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Prevalence of Vancomyc in-resistant Enterococci SSGH (A study of total 300 isolates during 2009-2010)

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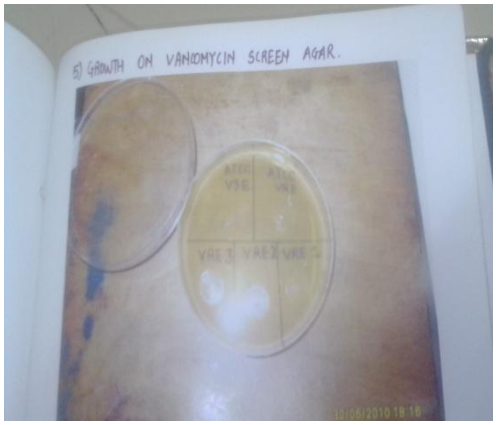
I. Background/Objective:

Enterococci are one of the culprits causing nosocomial infections!!!!!!!.....predominantly affecting immuno-compromised patients or patients with multi-morbidity. The appearance of VRE has limited the therapeutic options available for clinicians due to the transferrable glycopeptide resistance of the vanA and vanB genotypes in VRE.Thus a study was undertaken to describe the prevalence of vancomycin-resistant enterococci infections (VRE) in Medical college, vadodara during January 2009–December 2010.

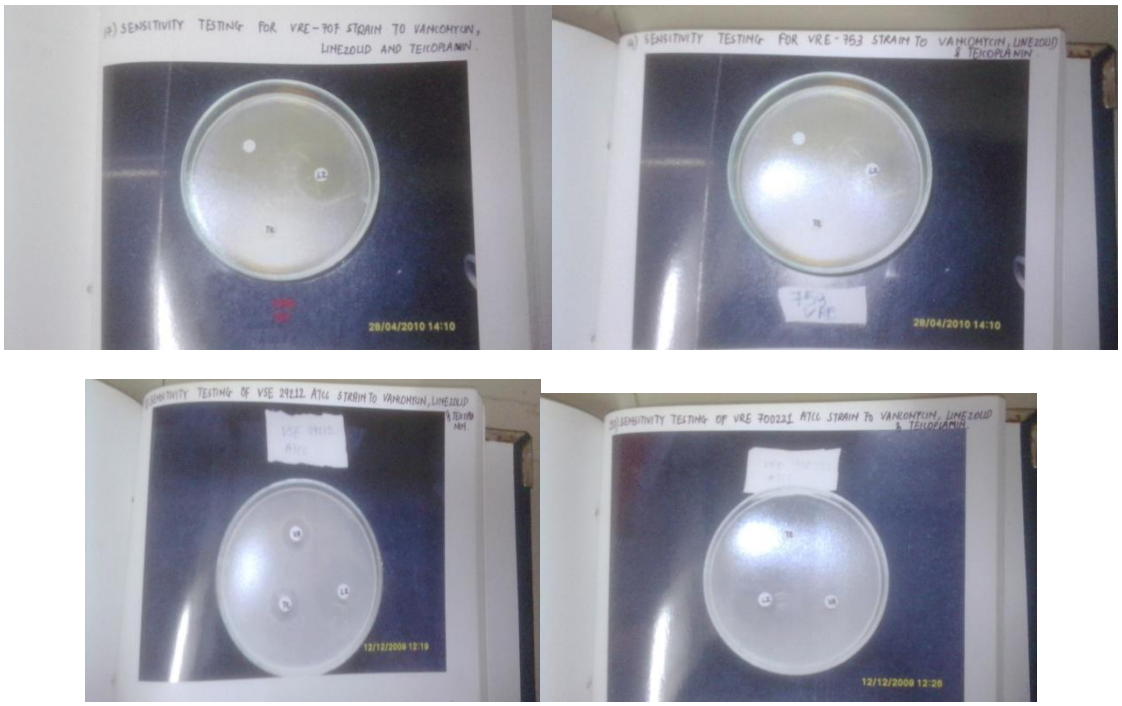
II. Methods:

Patient's sample were collected and sent to the Microbiology Laboratory for testing VRE. A total 300Enterococcus Spp.were isolated fromvarious samples by doing 14 different tests.Out of 300 strains, 45 strains were of Efaecium and 255 strains of E faecalis. After isolating enterococci from the sample,3tests were done further for VRE conformation.This three methods included - by Kirby-Bauer Disc Diffusion Method (KBDDM), Vancomycin agar screen method and MIC detection by--macrobroth dilution method and E-Test.
Susceptibility to vancomycin was performed by KBDDM on Mueller Hinton Agar by using 30µg vancomycin disc (HiMedia). Vancomycin resistance was also determined by Vancomycin agar screen method using 6µg/ml of vancomycin incorporated in Brain Heart Infusion (BHI) agar. It is a given below.

