

PCR detection of *Staphylococcus aureus* and *mecA* gene in patients with invasive infections

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Abstract (not more than 300 words)

Invasive infections caused by methicillin resistant *Staphylococcus aureus* and coagulase-negative staphylococci (MRSA/MRSCoN) require fast laboratory detection and start of adequate treatment.

The aim of this study was to develop a new faster protocol for direct detection of MRSA/MRSCoN in blood cultures and in abscess punctures. For this purpose were used polymerase-chain reaction (PCR) by primers for species specific identification of *S. aureus* and methicillin resistance gene *mecA*. We examined 85 growth-positive BACTEC blood cultures and 56 abscess punctures by routine microbiological assay and simultaneous PCR detection of MRSA/MRSCoN. The specificity of the PCR was evaluated by using DNA from another 16 microbial species for negative controls. We determined the susceptibility to methicillin by disc cefoxitine according EUCAST 2019 criteria and minimum inhibitory concentration (MIC) of oxacillin against the *S. aureus* isolates using the E-test. In the blood cultures, the two methods detected near 40% MRSA, resp.94% MRCoNS. In the punctures, the PCR assay identified near 20% MRSA. The PCR and the routine microbiological results for the blood samples are fully consistent but the new method was faster (only a few hours were need). Among the punctures, there were five PCR MRSA positive and culture negative samples. The new PCR protocol was more sensitive and again faster for detecting MRSA from abscess punctures than the routine microbiological techniques. This molecular -genetic test will speed up the right choice of empirical therapy, which is extremely important for saving patients' lives.

Keywords— *Staphylococcus aureus*, methicillin resistance, blood cultures, punctures, PCR
Professional Biography (100-150 words)

Bio of Dr. Virna-Maria Tsitou

2011 : Finished Medical University of Sofia- Bulgaria , Specialty Doctor of Medicine

2009-2012 : worked in Emergency Department in “Prevent DCC” hospital

2010-2013 : intern in Dermatology Department in “Tokuda Hospital” in Sofia Bulgaria

2013-2014 : Intern in Microbiology Department in “ISUL- TSARITSA IOANNA” hospital in Sofia Bulgaria

2014-2018 : Specialist Microbiologist in the Department of Medical Microbiology in Medical University Sofia - Bulgaria

2016- until today : Assistant Professor in the Department of Medical Microbiology in Medical University Sofia – Bulgaria

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I am fluent in Greek , English and Bulgarian language

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My participation in Congresses is very active because I want to share my research findings with other scientists from the Microbiological Community and also keep up with the scientific innovations in Bulgaria but also abroad.



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Any Comments: