to the patients' microbiota (causing autoinfection) but also because it is easily transmitted by healthcare workers (causing cross-infections). The goal of the present study was to characterize, for the first time, the biofilm-forming ability and virulence associated traits of several *S. epidermidis* strains circulating in a Portuguese hospital, as well as in the Portuguese community (northern region). To achieve that, bacteria were isolated from October 2011 to January 2013 and identified by biochemical tests and rpoB sequencing. Confirmed *S. epidermidis* strains were then tested for biofilm formation, antimicrobial resistance and carriage of biofilm-associated genes. The majority of clinical and skin isolates were resistant to erythromycin followed by penicillin. Regarding the presence of virulence-associated genes there was an equal distribution between the clinical and commensal isolates. The aap gene was the most prevalent (48% and 50%, respectively) followed by ica operon (37% and 33%, respectively) and bhp gene (15% and 17%, respectively). These results are in agreement with the ones obtained for the biofilm formation. Our results highlight slight differences between isolates obtained from the hospital setting and those obtained from the community. The emergence of antibiotic resistance and the frequent presence of virulence-associated genes among commensal Portuguese strains, reported in this study, raises serious clinical implications and should be considered to re-evaluate preventive measures against nosocomial infections.

**Biofilm formation by clinical isolates of Neisseria gonorrhoea**

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*Neisseria gonorrhoea* (NG) has previously shown to form biofilms both in vitro and in vivo. With this study, we have investigated diverse characteristics and biofilm forming capacity of 347 clinical NG strains isolated in Belgium in 2012. The clinical strains were isolated from 51 women and 293 men. They were tested for resistance against penicillin, azithromycin, tetracycline, cefixim, ciprofloxacin, ceftriaxone and spectinomycin and stored in skim milk at -70°C. The biofilm-forming capacity was evaluated using the high-throughput microtiter plate assay. A cut-off value was arbitrarily set at an optical density of 0.170; a lower value was assessed as no biofilm formation. Of all clinical isolates, 75% was able to form biofilms in vitro. There was a significant imbalance (p=0.002); only 55% (28/51) of NG isolated from female patients could form biofilms, compared to 77% (227/293) of isolates from male patients. The capacity for biofilm formation did not seem to be associated with multi-drug resistance, but significant differences (p<0.001) were seen for two specific antibiotics: penicillin and tetracycline. For both, sensitive strains did form less biofilms (36% (10/28) and 42% (16/38) resp. for penicillin and tetracycline) compared to resistant strains (73% (100/137) and 74% (139/188) resp. for penicillin and tetracycline. A positive trend was seen in the association between biofilm formation and β-lactamase production (p=0.077). Our study has shown that there is a heterogeneous capacity for biofilm formation. Penicillin- and tetracycline-resistant strains have a higher capacity for biofilm formation, which might be associated with β-lactamase production.