



*Original Contribution*

**VANCOMYCIN-RESISTANT ENTEROCOCCI IN HOSPITALIZED PATIENTS WITH URINARY TRACT INFECTIONS – FIRST REPORT IN BULGARIA**

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**ABSTRACT**

Vancomycin-resistant enterococci (VRE) present a serious problem in a hospital setting because they reduce treatment options in enterococcal infections. Using the conventional tests and the Sceptor MIC/ID System (BBL), we analysed 2 VRE strains isolated from the urine of patients at the University Hospital in Stara Zagora, Bulgaria. In vitro susceptibility testing was done using the DDM (Bayer – Kirby) and MIC (Agar Dilution Method; E-test). Resistance to high-level aminoglycosides (HLAR) was determined by DDM using disk containing *Gentamicin* 120 µg. The *E. faecalis* isolates were a strain with multiresistance to high-level aminoglycosides, beta-lactams, fluoroquinolones, and *Vancomycin* but susceptible to *Teicoplanin*. *E. faecium*, the second urine isolate, was equally multiresistant to high-level aminoglycosides, beta-lactams, fluoroquinolones, and *Vancomycin* but susceptible to *Teicoplanin*. The problem of VRE in Bulgaria already exists. It is imperative to monitor the enterococcal infections in the hospitals now, when they are still sporadic.

Key Words: VRE, HLAR, DDM, E-test, MIC

**INTRODUCTION**

*Enterococci* are a part of normal intestinal flora in humans, but they are also considered as important pathogens in urinary, gastrointestinal and genital tract infections, as well as a cause of nosocomial infections

*Enterococci* have an acquired resistance to several groups of antibiotics. Traditionally enterococcal infections have been treated with beta-lactams alone or in combination with an aminoglycosides (1, 2). *Vancomycin* and *Teicoplanin* are often used in the treatment of diseases, caused by *Ampicillin* and Aminoglycoside-resistant enterococci (3, 4). For this reason occurrence of *Vancomycin*-resistant enterococci (VRE) represents a serious problem because it reduces treatment options in patients with enterococcal infections (5, 6).

**MATERIAL AND METHODS**

We analysed 2 VRE strains, isolated from the urine of patients with urinary tract infections at the University Hospital in Stara Zagora, Bulgaria. Each specimen was cultured on sheep agar with the following identification, using conventional methods (7) and Sceptor MIC/ID System (BBL). In vitro susceptibility testing was done by DDM (Disk Diffusion method) and MIC, using Agar Dilution Method (ADM) and E-test (*AB Biodisk – Sweden*). The values of  $\geq 4\mu\text{g/ml}$  for *Vancomycin* and  $\geq 8\mu\text{g/ml}$  for *Teicoplanin* were used as breakpoints (NCCLS-2001) (7).

Resistance to high-level aminoglycosides (HLAR) was determined by disks –Gentamicin 120µg. (7).

**RESULTS**

- Case report 1: A 68 year-old man (K.U.I) was admitted at the University Hospital in Stara Zagora. *E. faecalis* was isolated

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from his urine on 05. 02. 2002 (Lab. N115345). The strain was multiresistant to beta-lactams, fluoroquinolones and HLAR, resistant to *Vancomycin* (MIC $\geq$ 256 $\mu$ g/ml), but susceptible to *Teicoplanin* (MIC=1 $\mu$ g/ml.).

- Case report 2: A 44 year-old woman (P.I.D.) was admitted at the University Hospital in Stara Zagora. *E.faecium* was isolated from her urine (Lab.N116947) on 15.03.2002. The strain was resistant to beta-lactams, fluoroquinolones and *Vancomycin* (MIC  $\geq$ 128  $\mu$ g/ml, but was *Teicoplanin* susceptible (MIC =2 $\mu$ g/ml).

Using Vitek-2 system (*Bio-Merieux, France*), the identification and the antimicrobial susceptibility of the two strains were confirmed at the National Reference Laboratory, Sofia, as the first cases of VRE in Bulgaria (Lab. N 417/03, 06.04.2003). Subsequently, these cases were reported for the first time at the Tenth Congress of Bulgarian Microbiologists, Plovdiv, October 9-12, 2002 (1).

## DISCUSSIONS

The source of VRE in hospitalised patients may be gastrointestinal and the hospital environment. The increased use of glycopeptides in human and animals is a risk factor for the acquisition of VRE. That implies the restricted use of glycopeptides in hospitals and for animals.

The results of our study are based on phenotypical methods only. But it is clear that the problem of VRE in Bulgaria already exists. It is important to register cases of enterococcal infections in our hospitals and to monitor their resistance patterns, when VRE is still sporadic.

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