



Coagulase-negative Staphylococci in Hematological Malignancy

av

Erik Ahlstrand

Akademisk avhandling

Avhandling för medicine doktorexamen i medicinsk vetenskap
med inriktning medicin,
som kommer att försvaras offentligt
fredagen den 15 november 2013 kl. 09.00,
Wilandersalen, Universitetssjukhuset Örebro

Opponent: Docent Karlis Pauksens
Uppsala universitet

Örebro universitet
Institutionen för hälsovetenskap och medicin
701 82 ÖREBRO

Abstract

Erik Ahlstrand (2013): Coagulase-negative Staphylococci in Hematological Malignancy. Örebro Studies in Medicine 95.

Bacterial infections are common in hematological malignancy. Coagulase-negative staphylococci (CoNS) are among the most prevalent causes of bacteremia in patients with hematological malignancies.

In this thesis, different aspects of CoNS in hematological malignancy have been studied in four papers:

In paper 1, CoNS blood culture isolates from patients with hematological malignancies treated at the University Hospital of Örebro from 1980 to 2009 were reevaluated for the presence of reduced sensitivity to glycopeptides. A high incidence of heterogeneous-intermediate glycopeptide resistance was observed and there was a trend towards increasing incidence of this phenotype over time.

In paper 2, the colonization pattern of CoNS among patients undergoing intensive chemotherapy for hematological malignancy was investigated. A successive homogenization and an accumulation of CoNS phenotypes mutually present in a majority of included patients were demonstrated.

In paper 3, a PCR method to determine the clinical significance of positive blood cultures of the CoNS species *Staphylococcus epidermidis* was evaluated. The test failed to discriminate bloodstream infection from blood culture contamination.

Finally, in paper 4, the long-term molecular epidemiology of *S. epidermidis* blood culture isolates from patients with hematological malignancies was studied with multilocus sequence typing. A predominance of sequence type 2 was demonstrated during the entire 30 year study period.

In conclusion, the results are consistent with that CoNS have established as important pathogens by its capacity to colonize the human skin, its ability to reside and spread in the hospital environment and its rapid adaptation to stressors such as antimicrobials.

Keywords: Coagulase-negative staphylococci, hematological malignancy, *Staphylococcus epidermidis*, health care-associated infection, antibiotic susceptibility, molecular epidemiology, bloodstream infection, bacteremia.

Erik Ahlstrand, School of Health and Medical Sciences
Örebro University, SE-701 82 Örebro, Sweden, erik.ahlstrand@orebroll.se