

CELLULITIS: A RETROSPECTIVE DRUG UTILIZATION REVIEW ON ANTIBIOTICS

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ABSTRACT

Background Antibiotic resistance is a serious issue that has been linked to roughly 1.27 million fatalities globally. **Objective** This study aims to evaluate the prescription pattern of antibiotics among patients with cellulitis at Gandhi Hospital, Secunderabad. **Method** It is an observational and retrospective study that was carried out during November 2022 to April 2023. Patient's data was documented in a predesigned data collection form and was analysed for patient, drug and drug therapy parameters. **Results** Ceftriaxone (21%) was the most common antibiotic acquired during the treatment. The combination of Amoxicillin and Clavulanate (17%) was also extensively used. Beta lactam antibiotics were the most common category of antibiotics acquired during the treatment of cellulitis. Apart from antibiotics, pantoprazole (57%) was the most commonly used medication. To relieve symptoms of pain and inflammation paracetamol (48%) was the most extensively used medication, followed by diclofenac (22%) and tramadol (33%). Surgical treatment was required in 25% of patients, debridement (13%) being the most common procedure acquired. The mean duration of hospital stay was 10.46 days with a standard deviation of 6 days. Majority of the patient (70%) had no complications post treatment. Only 30% patients were reported with complications, necrotizing fasciitis (11%) and diabetic foot (7%) being the most common. **Conclusion** Ceftriaxone and the combination of Amoxicillin and Clavulanate were the most commonly prescribed medications. Due to antibiotic resistance a deviation in standard treatment has been observed as per ICMR Guidelines. There is a switch of first generation cephalosporins to third generation cephalosporins. Thus, there is a need to rationalize drug therapy, to preserve efficacy of medication and prevent further resistance.

KEYWORDS: *Cellulitis, Antibiotics, Drug Utilization Review, Prescription Monitoring.*

INTRODUCTION

Cellulitis is an acute, rapidly spreading pyogenic inflammation of the dermis and subcutaneous tissue that typically worsens an injury, an ulcer, or a dermatosis¹. It is a deep dermal and subcutaneous infection caused by pathogens entering the dermis through skin breaks. Cellulitis is primarily connected to group A streptococci (*Streptococcus pyogenes*), with *Staphylococcus aureus* being consequential but less frequent pathogen. Dolor (pain), calor (heat), rubor (erythema), and tumour (swelling) are the basic indications of inflammation in cellulitis². Most cellulitis cases are identified only by history and physical examination, the physical examination of a patient suspected of having cellulitis should begin with an assessment of overall appearance and vital signs^{2, 3}. According to the ICMR Guidelines, Cefazolin, Cephalexin, Amoxicillin-Clavulanate and/or Clindamycin are indicated for the treatment of cellulitis⁴.

Antimicrobial resistance (AMR) has become a global health and development threat. As drug resistance increases globally, diseases become harder to cure and more fatal, and antibiotics are becoming inefficacious. The main factors influencing the emergence of infections that are resistant to antibiotics include improper and excessive usage of antimicrobials⁵.

Drug Utilization according to WHO is defined as "the marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences"⁶. Therefore, this study will assist in identifying any inappropriate use of antibiotics in the treatment of cellulitis, thereby rationalizing the drug therapy.

AIM OF THE STUDY

To evaluate the prescription patterns of antibiotics among patients with cellulitis at Gandhi Hospital, Secunderabad.

ETHICS APPROVAL

The study was reviewed and approved by the Institutional Review Board (IRB-AU), approval reference number: IRB-AU/2022-2023PROPOSALNUMBER08

METHODOLOGY

It is an observational and retrospective study that was carried out for a period of six months from November 2022 to April 2023 and the data obtained was analysed to review the prescribing, dispensing, administering and ingesting of medications in cellulitis patients. The study was conducted at Gandhi Hospital, Musheerabad, Secunderabad, Telangana, India. A sample size of 123 patients were involved in the study.

Inclusion Criteria:

- Patients who were diagnosed with cellulitis and were admitted into the hospital in-patients.
- Patients involving all the aetiologies of cellulitis.
- Patients of both genders of all age groups.

