

**A CLINICO-MICROBIOLOGICAL STUDY OF PYODERMA WITH SPECIAL REFERENCE TO MRSA**Animesh Saxena<sup>1</sup>, Krishnendra Varma<sup>2</sup>, Yash Triwedi<sup>3</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: BACKGROUND AND OBJECTIVES:** Pyoderma refers to pyogenic infection of the skin. Staphylococcus aureus is one of the most common pathogen in pyoderma and due to indiscriminate use of antibiotics it has lead to development of resistant strains known to be sensitive before. **AIMS:** A clinico-microbiological study of pyoderma with special reference to MRSA. **SETTINGS AND DESIGN: STUDY DESIGN:** Cross-sectional study. **STUDY SETTING:** O.P.D of Dermatology Department. **STUDY SUBJECTS:** Patients of all age groups, both gender, attending Dermatology out patient department were incorporated. **STUDY SAMPLE:** 200 patients with Pyoderma attending the O.P.D in 1 year. **STUDY PERIOD:** 6 Months. **METHODS:** In this cross sectional study, 200 patients of either sex and all age groups diagnosed as pyoderma and having frank pustular lesion were included after detailed history and examination. A sample of pus was collected taking aseptic precautions with the help of sterile swabs and investigated for antibiotic sensitivity pattern of isolated organism. **RESULTS:** Out of 200 patients of indoor and outpatient department Single isolates were yielded in 166 patients and multiple organisms were isolated in 7 patients and there was no growth in 27 patients. Coagulase positive Staphylococcus was the commonest isolate i.e. 142 organisms, among which MRSA was 41(23%). Highest susceptibility was seen to Chloramphenicol 100%, Teicoplanin 100%, Vancomycin 99% Amikacin 90%, Linezolid 82%, Clindamycin 76%, Gentamicin 67%. Most Resistant drugs were Cefoperazone 100%, Cefotaxime 100%, Cephazolin 100%, Penicillin-G 100%, Cefipime 90%, Cefipime 90%, erythromycin 77% ciprofloxacin 75%, Cotrimoxazole 63% & cefoxitin showed 52% resistance. **CONCLUSION:** Though Pyodermas are common skin problem often because of therapeutic failure and due to resistance of organism and emergence of MRSA stains to antibiotics it becomes difficult to treat. Hence, the study of culture and sensitivity can be highly useful in tackling disease when such a situation arises.

**KEYWORDS:** Pyoderma, Cross-Sectional Studies, Methicillin-Resistant Staphylococcus aureus.

**INTRODUCTION:** Pyoderma refers to pyogenic infection of the skin.<sup>[1]</sup> Staphylococcus aureus is one of the most common pathogen in pyoderma<sup>[2]</sup> and due to indiscriminate use of antibiotics it has lead to development of resistant strains known to be sensitive before. Staphylococcus aureus resistant to Methicillin, cloxacillin & flucoxacillin are known as Methicillin resistant staphylococcus aureus (MRSA), MRSA have ability to develop resistance to other group of antibiotics like penicillin, cephalosporin, aminoglycosides, macrolide & quinolones.<sup>[3]</sup>

**AIM:** A clinico-microbiological study of pyoderma with special reference to MRSA.

**OBJECTIVE:** To study the bacteriological etiology of pyoderma with special reference to MRSA in patients attending tertiary care hospital.

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**SETTINGS AND DESIGN:**

**Study Design:** Cross-sectional study.

**Study Setting:** O.P.D of Dermatology Department.

**Study Subjects:** Patients of all age groups, both gender, attending Dermatology outpatient department were incorporated.

**Study Sample:** 200 patients with Pyoderma attending the O.P.D in 1 year.

**Study Period:** 6 Months.

**INCLUSION CRITERIA:**

- a) All clinical types of pyoderma with pus discharge irrespective of age and sex and immune status.
- b) Patient presenting to the O.P.D of Dermatology with Pustule, Papulovesicles, Bullae, Nodules, Ulcer, Inflammatory plaques with oozing, crusting signifying bacterial skin infection.

