A NOVEL, DIRECT SUCEPTIBILITY TESTING METHOD OF SONICATED VASCULAR PROSTHETIC GRAFT SAMPLES BY COMBINATION OF Liofilchem® MIC Test Strip AND CHROMOGENIC AGAR PLATES

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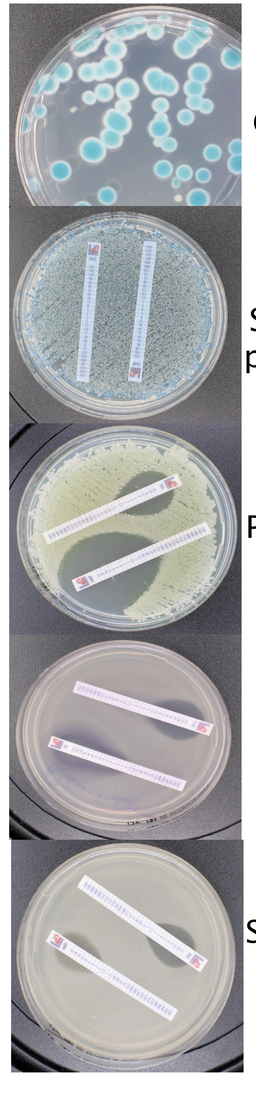
Background: Vascular Graft Infections (VGIs) are associated with a high rate of mortality and amputation. VGIs remain a therapeutic challenge for surgeons and Infectious Diseases specialists.

Objectives: In line with a rapid de-escalation of the empirical antimicrobial therapy, this study assessed the validity of a novel, rapid, diagnostic approach combining the use of Liofilchem® MIC test strips and Chromgenic agar plates (Liofilchem, Italy), directly on sonicated Vascular Prosthetic grafts (VPG) samples from patients attending the Vascular Surgery Unit of Bordeaux Teaching Hopsitals.

Methods: Between May 2011 and August 2012, 30 samples of VPG were collected from the Vascular Surgery Unit. Samples were sonicated for 5 min at 48hertz, then cultured with agitation for 2h at 37°C for bacteria and 30°C for fungi. Fter incubation, 10µL of the culture was spread on each of the Liofilchem® chromogenic agar plates (Chromatic MH and CHROMATIC CANDIDA). MIC tests strips (amoxicillin, rifampin, amikacin, piperacillin/ tazobactam, cefotaxime, imipenem, meropenem, linezolid, daptomycin) were directly applied onto the seeded plates which were read after 24h of incubation. The CHROMATIC CANDIDA agar plate was read after 48h incubation. In parallel, the VPG samples were processed by the hospital routine Diagnostic Laboratory. The microbroth dilution approach was used as a reference method for MIC determinations.

Results: VPG samples from 30 patients were included in this study. The MIC data obtained after 24H with the MIC test strips were in total concordance with those obtained by the reference method. In addition the color based presumptive identification of the microorganisms (bacteria and fungi) on the chromogenic plates was globally coherent with the one obtained by conventional methods. For 5 patients the results were negatif with all 3 approaches. For patients with polymicrobial infections, all bacteria were detected on the Chromgenic agar plates but in 3 cases the color of the more predominant bacteria overshadowed the color of the ones present in smaller inoculums. In addition, in 3 cases where fastidious organisms were also involved, these did not grow on the MH chromatic agar plate.

Conclusion: Our results demonstrate that applying MIC test strips directly onto Chromogenic plates containing sonicated VPG samples is a promising method for obtaining after 24h both susceptibility data and a presumptive identification of the microorganisms involved in Vascular graft infections for an optimal clinical management of this critical group of patients.



C. tropicalis

S. aureus and K. pneumoniae

P. aeruginosa

E. coli

S.aureus