Exclusion Criteria:

- Pregnant and lactating women.
- Out-patients

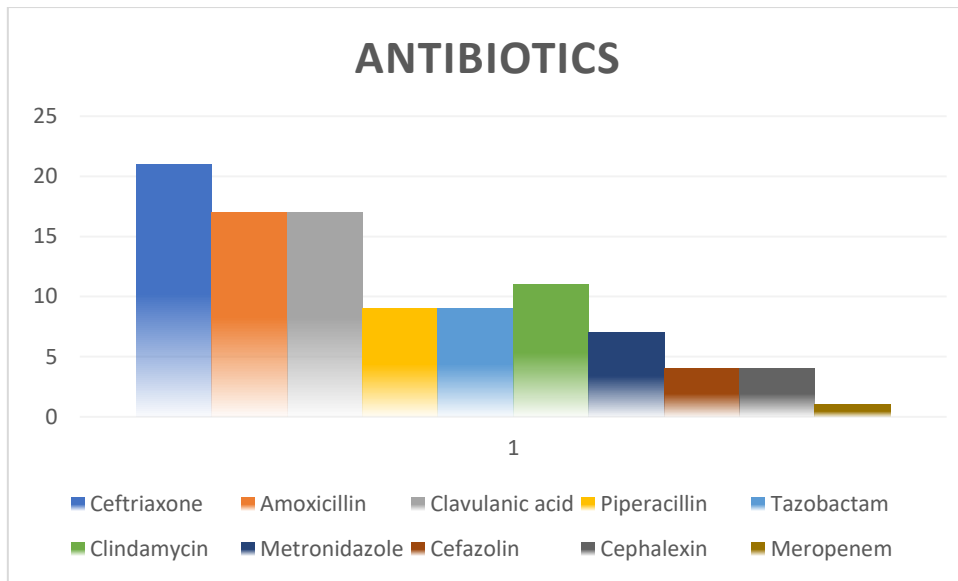
The data was collected from case sheets, medication charts and doctor notes using approved data collection forms. Clinicians in the hospital were consulted regarding the selection of antibiotic and change in the drug therapy.

The statistical analysis was performed using Microsoft Excel 2021 and IBM SPSS Statistics Software.

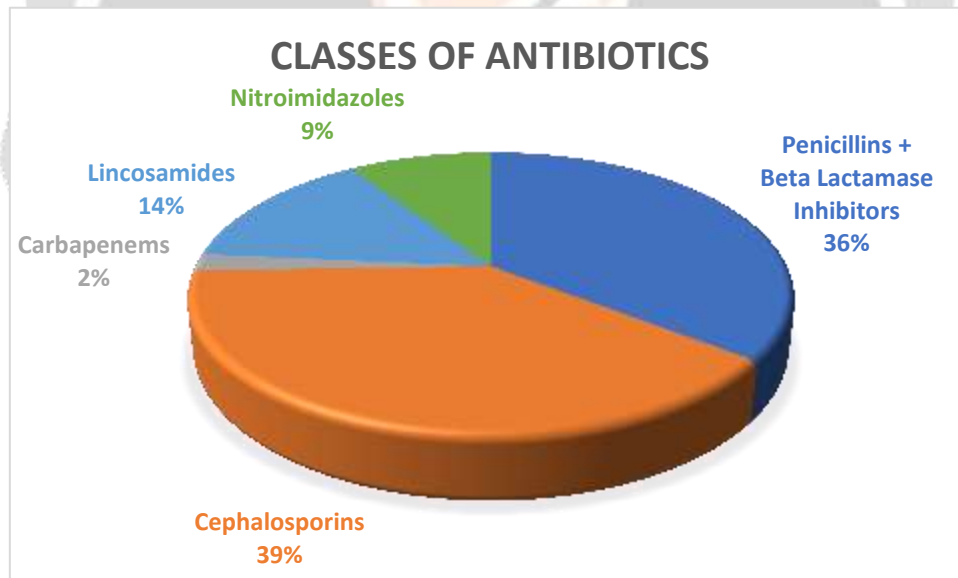
RESULTS AND DISCUSSION

A sample of 123 subjects with cellulitis were screened according to the inclusion criteria. Patients belonging to the age group of 41-70 years were found to be maximum affected with males being dominant. All the patients were prescribed the treatment regimen according to the standards of ICMR Guidelines.

