

Pattern of antimicrobials use in chronic leg ulcers at a tertiary care hospital

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ABSTRACT

Background: Chronic leg ulcers are common among elderly population with major risk factors being diabetes, smoking etc., and their sequelae are the most common cause of disability and hospital admission with a significant impact on the quality of life. This study was taken up to evaluate usage of Antimicrobial agents (AMA) in chronic leg ulcers using WHO prescribing indicators.

Methods: A prospective, observational study, in which 101 prescriptions with antibiotics, prescribed for cases of chronic leg ulcer, were collected from the Department of Surgery, analysed and assessed using WHO prescribing indicators.

Results: One hundred and one prescriptions collected over a period of 6 weeks, were analysed using WHO prescribing indicators. Total number of drugs prescribed was 721. Average number of drugs per prescription was 7. 36% of the drugs were prescribed by their generic name and only 35% of the total drugs were from EML (2011). Prescriptions of AMA accounted for 34.4%; most common being Beta lactam (25.6%) followed by Linezolid (20.8%), Metronidazole (17.7%), Fluoroquinolones (7.6%) and combination antibiotics (28%). All patients received one or more injections. The average duration of AMA therapy was 5 days.

Conclusions: Majority of the AMAs used in the treatment of chronic leg ulcers were injection. However prescriptions from Essential Medicine List and by generic name were less frequent.

Keywords: Chronic leg ulcers, antimicrobials, injections, Essential Medicine List (EML), generic name, WHO prescribing indicators

INTRODUCTION

A chronic leg ulcer (CLU) is a break in the continuity of the skin below the level of knee persisting for more than six weeks.¹ They are a major health problem, with a prevalence of 1% in adult population, affecting principally the elderly over 65 years of age.² Although the overall prevalence of leg ulcers is relatively low, the refractory nature of these ulcers increases the risk of morbidity and mortality, and has a significant impact on patient's quality of life.^{3,4}

The common causes of ulcers are venous disease, arterial disease, metabolic disorders and neuropathy.⁵ The major risk factors being diabetes, smoking and obesity.^{6,7} Optimum management of CLUs has a large impact in

prevention of foot impairment and amputation rate in patients with leg ulcers. Appropriate management of these patients reduces the financial burden and improves patient's quality of life.^{8,9,10}

Antimicrobial agents (AMA) are the mainstay of treatment, either monotherapy with a single broad spectrum agent or combination therapy with two or more AMAs.¹¹ Therefore utilization pattern of AMA needs to be evaluated regularly to increase the therapeutic efficacy, decrease adverse effects and also to evaluate/assess the rationality of the AMA therapy.⁸

Objective data about efficacy of various antimicrobial treatments is not clear and only a few studies are available regarding the AMA use in chronic leg ulcers.

To improve the overall drug use, especially in developing countries, international agencies like WHO have applied themselves to evolve standard drug use indicators. Therefore the present study was taken up to study the pattern of AMA use in chronic leg ulcers using WHO prescribing indicators.¹² Aim of the study was to evaluate use of antimicrobial agents (AMA) in chronic leg ulcers using WHO prescribing indicators.

METHODS

This study is a prospective, observational study, in which 101 prescriptions of chronic leg ulcer admitted to the Department of Surgery, Victoria hospital attached to Bangalore Medical College and Research Institute, Bengaluru were collected daily for a period of 6 weeks. Approval was obtained from Institutional Ethics Committee before starting the study.

The prescriptions was collected from all the patients above the age of 18 years and from either sex admitted with chronic leg ulcers during the study period. Patients less than 18 years of age, out patients with CLUs and the patients who were not willing to participate in the study were excluded from the study. After taking written informed consent from the patient and/or patient's relative, data was collected from the patient's case sheet. The proforma for data collection includes patient's demographic details, chief complaints, clinical examination findings, provisional diagnosis and complete drug prescription. The prescriptions collected was analysed using WHO prescribing indicators.

