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Letter to Editor

Microbiology Section

Prevalence of Vancomycin Resistant Enterococci Carriers from Rectal Swabs among High Risk Patients in a Tertiary Care Hospital

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Dear Editor,

Enterococci with acquired vancomycin resistance is a major concern amongst hospital. These resistant species have the ability to survive for prolonged periods and they can get transmitted easily. The infections caused by these organisms range from complicated Urinary Tract Infections (UTI) to life threatening Central Nervous System (CNS) infections making the treatment challenging [1]. The rate of Vancomycin Resistant Enterococci (VRE) colonisation in Northern India is nearly 34.5%, with *van A* genotype being the most common [2]. Studies have reported that active screening through rectal swabs is a definite tool in preventing complications in high risk patients by early identification and treatment of VRE carriers [3]. The conventional method of screening with bile esculin azide agar supplemented with 6 µg/mL of Vancomycin/ml is reasonably sensitive but requires confirmation by molecular techniques [4]. The molecular methods in the detection are limited to the referral laboratories. Development of highly specific chromogenic substrates in the VRE selective media help in effective screening of colonisers. The sensitivity and specificity of the chromogenic media was 100% and 99%, respectively [4]. This was in accordance to present study as well. This study was undertaken to screen the high risk patients in critical care for VRE colonisation from stool samples and identify the genotype. Early identification of the carrier state in high risk patients is helpful in planning the management strategy of these patients.

This was an observational study done over the period of three months from January to March 2016 at PSGIMS&R, Coimbatore, Tamil Nadu, India. The Institutional Human Ethical clearance number obtained was 14/118. Informed consent was obtained before collecting the rectal swabs. The criteria for high risk patients were defined as hospitalisation >7 days, chronic haemodialysis, use of multiple antibiotics and associated chronic disease status. Rectal swabs were obtained from 100 patients (no repeat isolates and the mean age group was 60 years 75% were males) following the identification as high risk as per the criteria explained above. The rectal swabs were streaked on chromogenic ChromID VRE media (Biomerieux) and incubated at 37°C for 24 hours. The presence of violet colour colonies indicated *Enterococcus faecium* and blue colour colonies indicated *Enterococcus faecalis*. Isolates with intrinsic resistance to vancomycin as *Enterococcus casseliflavus* and most of the other gram positive organisms were selectively inhibited by this media. Conventional biochemical tests as bile esculin, mannitiol, argininine and PYR (Pyrrolidonyl Arylamidase) were done for confirmation at the species level. The antibiotic sensitivity was also performed by Kirby Bauer method as per the CLSI guidelines [5]. The antibiotic susceptibility pattern of the 100 isolates showed the maximum sensitivity to linezolid (98%) followed by vancomycin (97%), erythromycin (89%), teicoplanin (75%), ampicillin (69.2%), high level gentamycin (49.2%) and penicillin (25%). The Minimum Inhibitory Concentration (MIC) of the resistant isolates was confirmed by using commercial E-strips. Molecular characterisation of the resistant isolates for the specific genotype was done by performing conventional PCR. The DNA from the resistant isolates was extracted using the QIAGEN kit. The primers of base pair 732bp for detection of *van A* were used. The PCR products were analysed by running gel electrophoresis and visualised under UV light in automated GEL DOC viewer. Primers for *van A* used were:

F (5' GGGAAAACGACAATTGC-3')

R (5'GTACAATGCGGCCGTCGTTA-3') [6]

Out of the 100 patients screened, three were found to be positive for VRE carriage (3%). All the three were *Enterococcus faecium*. The positive sample was used as the control strain. Analysis of the predisposing risk factors among the three patients revealed the association of chronic renal impairment, immunocompromised status (retroviral infection) and presence of co-morbid conditions such as diabetes mellitus along with prolonged hospital stay.

The VRE carriers can pose a risk to the patients harboring these pathogens as they can invade the host and result in bacteremia complicating the management. In such patients, treatment of the VRE carriage aids in better prognosis. Isolation and cohorting of these patients prevents the transmission and risk of infection in other patients, especially in healthcare setups. The choice of VRE screening can aid in proper infection control measures.

Thus, chromogenic VRE media was found to be a simple and rapid method for identifying VRE carriage.

Declaration: The present study was presented as poster presentation in 39th National Conference of the Indian Association of Medical Microbiologists MICROCON in 2015.

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