

Prevalance of MRSA and Their Anti-Microbial Susceptibility in a Tertiary Care Hospital in Chennai

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Abstract: MRSA is one of the leading causes of Hospital acquired infection. This retrospective study was conducted from August 2016 to January 2017 to know the prevalence of MRSA in our hospital setup. A total of 162 cases of Staphylococcus strains were isolated from various clinical samples, 62 cases (38.3%) were methicillin resistant. Gentamycin had a maximum resistance of 65% and Vancomycin had nil resistance. There is a need of developing antibiotic policy, selecting appropriate antibiotic therapy and limiting the usage of higher antibiotics.

Keywords: MRSA, Vancomycin, antibiotics, Staphylococcus strains

INTRODUCTION

In the year 1961, MRSA was first described. The incidence of MRSA varies according to the region, ranges from 25% to 50% [1].

MATERIALS AND METHODS

This was a retrospective study done from August 2016 to January 2017. The records were taken from the Microbiology department. Staphylococcus strains were identified based on Gram's stain morphology, colony characteristics, and positive catalase and coagulase tests. The Staphylococcus aureus isolates were subjected to susceptibility testing by disc diffusion technique according to the Clinical Laboratory Standards International (CLSI) guidelines 2016 with quality controls (Staphylococcus aureus ATCC 29213). The antimicrobials tested included gentamycin (10µg), amikacin (30µg), erythromycin (30µg), clindamycin (30µg), ciprofloxacin (5µg), chloramphenicol (30µg), norfloxacin (10µg); co-trimoxazole (25µg); vancomycin (30µg), teicoplanin (30µg) and linezolid (30µg).

Screening for MRSA

Methicillin resistance was screened by disc diffusion method using 30µg cefoxitin disk. An isolate was considered to be a MRSA strain if cefoxitin inhibition zone diameter was < 21 mm.

RESULTS

A total of 162 cases of Staphylococcus strains were isolated from various clinical samples, 62 cases (38.3%) were methicillin resistant.

Table-1: Age and sex wise distribution of MRSA

Age in years	Male(n=33)	Female (n=29)
0-20	1	5
21-40	9	11
41-60	9	7
61-80	14	6

More MRSA were between the age group 61-80 among males and 21-40 years among females and least between 0-20 years among both the sexes.

Table-2: Department wise distribution of MRSA

Department	No.of cases	Percentage (%)
Outpatient	21	33.9
Inpatient (ortho, ICU, surgery, medicine, OBG, dermat)	41	66

More MRSA were seen among inpatients than outpatient

Table-3: Distribution of MRSA from different clinical samples

Samples	No. of cases (n=62)	In percentage (%)
Pus/wound swab	18	29
Urine	12	19.4
Sputum	9	14.5
Throat swab	8	13
Blood	7	11.3
Ear	5	8.1
Others	3	4.8

Maximum MRSA was from pus/wound swab.

All the MRSA were susceptible to vancomycin, teicoplanin, and linezolid.

Table-4: antibiotic susceptibility pattern of MRSA

Antibiotics	No. of resistance cases	Percentage (%) of resistance cases
Gentamycin	40	65
Cotrimoxazole	39	63.2
Erythromycin	38	62.5
Ciprofloxacin	37	60
Norfloxacin	31	50
Chloramphenicol	28	45
Clindamycin	22	35
Amikacin	14	22.5

Highest resistance was found to gentamycin 65% [3] followed by Cotrimoxazole 63.2 % [2] and All the MRSA were susceptible to vancomycin, teicoplanin, and linezolid

DISCUSSION

Transient hand carriage by the health care workers is the predominant mode for patient -to -patient transmission. Carriage of Staphylococcus aureus in the anterior nares plays a key role in the epidemiology and pathogenesis of infection. Patients with Diabetes mellitus, those on hemodialysis, IV drug abusers, patients with skin and soft tissue infections and those with HIV infection are at increased risk for carriage of Staphylococcus aureus in their anterior nares. Measures to control the spread of MRSA include swab sampling of the anterior nares, isolating colonised and infected patients until complete decolonisation and implementing hygienic precautions such as handwashing and antiseptics, the efficacy of which has been well established. Application of mupirocin (2%) in the anterior nares twice daily for 5 days is highly efficacious in eliminating Staphylococcus aureus in both healthy carriers and carriers belonging to high risk group. Protective measures for health care workers against MRSA include contact isolation of the patient, using protective gown, gloves, mask and goggles and

most importantly cleaning hands with alcoholic solution on glove removal and between patients’. These measures are also of paramount importance to prevent the transmission of MRSA from patient-to patient.

CONCLUSION

Active screening and compliance with recommended infection control practices play an important role in the control of MRSA. Attention should be paid to halt the transmission of MRSA by health care workers by meticulous hand washing.

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