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Antibiotic resistant Enterobacteriaceae associated with canine and feline urogenital system

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Antibiotic resistance (AR) in bacteria of animal origin and its zoonotic potential has elucidated considerable attention worldwide. The most frequently isolated AR bacteria in both, human and veterinary medicine are methicillin-resistant staphylococci, Pseudomonas aeruginosa and the β-lactamase-producing and fluoroquinolone-resistant (FQR) members of Enterobacteriaceae. Enterobacteriaceae producing β-lactamases are an emerging problem for human and animal health. The incidence of infections caused by extended spectrum β-lactamase (ESBL)- or plasmid-mediated AmpC β-lactamase-producing members of Enterobacteriaceae is increasing in humans. Plasmid-mediated ESBL and ampC genes can easily be transmitted by conjugation to other bacteria. In addition, various other resistance genes are frequently co-located on these plasmids and as a consequence are co-transmitted, limiting the therapeutic options in the case of an infection with these bacteria.¹,² Due to high proximity to humans, companion animals may act as a reservoir of bacterial pathogens producing ESBL and/or AmpC enzymes. Therefore, the objective of the present study was to evaluate the occurrence of β-lactamase-producing and FQR members of Enterobacteriaceae associated with canine and feline urogenital system in Austria. Between October 2010 and June 2012, seventeen enterobacterial isolates were selected further examinations. These exhibited an ESBL and/or AmpC phenotype or were FQR. All isolates were screened for the presence of β-lactamase as well as of the non-β-lactamase genes. Isolates resistant to fluoroquinolone were tested for the plasmid-mediated quinolone resistance genes. The transferability of β-lactamase and other genes was carried out by conjugations experiments and subsequently, plasmids were replicon typed.³ The most predominant enterobacteria was E. coli (n=13), followed by singeltones Raoultella sp., Citrobacter sp., Klebsiella sp., Enterobacter sp. All E. coli were FQR, five had an ESBL phenotype and were FQR. One E. coli and Klebsiella sp. isolate exhibited an AmpC phenotype and were FQR. One Raoultella sp. and one Enterobacter sp. isolate were FQR and the isolate belonged to Citrobacter had an ESBL phenotype. Among β-lactamase genes, blaCTX (n=6) and among non-β-lactamase genes sul2 (n=12) were predominant. Even though the presence of β-lactamase-producing and FQR enterobacteria associated with canine and feline urogenital system is not high, these bacteria complicate therapy and limit treatment options, which is challenging for both, clinical microbiologist and clinicians. Thus, the seamless cooperation between diagnostic lab and clinic is inevitable.