Mixed species biofilms of Candida albicans isolated from vascular catheters at the university hospital center of Tlemcen-Algeria

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Keywords: mixted biofilms; Candida sp.; bacteria; venous catheters

a. Background and Purpose: Candida albicans, remains a pathogen commonly found in catheter-associated infections. This yeast provide adhesion sites for other species such bacteria and yeast resulting mixed biofilm formation. These structures represent a major threat to public health. it can ultimately influence disease severity by promoting intensified pathogenic phenotypes, including increased resistance to both host defenses and antimicrobial therapies

Based on these data, we conducted this study at Tlemcen hospital, which focused on the isolation of Candida yeasts cohabiting with bacteria and yeast on the same intravascular catheter removed from patients.

b. Methodology: Isolates were screened for their ability to form biofilms; both monospecies and multispecies combinations were tested. Biofilms, formed by co-isolates species were developed from standardized suspensions on 96-plates.

The metabolic activity were determined by XTT reduction assay. The structure of biofilms was evaluated by scanning electron microscopy.

c. Results and Discussions: This study revealed that Candida albicans co-exist with bacteria such Bordetella sp., Enterobacter cloacae and yeast of Candida glabrata on different catheters surfaces. The metabolic activity of mixed species biofilms increase whatever the proportion of the mixture from that found for single ones.

In mixed biofilms, both bacteria showed extensive interactions with C. albicans. Candida albicans/Enterobacter cloacae biofilms showed that the hyphae are fully covered by bacteria. In contrast, microphotographs of Candida albicans/Bordetella sp. showed bacteria are massively attached to yeasts.

Microphotographs obtained of peripheral venous catheter of Candida albicans/Candida glabrata reveals that the Candida glabrata cells are monomorphic, easily observable whereas those of Candida albicans occur in different morphological forms.

d. Conclusions: C. albicans is able to co-exist with bacteria and yeast on the same medical device and it is clear that the multispecies biofilms can cause serious health problems.

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Mycobacterial contamination of heater cooler units used in ECMO is not aerosolised into the environment: a single center experience

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Keywords: Mycobacterium chimaera; heater cooler units

Background: Heater-cooler units (HCUs) used in cardiopulmonary bypass and Extracorporeal Membrane Oxygenation (ECMO) can generate infectious aerosols containing Mycobacterium chimaera, a slow growing atypical mycobacterium associated with disseminated infection including endocarditis and vertebral osteomyelitis. Since the identification of M. chimaera infective endocarditis in 2013 in two cardiosurgical patients in Switzerland, many more cases of deep-seated infections with M. chimaera have been identified in patients across Europe and North America. The use of contaminated Stöckert 3T LivaNova (London, United Kingdom) HCUs has been implicated in these outbreaks of M. chimaera infections.

Aim: The aim of this study was to ascertain if HICO-Variotherm units (Chalice) used in ECMO were colonised with mycobacteria species and to assess the associated risk of aerosolisation into the critical care environment.

Methods: Water was sampled for routine microbiological culture from three ECMO HCUs in the Cardiothoracic Critical Care Unit of the Manchester University Foundation Trust (Wythenshawe Hospital). Air samples were obtained and aerobiological studies were performed. The presence of mycobacteria was detected via real-time qPCR.

Results: Mycobacterium spp were detected in water taken from two of the three ECMO units. All three ECMO units were colonised with Ralstonia spp, however aerosolisation from the machines into the environment was not demonstrated.

Conclusions: Aerosolization of infectious particles from the HICO-Variotherm HCU was not demonstrated. However, as an aerosolisation risk remains when ECMO machines are decontaminated, emptied or the circuits broken during use, ongoing microbiological surveillance is vital.

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Management of Resistant Gram-negative Infections; experience with the new agents from a tertiary referral center in the UK

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Background: Antibiotics are the only class of drug where inappropriate use in one patient may change the efficacy in another. Spread of antibiotic resistance is having devastating consequences globally, including increasing morbidity, increasing severity of illness and higher cost burdens. Treatment options are increasingly limited. New agents are being developed, however real life insitu clinical data is lacking.

Purpose: To share experience of the use of some of the new agents, targeted against resistant Gram negative infections, in the clinical setting.

Methodology: Using clinical case illustrations from a tertiary referral hospital in Manchester, UK, we aim to share our