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Konstantina Kontopoulou, Microbiol Curr Res, Volume 3
DOI: 10.4066/2591-8036-C1-006

4th International Conference on
Medical Microbiology
May 20-21, 2019 | Vienna, Austria

Detection of colonization-infection by multi-drug resistant microorganisms in patients with previous hospitalization

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Objective: Detection of rectal and pharyngeal colonization by multi-drug resistant microorganisms (MDR) in patients with previous hospitalization in other hospitals.

Material-methods: 564 patients admitted to our hospital with prior hospitalization in other hospitals were screened for MDR microorganisms by rectal and pharyngeal swabs within 24h of their admission. The study did not include ICU patients. The patients were monitored for the development of any signs of possible infection. *Pseudomonas aeruginosa*, *Acinetobacter baumannii* complex and *Klebsiella pneumoniae* resistant to carbapenems, methicillin resistant *Staphylococcus aureus* (MRSA) and vancomycin resistant *Enterococcus spp*. (VRE) were concerned as MDR. The swabs were directly inoculated onto chromID CARBA prototype medium (bioMerieux, Marcyl'Etoile, France). Identification and susceptibility testing were performed by VITEK 2 automated system (bioMerieux, Marcy l'Etoile, France). The MICs of imipenem, meropenem, ertapenem, tigecycline, vancomycin and teicoplanin were determined using E-tests (bioMerieux, Marcy l'Etoile, France) following the Clinical and Laboratory Standards Institute (CLSI) guidelines and interpretative criteria. Detection of KPC and VIM resistance genes was done via combined-disk tests using meropenem with and without phenylboronic acid (PBA), EDTA or both, as recommended by EUCAST.

Results: 51 patients (9%) were colonized by one or two MDR microorganisms. Particularly, 20 (3.5%) were colonized with *K. pneumoniae*, 21 (3, 7%) with *A. baumannii* complex and 10 (1,8%) with *P. aeruginosa* resistant to carbapenems. All strains of *K. pneumoniae* were KPC. 4 (0,7%) patients were colonized with MRSA and 7 (1, 2%) were colonized with 2 MDR microorganisms. Cohorting was applied in all patients. 10 colonized patients developed an infection during their hospitalization with a microorganism with the same resistant phenotype as the colonization strain. Table 1 shows the rates of colonization and infection by the responsible microorganisms, while Table 2 indicates the type of infection.

Table1: Patients with colonization and corresponding infections

	A.baumanniicplx	*P.aeruginosa*	*K.pneumoniae*	MRSA	VRE
Colonization	21	10	20	4	-
Infection	3	2	5	-	-

Table 2: Type of infection

	Bloodstream infection	Urinary tract infection	Wound Infection
A. baumanniicplx	2	1	-
P. aeruginosa	1	-	1
K. pneumoniae	2	2	1

Conclusions: Screening of colonization by multi-drug resistant microorganisms in patients with previous hospitalization in another healthcare institution is considered necessary for the timely apply of patients cohorting and strongly implementation of contact precautions to prevent and limit the spread of multidrug-resistant microorganisms.

Speaker Biography

Konstantina Kontopoulou has done her master's in public health from University of Macedonia, Greece and doing her PhD at Aristotle University of Thessaloniki, Greece. She is specialized in medical biopathology and worked as a chief of microbiology department at Interbalkan Medical center, Thessaloniki and now she is working as a senior registrar of microbiology department at Gennimates general hospital, Thessaloniki. She has attended many conferences and has marked her imprint of research by winning awards under various categories. She also worked as a sub investigator for various clinical trial and research projects. She is currently an active member of various committees such as Medical Society of Thessaloniki, Greek society for Infection Control, Hellenic Microbiology Society.

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