WHO prescribing indicators are:

1. Average number of drugs per encounter: Average, calculated by dividing the total number of different drugs prescribed, by the number of encounters surveyed.
2. Percentage of drugs prescribed by generic name: Percentage, calculated by dividing the number of drugs prescribed by generic name, by the total number of drugs prescribed, multiplied by 100.
3. Percentage of encounters with an antibiotic prescribed: Percentage, calculated by dividing the number of patient encounters during which an antibiotic is prescribed, by the total number of encounter surveyed, multiplied by 100.
4. Percentage of drugs prescribed from Essential Medicine List: Percentage, calculated by dividing the number of drugs prescribed which are listed in the EML, by the total number of drugs prescribed, multiplied by 100.
5. Percentage of encounters with an injection prescribed: Percentage, calculated by dividing the number of patient encounters during which an injection is prescribed, by the total number of encounters surveyed, multiplied by 100.

WHO prescribing indicators for Antimicrobial Agents (AMAs);

1. Percentage of hospitalizations with one or more antimicrobial drugs prescribed: Percentage, calculated by dividing the number of patient hospitalizations with one or more antimicrobial drugs prescribed, the total number of hospitalizations studied, multiplied by 100.
2. Average duration of prescribed antimicrobial drug treatment: Average, calculated by dividing the total number of days on antimicrobial drug treatment, by the total number of antimicrobials prescribed.
3. Percentage of patients with chronic leg ulcers (CLU) who are prescribed antimicrobial drugs in accordance with standard treatment guidelines (STGs): Percentage, calculated by dividing the number of patients of CLU treated only with antimicrobial drugs per STG, by the total number of patients with CLU, multiplied by 100.
4. Percentage of antimicrobial drugs prescribed by generic name: Percentage, calculated by dividing the total number of antimicrobial drugs prescribed by generic name, by the total number of antimicrobials prescribed, multiplied by 100.

RESULTS

A total of 101 prescriptions were randomly collected and analysed during the study period. The age group of the patients ranged from 25 to 88 years, 72 were males and 33 were females. A total of 721 drugs were prescribed. Average number of drugs per prescription was 7.

Table 1: WHO prescribing indicators.

Prescribing indicators	Prescribing indicators no. and %
Total number of prescriptions analysed	101
Total number of drugs prescribed	712
Average number of drugs per encounter	7
Total number of AMAs prescribed	248 (34.2%)
Total number of injections prescribed	402
Drugs prescribed from essential medicines list	253 (35%)
Drugs prescribed by generic name	260 (36%)
Average duration of AMA therapy	7 (days)
Number of AMAs prescribed by their generic name	178

Prescriptions of AMA were 249 accounted for 34.4%. Most frequently prescribed AMAs being Beta lactams (25.6%) followed by Linezolid (20.8%), Metronidazole (17.7%), and Fluoroquinolones (7.6%). Combination

therapy of AMAs with 2 or more antibiotics was 71 out of 249 AMAs prescribed. Most common were piperacillin+tazobactam, cefoperazone+sulbactam, amoxicillin+clavulanic acid.

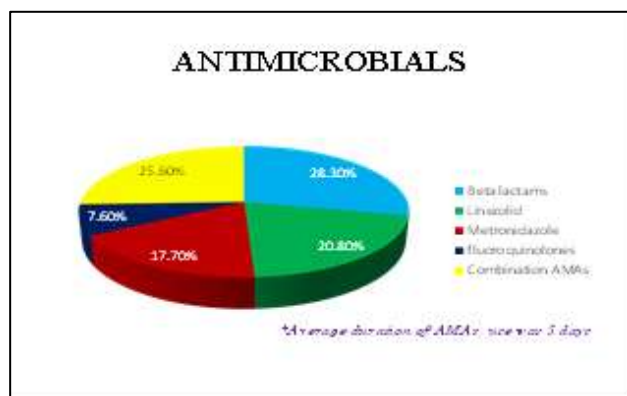


Figure 1: Use of different AMAs.

Injections were most commonly used dosage forms, followed by oral AMAs. Topical dosage forms were less frequent. The average duration of AMA therapy was 7 days.

