



THE BURDEN OF MULTI-DRUG RESISTANT UROPATHOGENS

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Introduction. Urinary tract infections (UTIs) are among the most frequent infectious diseases affecting humans, thus representing an important public health problem with a substantial economic impact. The reviewed literature highlighted that the causative agents are gram-negative organisms from the family *Enterobacterales*. In recent decades the emerging threat of resistant Gram-negative bacteria to beta-lactams, aminoglycosides, sulfonamides, and fluoroquinolones in urology became a major global concern. The results of many scientific papers have demonstrated that the knowledge of local and regional antimicrobial susceptibility patterns is one of the ways to improve antibiotic prescription.

Material and methods. A bibliographic review was conducted to identify the published studies between 2010 and 2020. This present paper used the literature search strategy, including PubMed, Scopus, Web of Science, Springer open and Google Scholar databases of the relevant publications on multi-drug resistant uropathogens. Thereby, searching was performed using the keywords on multi-drug resistant uropathogens and urinary tract infections to identify evidence published at international and national level.

Results. UTIs caused by resistant gram-negative bacteria are becoming increasingly prevalent and now constitute a serious threat to public health worldwide due treatment difficulties associated with high morbidity and mortality rate. Authors demonstrated that *Enterobacterales* are frequently isolated from samples of patients with UTIs. Also, studies demonstrated that *E. coli* remains the most common causative agent followed by *K. pneumoniae*, *P. mirabilis*, *E. faecalis*, *S. saprophyticus*. Due to a widespread and/or inappropriate use of antibiotics, the antimicrobial resistance is growing at an alarming rate, which develops in pathogens commonly causing UTIs. In clinical practice, it is not uncommon to encounter organisms that are resistant to multiple antibiotics, or even to all the antimicrobial agents available. The development of multidrug-resistant (MDR) strains, which are resistant to three or more classes of antimicrobials, or extensively drug-resistant (XDR) strains, which are resistant to all but one or two classes of antimicrobials, is a cause of major concern. The culture-based diagnosis of UTIs presents several challenges to clinical microbiologists, physicians and health care system. Bacteriological tests are necessary to make the diagnosis and provide specific information regarding the identity and the antimicrobial susceptibility pattern of pathogens. Most of the reviewed studies indicated that the culture technique aids to identify uropathogens, selection of antimicrobial preparation for treatment but the accurate interpretation of the results requires clinical information that is usually available only to the clinician. When analyzing the relevant data, there was noticed that Gram-negative resistance to UTIs is associated with severe and serious consequences such as recurrence, pyelonephritis followed by sepsis, renal damage etc. Therefore, the monitoring of pathogen resistance patterns is very important and help clinicians to develop guidelines for establishing a proper empirical therapy for UTIs while awaiting culture sensitivity reports.

Conclusions. UTIs caused by Gram-negative pathogens that are resistant to many and, in some cases, to all available antimicrobial agents, are becoming increasingly common and difficult to treat. Consequently, UTIs caused by multi-drug resistance bacteria require a multifaceted approach such as the rationale use of current antimicrobials, improved diagnostics and surveillance, better adherence to basic measures of infection prevention, development of new antibiotics.