SESSIONE 6 | Percorso Diagnostico Congiunta Amcli – Esgiai Escmid INFEZIONI DA DEVICE VASCOLARI

DEVICE, MICRORGANISMI E BIOFILM

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Identification of the causative microorganism by culture of different kinds of specimens is considered essential in the diagnosis of medical devices related infections (MDRIs). Several studies have demonstrated that contamination during processing and collection of samples may lead to false positive results. In addition, presence of biofilm on vascular devices and the surrounding tissues may give difficulties to treat and detect the related microorganisms. The bacterial colonization of these medical devices is promoted by the ability of the bacteria to produce protein-specific adhesions and extracellular polymeric substances (EPS) on their surfaces. Bacteria in biofilms evade host defenses and are more resistant to antibiotics. Both gram positive, i.e. Staphylococci and Gram-negative bacilli are the pathogens most commonly involved in these cases. Bacteria start MDRIs by adhering to biomaterials and producing biofilms, which represent a major reason for bacterial persistence, in spite of antibiotic treatment and host's defence. In the last two decades, a number of different antibiofilm agents and detection approaches have been studied at both in vitro and in vivo results. Bacteria within biofilm can remain “dormant” on the surface of vascular devices for a long time; however, due to environmental changes, such as reduced patient immune function, biofilm can cause infection. There are five main options to prevent occurrence of biofilm-associated infections: 1) preventing the initial contamination through the use of aseptic techniques and appropriate antibiotic prophylaxis; 2) minimizing the initial bacterial bond through the use of antibiofilm substances; 3) using of antimicrobials with site-specific pharmacodynamic characteristics, able to penetrate the biofilm matrix in appropriate concentrations 4) removing of the infected tissues/devices; 5) detecting as soon as possible the microorganism with an appropriate antibiotic profile susceptibility considering biofilm as the main pathogenic factor.