

## **Analysis of Antibiotic Sensitivity Pattern of Clinically Significant *Staphylococcus aureus* at a Base Hospital, Sri Lanka**

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**Introduction:** *Staphylococcus aureus* is a major organism that causes skin and soft tissue infections. Moreover, it causes an array of other infections. It is treated with flucloxacillin/cloxacillin. However, a significant proportion of *S. aureus* has developed resistance to flucloxacillin/cloxacillin; hence, they are termed as MRSA. Though MRSA is likely to present in hospital settings, it has crept to the community as well. Accordingly, the number of MRSA infections is increasing.

**Objective:** To analyze the antibiotic sensitivity (ABST) pattern of clinically significant *S. aureus*.

**Method:** A retrospective, cross-sectional study was conducted over one year from 01/08/2017 to 31/07/2018 involving patients infected with *S. aureus* in Base Hospital, Wathupitiwala. Demographic & clinical data & ABST results were analyzed. ABST (John Stokes method) was performed for chloramphenicol, ciprofloxacin, erythromycin, fusidic acid, linezolid, co-trimoxazole, gentamicin, clindamycin, teicoplanin & vancomycin. MRSA was identified using cefoxitin disc. The ABST pattern of MSSA was compared with that of MRSA. Statistical analysis was done via the R programming language (level of significance  $P < 0.05$ ).

**Results:** Of 210 patients, 48% (101/210) were males while 52% (109/210) were females. In study cohort, 88.1% (185/210) was inpatients & the rest (11.9% - (25/210)) was outpatients.

Of the isolated *S. aureus*, 42.9% (90/210) were from pus, 14.8% (31/210) from blood, 29.5% (62/210) from sputum & 12.4% (26/210) from urine. As per ABST, 69.1% (145/210) was MRSA & 31% (65/210) was MSSA. Sensitivity of MSSA was 84.6% (11/13) for chloramphenicol, 62.3% (33/53) for gentamicin, 55.8% (29/52) for ciprofloxacin, 68.9% (31/45) for clindamycin, 45.7% (21/46) for erythromycin, 84.2% (16/19) for nitrofurantoin, 69.2% (27/39) for fusidic acid, 92.1% (35/38) for linezolid, 74.6% (41/55) for co-trimoxazole, 84.6% (33/39) for teicoplanin & 92.3% (60/65) for vancomycin.

Sensitivity of MRSA was 83.3% (20/24) for chloramphenicol, 35.6% (32/90) for gentamicin, 24.6% (30/122) for ciprofloxacin, 34.1% (42/123) for clindamycin, 8.0% (9/112) for erythromycin, 75% (12/16) for nitrofurantoin, 65.8% (73/111) for fusidic acid, 99% (96/97) for linezolid, 58.9% (76/129) for co-trimoxazole, 87% (80/92) for teicoplanin & 98.5% (134/136) for vancomycin.

Sensitivity of MRSA was significantly low compared to the sensitivity of the MSSA against erythromycin ( $P = 0.000$ ), ciprofloxacin ( $P = 0.000$ ), clindamycin ( $P = 0.000$ ) & gentamicin ( $P = 0.002$ ).

**Conclusion:** Skin & soft tissue infections were the most common infections caused by *S. aureus*. MRSA rates were alarmingly high in the study cohort. Less than 50% of MRSA were sensitive to erythromycin, ciprofloxacin, gentamicin, & clindamycin and it was significantly low compared to the sensitivity of MSSA against same antibiotics. Vancomycin and linezolid are effective empiric antibiotics for both MSSA & MRSA.

**Keywords:** Staphylococcus Aureus, Antibiotic Resistance

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