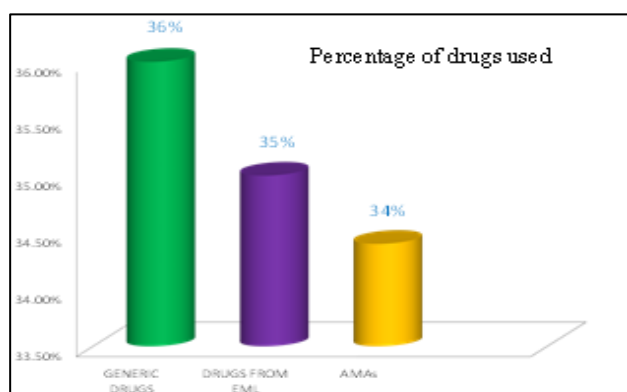


Figure 2: Percentage of drugs used.

Drugs prescribed from Essential Medicine List (EML) India -2011 were 35%, most common were Cefotaxime, Metronidazole and Fluoroquinolones. Out of 721 drugs, 36% were by their generic name and the remaining by brand name. Drugs by their brand name were most frequently prescribed.

DISCUSSION

Chronic leg ulcer is a most common condition requiring hospitalisation and associated with significant morbidity and high rates of lower extremity amputation.^{13,14} Role of physician in early diagnosis and management of CLUs is of utmost importance.¹⁵

In this study 101 in-patients with CLUs of any aetiology such as diabetic foot ulcer, non-healing venous ulcers, arterial ulcers due to PVD and traumatic leg ulcers

admitted in the wards of surgery were included. Their data collected analysed and assessed using WHO prescribing indicators as seen with previous studies.¹²

In our study, we came across 52 patients of diabetic foot ulcers, 27 non-healing venous leg ulcers, 19 arterial ulcer due to peripheral vascular diseases and others including 1 each of post burn ulcer, post snake bite and traumatic ulcer.

We found maximum number of diabetic foot ulcer patient in our study, and the most common AMA used for diabetic foot infection was linezolid which is similar with the previous studies on diabetic foot ulcer.¹⁵

Total number of drugs prescribed was 721. The average number of drug per prescription was 7, which includes 2 or more AMAs, analgesic, antacid, antiemetic, multivitamins and others. Out of 721 drugs prescribed 34.4% were AMAs. The most commonly used being Beta lactam (25.6%) followed by Linezolid (20.8%), Metronidazole (17.7%), Fluoroquinolones (7.6%). The combination antibiotics such as piptaz, amoxiclav etc accounts for 28% of the prescribed drugs. Injectable antibiotic were used in majority of prescriptions while oral prescriptions of AMAs were less frequent. Additional treatment with local antibiotics had favourable outcome in wound healing rates similar with previous studies.^{1,6,15}

All patients in our study received AMAs empirically. 28% of the patients were prescribed with combination AMAs and the remaining patients received monotherapy with a single broad spectrum antibiotic. The mean duration of empirical therapy being 5 ± 2 days which is akin with previous studies.¹⁶ The AMA therapy was changed later based on culture and sensitivity report.

These prescribing indicators are also used to measure the tendency of the prescribers to prescribe drugs by generic name. In our present study only 36% of the total drugs were prescribed by their generic name and use of brand name for drugs was more frequent.

Use of drugs from Essential Medicine List (EML) was only 35% of the total drugs prescribed; the most commonly used were Ceftriaxone, Cefotaxime, and Metronidazole. Prescription of less number of drugs from EML may be due to lack of awareness of EML.

All patients in our study received one or more injections which may be AMAs, analgesics or antacids.

CONCLUSION

Complete prescription should include name, age, sex, diagnosis, dose, dosage forms and frequency of administration and duration of therapy. Evaluation of drug therapy using WHO prescribing indicators showed that at our institute use of AMAs for the treatment of CLUs were

adequate, majority of which were in the form of injections and the average duration of treatment was 7 days. However the number of drugs prescribed by their generic names as well as from EML was less frequent, which should be improve.

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