11. ANTIMICROBIAL SUSCEPTIBILITY OF PROTEUS MIRABILIS STRAINS ISOLATED FROM URINARY TRACT INFECTIONS

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Introduction. Urinary tract infections (UTIs) are among the most common bacterial infections worldwide, affecting both community and hospital populations. Most cases are caused by Gram-negative bacteria belonging to the Enterobacteriaceae family. Among them, Proteus mirabilis is an important opportunistic pathogen frequently associated with complicated and catheter-associated UTIs. Its pathogenicity is related to several virulence factors, including urease production, swarming motility, and biofilm formation, which facilitate urinary tract colonization and promote urinary stone formation. The increasing antimicrobial resistance of P. mirabilis strains represents a significant public health concern and highlights the need for continuous monitoring of antimicrobial susceptibility patterns.

Aim of study. To evaluate the antimicrobial susceptibility profile of Proteus mirabilis strains isolated from urine samples and to identify the main resistance patterns associated with urinary tract infections.

Methods and materials. Proteus mirabilis strains were isolated from urine samples collected from patients with clinical suspicion of urinary tract infection. Identification was performed using standard microbiological culture methods and biochemical tests. Antimicrobial susceptibility testing was carried out using the Kirby–Bauer disk diffusion method on Mueller–Hinton agar, according to international standards established by the Clinical and Laboratory Standards Institute (CLSI) and the European Committee on Antimicrobial Susceptibility Testing (EUCAST). Analysis and interpretation of antimicrobial resistance patterns were supported by current scientific literature and clinical guidelines from PubMed/MEDLINE, WHO reports, and European Association of Urology (EAU) guidelines.

Results. The analysis demonstrated variability in antimicrobial susceptibility among the isolated Proteus mirabilis strains. Increased resistance was observed to ampicillin, trimethoprim-sulfamethoxazole, and early-generation cephalosporins, which are commonly used in empirical UTI therapy. Higher susceptibility was recorded for aminoglycosides, fluoroquinolones, and beta-lactam/beta-lactamase inhibitor combinations. A proportion of isolates exhibited multidrug-resistant phenotypes, indicating a growing trend of antimicrobial resistance among uropathogenic bacteria.

Conclusions. Proteus mirabilis from urinary tract infections show variable antibiotic susceptibility, with increasing resistance. Ongoing monitoring and rational antibiotic use are essential to guide therapy and limit multidrug resistance.

Keywords. Proteus mirabilis, antimicrobial susceptibility, urinary tract infection, antimicrobial resistance, uropathogens.

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