**EXCLUSION CRITERIA:**

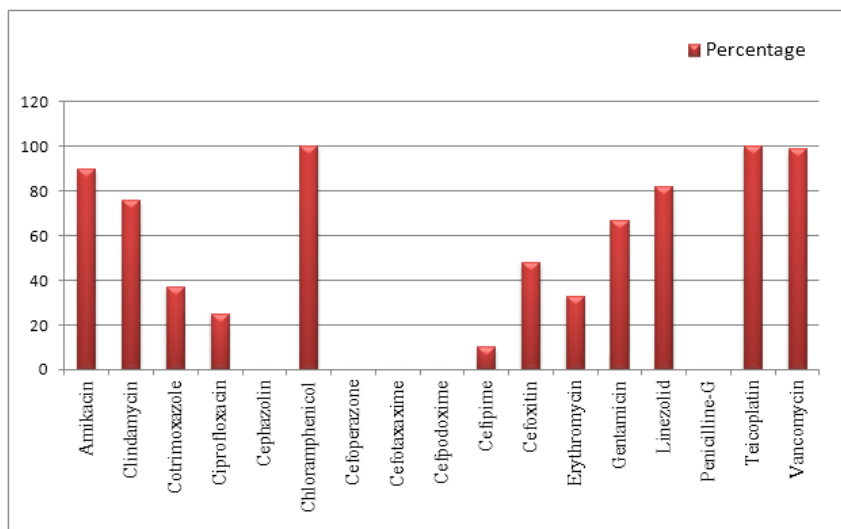
- a) Patients on antibiotic therapy.
- b) Patients not willing to participate in study.

**ETHICAL ISSUES:** Permission/consent in written to carry out the study was obtained from;

1. Ethical committee of Medical College.
2. Department of Microbiology.
3. Study subjects.

**MATERIAL & METHODS:** In this cross sectional study, 200 patients of either sex and all age groups diagnosed as pyoderma and having frank pustular lesion were included after detailed history and examination. A sample of pus was collected taking aseptic precautions with the help of sterile swabs. In case of intact pustular lesions the pustule were ruptured with a sterile needle and material collected by two sterile swabs. The swabs were transported immediately to the laboratory. One of the two swabs collected were used for Gram stain and microscopic examination and other for culture. Culture was done by using appropriate agar including Blood agar/ MacConkey agar medium. Once the organism was identified by various tests the antibiotic susceptibility testing was performed on Mueller Hinton agar by Kirby Bauer disc diffusion method. Antibiotic recommended by CLSI guideline<sup>[4]</sup> for treating this infection was tested for their susceptibility.

**RESULTS:** Out of 200 patients of outpatient department Single isolates were yielded in 166 patients and multiple organisms were isolated in 7 patients and there was no growth in 27 patients. Coagulase positive Staphylococcus was the commonest isolate i.e. 142 organisms, among which MRSA was 41 (23%). Highest susceptibility was seen to Chloramphenicol 100%, Teicoplanin 100%, Vancomycin 99% Amikacin 90%, Linezolid 82%, Clindamycin 76%, Gentamicin 67%. Most Resistant drugs were Cefoperazone 100%, Cefotaxime 100%, Cephazolin 100%, Penicillin-G 100%, Cefipime 90%, Cefipime 90%, erythromycin 77% ciprofloxacin 75%, Cotrimoxazole 63% & cefoxitin showed 52% resistance (Figure 1).



**Figure 1: MRSA Sensitivity Pattern**

**DISCUSSION:** Pyoderma is quite common in India and it forms one of the commonest clinical condition encountered in dermatological practice.<sup>[5]</sup> Various studies have shown that pyoderma constitutes the highest percentage of skin infection.<sup>[6]</sup> Incidence of pyoderma varies from place to place and studies have shown that bacterial skin infections may account for upto 17% of the clinical visits.<sup>[7]</sup> K V Ramana et al.<sup>[8]</sup> reported MRSA in 19.1% of cases U Nagaraju et al<sup>[9]</sup> reported MRSA in 10.9% of cases. In present study MRSA was isolated in 22% of cases which is more than above mentioned studies.

Between 2000 and 2010, consumption of antibiotic drugs increased by 36%. There was increased consumption of carbapenems (45%) and polymyxins (13%) two-last resort classes of antibiotic drugs.<sup>[10]</sup> India was the largest consumer of antibiotics in 2010 with  $12.9 \times 10^9$  units (10.7 units per person) with peak in July - September i.e monsoon and after monsoon season<sup>[11]</sup>. New Delhi Metallo-beta-lactamase-1 (NDM-1) discovered in 2010 is an enzyme that makes bacteria resistant to a broad range of beta-lactam antibiotics including carbapenem family, which are a mainstay for the treatment of antibiotic-resistant bacterial infections. Bacteria that produce carbapenemases are often referred in the news media as "superbugs".

Such bacteria are usually susceptible to polymyxins only and tigecycline.<sup>[9]</sup> Since it is not always feasible to do pus culture and antibiotic sensitivity test in all Pyoderma cases, there is a need for a protocol to help continuously monitoring the changing patterns of antibiotic sensitivity, which would help us to effectively manage these deceptively innocuous infections. In order to reduce the problem of antibiotic resistance, it is mandatory to survey and screen all clinical isolates for resistance. Our efforts should be concentrated not only on antibiotic use, but also on other confounding factors that contribute to resistance such as infection control practices. Contact isolation and strict asepsis should be enforced. This area warrants further studies on a larger number of isolates from various parts of the country in order to develop and apply evidence based guidelines on countering resistance.<sup>[12]</sup>

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