Vancomycin Screen Agar:



Susceptibility to vancomycin,Teicoplanin and Linezolid by using KBDDM



Further MIC of vancomycin was also found for VRE by Broth Dilution Method and E-Test

E-TEST

Table: Clsi Guidelines For Mic Detection Of Vre:

MIC OF VANCOMYCIN	INTERPRETETION RESISTANCE OF VANCOMYCIN
0-8 µg/ml	Sensitive
8-16 µg/ml	Intermediate resistant
greater than or equal to 32µg/ml	Resistant.

Minimum Inhibitory Concentration (MIC) of all the VRE isolates were done by E-Test and Macrobroth dilution method, using dilutions of vancomycin ranging from 2 µg/ml to 512 µg/ml.Further susceptibility to teicoplanin and Linezolid was done for all VRE isolates.

III. Results

In a present study Out of 300 Enterococcus strains three VRE strains (E faecium from blood) were isolated and it showed vancomycin resistance of van A(i.e.1%VRE) type. The total enterococcus Spp. isolated from clinical samples were : from urine in 18.6% of cases, from blood in 58.6%, from a surgical wound in 11.6% and in 6% from pus ,5.2% from others. From 300 Enterococcus Spp.3 VRE isolates: E. faeciumofvanAtype were found. All VRE bloodstream isolates were susceptible to linezolid and resistant to vancomycin and Teicoplanin.In this study, all the three VRE isolates were E. faecium and were resistant to both Vancomycinandteicoplanin, so they were of Van A phenotype.

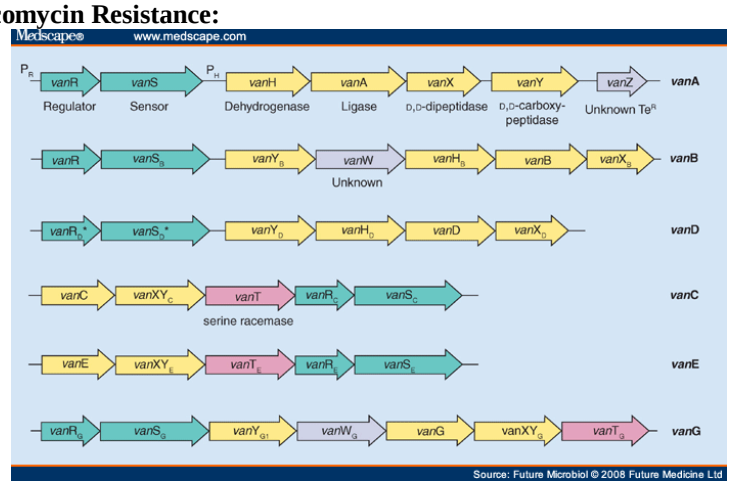
Table 1: Isolation Of Enterococcus Spp. From Various Clinical Samples

SPECIMEN	NUMBER OF SAMLES/PERCENTAGE	**E faecium**	**E faecalis**
BLOOD CULTURE	176 (58.6%)	20	156
URINE	54 (18.6%)	1	53
WOUND SWABS	35 (11.6%)	15	20
PUS	18 (6%)	4	14
OTHERS	17(5.2%)	5	12
TOTAL	300 (100%)	45 (15%)	255 (85%)

Table 3: Details Of Vre:

SAMPLE NO. OF VRE	SAMPLE NAME	SPP. OF VRE	ANTIBIOTIC SENSITIVITY	MIC OF VANCOMYCIN	TYPE OF RESISTANCE
1739	BLOOD	E.faecium	Va:R Tei:R Lz:S	Vancomycin: 32 µg	Van A
753	BLOOD	E faecium	Va:R Tei:R Lz:S	Vancomycin: 240 µg	Van A
707	BLOOD	E faecium	Va:R Tei:R Lz:S	Vancomycin: 240 µg	Van A
VSE	ATCC STRAIN CONTROL	E faecalis 29212	Va:S Tei:S Lz:S	Vancomycin: 30µg	-
VRE	ATCC STRAIN CONTROL	E faecium 700221	Va:R Tei:R Lz:S	Vancomycin: 240 µg	Van A

Mechanism Of Vancomycin Resistance:



IV. Conclusion

Though VRE infection rates have been rapidly increasing with regional variation, yet the burden of VRE among SSGH hospital had remained low.During year 2009 a hospital in Mumbai had a prevalence of VRE -1% which correlates with our present study.

Acknowledgements:

I would like to thanks first of all my guide sir Shri.V.J.Lakkad, than our Head of the department Dr. T.B.Javdekar for guiding me as and when required.