Biofilms recovered from infected central venous catheters in a rat model of device-related infection were dispersed by nattokinase supporting the important role of the biofilm phenotype and identifying a potentially new therapeutic approach with antimicrobials and fibrinolytic drugs, particularly during the early stages of device-related infection" Zapotoczna et al (2015).

Reference:

Zapotoczna, M., McCarthy, H., Rudkin, J.K., O'Gara, J.P. and O'Neill, E. (2015) An essential role for coagulase in Staphylococcus aureus biofilm development reveals new therapeutic possibilities for device-related infections. The Journal of Infectious Diseases. June 4th. .

Staphylococcus aureus biofilm development in medical devices http://ctt.ec/Ihkfd+ @ivteam #ivteam

Click To Tweet

Abstract:

High level resistance to antimicrobial drugs is a major factor in the pathogenesis of chronic Staphylococcus aureus biofilm-associated, medical device-related infections. Antimicrobial susceptibility analysis revealed that biofilms (≤ 24h) grown on biomaterials conditioned with human plasma under venous shear in iron-free cell culture media were significantly more sensitive to anti-staphylococcal antibiotics. Biofilms formed under these physiologically-relevant conditions were SaeRS-regulated and dependent on coagulase-catalysed conversion of fibrinogen into fibrin. In contrast, SarA-regulated biofilms formed on uncoated polystyrene in nutrient-rich bacteriological media were mediated by the previously characterised biofilm factors poly-N-acetyl glucosamine, fibronectin-binding proteins or autolytic activity and were antibiotic resistant. Coagulase-mediated biofilms exhibited increased antimicrobial resistance over time (>48h) but were always susceptible to dispersal by the fibrinolysins; plasmin or nattokinase. Biofilms recovered from infected central venous catheters in a rat model of device-related infection were dispersed by nattokinase supporting the important role of the biofilm phenotype and identifying a potentially new therapeutic approach with antimicrobials and fibrinolytic drugs, particularly during the early stages of device-related infection.

Thank you to our partners for supporting IVTEAM