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First description of CTX-M group 1 producing *Klebsiella pneumonia* in an acute care hospital in Adjara, Georgia

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Background & Aim: In the previous years, CTX-M extended spectrum β-lactamases (ESBLs) have emerged worldwide and have replaced classical TEM and SHV-type ESBLs in many countries. CTX-M-15 is currently the most frequent, with a pandemic distribution, and the rapid spread is facilitated by incorporation of resistance genes in mobile genetic elements. This successful ESBL in Gram negative bacteria is closely associated with nosocomial environments and as an intestinal colonized, particularly in old and dependent patients. Little is known about the CTX-M ESBLs among *Klebsiella pneumonia* in Adjara. Our goal is the detection and characterization of ESBLs among *Klebsiella pneumonia* isolates from patients in two different hospitals in Adjara.

Material & Methods: Susceptibility profile and identification of the infection of *Klebsiella pneumonia* (n=23) isolates collected from different hospital services (2013-2015) were performed by disc diffusion methods according to the CLSI guidelines and API 20E, respectively. ESBL producers were detected and/or confirmed by the double disk synergy test using oximino-β-lactamic antibiotics with and without clavulanic acid. Genes of families' bla_{TEM}, bla_{OXA}, bla_{SHV} and bla_{CTX}-M group 1 were investigated by PCR. Sequencing was performed using group specific primers for CTX-M group 1.

Results: Fourteen *Klebsiella pneumonia* producing CTX-M group 1 ESBL infection isolates were detected in different biological samples, namely in sputum (n=8), urine (n=5) and abdominal fluid (n=1), collected in different hospital services. The infection isolates showed an extended resistance profile to aminoglycosides, fluoroquinolones and tetracycline. CTX-M group 1 ESBL isolates showed specific amplification for bla_{TEM}, bla_{OXA} and bla_{SHV} families.

Conclusion: This is the first report of CTX-M group 1 in infection *Klebsiella pneumonia* isolates in Adjara. This situation might represent the spread of these multidrug resistant Gram negative in acute care hospital in Adjara. The implementation and/or reinforcement of infection control measures, active antibiotic resistance surveillance and colonization screening of high risk patients is important in order to limit the dissemination of CTX-M ESBL producing *Klebsiella pneumonia* in health care institutions and to the people of Georgia. Colonization screening in elderly and/or dependent patients, upon admission at different health care institutions and their evaluation before discharge are extremely important to prevent the spread of cycle of multidrug resistant *Klebsiella pneumonia* in various healthcare facilities.

Biography

Tea Koiava was graduated from Batumi Shota Rustaveli State University in 2007 with a Master's degree in Genetics. Since 2007, she has been working at Batumi Shota Rustaveli State University as a Chief Specialist of the Department. She is actively engaged in medical/educational and many other kinds of measures taking place at university and leading training courses in Biology as well. She is also engaged in scientific activities of the department. She is the author of five scientific papers and currently pursuing her PhD in Biology Educational Program, specializing in Microbiology.

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