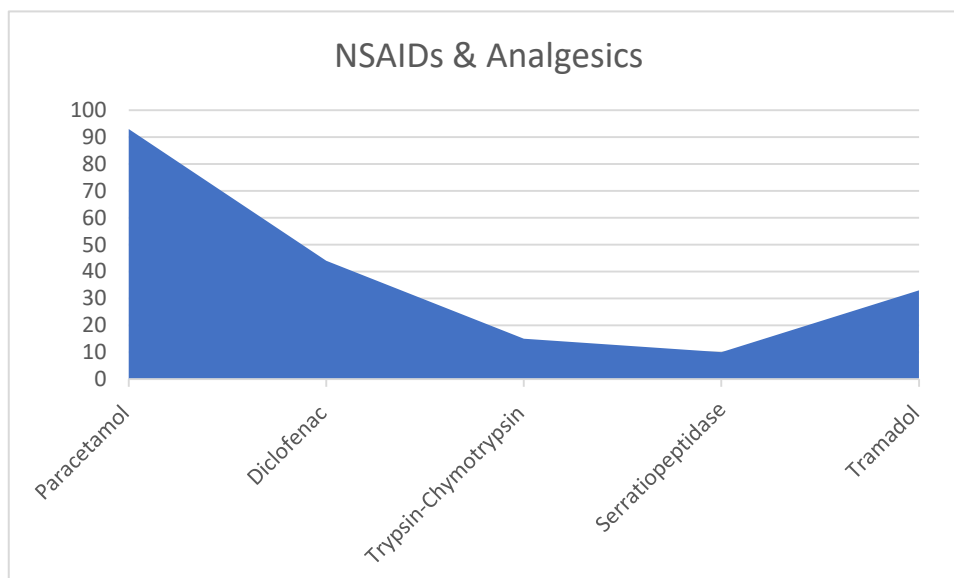
The treatment regimen consisted of Ceftriaxone (21%) along with Amoxicillin-Clavulanate (17%) and Clindamycin (11%). Piperacillin-Tazobactam (9%) was prescribed for broad spectrum antibiotic coverage. Metronidazole (7%) was prescribed if anaerobic infection was suspected or in cases of non-responsive cellulitis. Cephalexin (4%), Cefazolin (4%) and Meropenem (1%) were among the least prescribed antibiotics.



Among all the antibiotics prescribed, Cephalosporins (39%) were the most commonly used drugs. The combination of penicillins and beta lactamase inhibitors (36%) was also widely prescribed.



To relieve the symptoms of pain and inflammation, a wide range of NSAIDs and Analgesics were prescribed, with Paracetamol (48%) and Diclofenac (22%) being the most frequent. Others medications were, Tramadol (17%), Trypsin-Chymotrypsin (5%) and Serratiopeptidase (5%).



Apart from antibiotics, pantoprazole (57%) was the most commonly used medication. Around 25% of the patients required surgical management in which debridement (10%) was the mostly commonly employed procedure. Although, majority of the patients (70%) didn't develop any complications, the most frequent complication witnessed among patients with cellulitis was Necrotizing Fasciitis (11%) with a death rate of 1%.

CONCLUSION

Due to inappropriate use and unnecessary consumption of antibiotics, there is an enormous rise in the antimicrobial resistance across the globe. With the raising antibiotic resistance, there is a strong need to rationalize drug therapy. While reviewing the prescriptions of cellulitis patients we found that Ceftriaxone and the combination of Amoxicillin and Clavulanate were the most commonly prescribed medications. Due to antibiotic resistance a deviation in standard treatment has been observed as per ICMR Guidelines. There is a switch of first generation cephalosporins to third generation cephalosporins. Thus, there is a need to rationalize drug therapy, to preserve the efficacy of medication and to prevent further resistance.

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