



DRUG-DRUG INTERACTIONS IN THE TREATMENT OF DIABETIC FOOT ULCERS IN A TERTIARY CARE TEACHING HOSPITAL BETWEEN OCTOBER AND DECEMBER 2023

Dr. N. Junior Sundresh

Medical Superintendent, M.s.general Surgery, Fracs., Mba Hospital Administration. Government Cuddalore Medical College And Hospital, Chidambaram, Tamil Nadu

Dr. C. K. Dhanapal

M. Pharm. Ph.D. Professor, Coordinator-pharm. D Program, Department Of Pharmacy, Faculty Of Engineering And Technology Annamalai University

K. Vinay

Doctor Of Pharmacy (post Baccalaureate), Department Of Pharmacy Annamalai University, Chidambaram

ABSTRACT

Diabetic foot ulcers (DFUs) stand out as a major cause of morbidity and mortality among individuals with diabetes. DFUs are chronic wounds that develop on the feet of diabetic patients, often as a result of neuropathy, peripheral vascular disease, and impaired wound healing. Also in this condition, multiple drugs are used in the treatment, and the usage of drugs increases with any other comorbid conditions, therefore the safe combination use of drugs is essential. This study attempts to study drugs used in The Treatment Of Diabetic Foot Ulcers in A Tertiary Care Teaching Hospital Between October and December 2023 and to describe the possible Drug-Drug interactions. A prospective Observational Study was conducted among 14 confirmed cases of Diabetic Foot Ulcers, from the Department of Surgery of Cuddalore Government Medical College and Hospital, Tamil Nadu, India. Case sheets with DFU were considered and of age group above twenty, Drug-drug interactions Lexicomp Drug Interactions software. Males 71.4 %, females 28.6 %. Age group between 40 to 50 was 21.4%; 50 to 60 was 35.7%; 60 to 70 % was 28.6% and 70 to 80% was 14.3%. Co-morbidities, hypertension was 23.1%; hyperlipidaemic was 7.7%; CAD was 7.7%; Hypothyroidism was 7.7%; and Anaemic was 23.1 %. Drugs used, Cefotaxime 50 %, H2 blocker ranitidine used in all patients, Metformin 71.4%, Amlodipine 28.6%, acetaminophen 85.7%, atorvastatin 28.6%, Aspirin 14.3%. Possible drug-drug interactions between 127. Knowledge of possible Drug Interactions crucial for safe use of the drugs especially when multiple classes of drugs are used in combination.

KEYWORDS : Diabetic Foot Ulcer, Diabetes Mellitus, Drug-Drug Interactions

INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia, which poses significant challenges to global healthcare systems due to its rising prevalence and associated complications. Among these complications, diabetic foot ulcers (DFUs) stand out as a major cause of morbidity and mortality among individuals with diabetes. DFUs are multifactorial diseases that arise from intricate connections between peripheral vascular disease, compromised immunological response, and neuropathy. Due to the loss of protective feeling caused by neuropathy, patients are more vulnerable to accidents and hidden injuries. The tissue perfusion that is compromised by peripheral vascular disease hinders the supply of oxygen and nutrients that are essential for the healing of wounds. Furthermore, diabetes-related changes to the immune system and inflammation limit the body's capacity to fight infection and encourage tissue healing, delaying healing and raising the risk of ulcers. Also in this condition, multiple drugs are used in the treatment, and the usage of drugs increases with any other comorbid conditions, therefore the safe combination use of drugs is very essential.

MATERIALS AND METHODS

This study was a prospective Observational Study, conducted among 14 confirmed cases of Diabetic Foot Ulcers, from the Department of Surgery of Cuddalore Government Medical College and Hospital [Erst Rajah Muthiah Medical College], Chidambaram, Tamil Nadu, India. During the study case sheets with the diagnosis of DFU were considered and of the age group above twenty, also the comorbid conditions along with Diabetes mellitus were considered and case sheets of other departments were excluded. The drug-drug interactions were done by using Lexicomp Drug Interactions software.

OBSERVATION AND RESULTS

Gender Wise Distribution

In this prospective Observational Study, it was observed that Males were 71.4 % and females 28.6 % in the overall study.

Age Wise Distribution

The percentage of patients in the age group between 40 to 50 was 21.4%; 50 to 60 was 35.7%; 60 to 70 % was 28.6% and 70 to 80% was 14.3%. fig.1

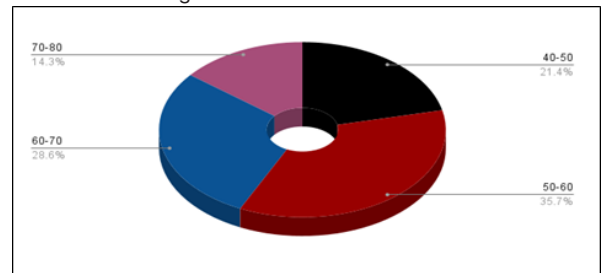


Figure 1

Co-morbid conditions were also observed during the study, patients with hypertension were 23.1%; hyperlipidemic was 7.7%; CAD was 7.7%; Hypothyroidism was 7.7%; and Anaemic was 23.1 %.

For the treatment of Diabetic Foot Ulcers, the following class of drugs was observed as the most in use, in the class of antibiotics, Cefotaxim was used in 50 % of the patients, in the class of H2 blockers ranitidine was used in all the patients, in the class of oral hypoglycemic agents Metformin was used in 71.4% of patients, in the class of antihypertensive agents Amlodipine was used in 28.6% of patients, in the class of anti pyretic agent acetaminophen was used in 85.7% patients, in the class of oral hypolipidemic agents atorvastatin was used the most in 28.6% of patients and the drugs used in the treatment of cardiovascular diseases Aspirin was used the most in 14.3% of the patient. Drugs used are shown in table 1.

On analyzing the observation, based on the drugs used in the treatment, the possible drug interactions were found to be 127; one combination of drugs was contraindicated that is between ceftriaxone and calcium carbonate, as it bears the risk of

potentially fatal particulate precipitation in lungs, kidneys; fourteen combinations are categorized under serious interactions, sixty-seven combinations of drugs are to be monitored closely and the rest forty-five is classified under minor interactions.

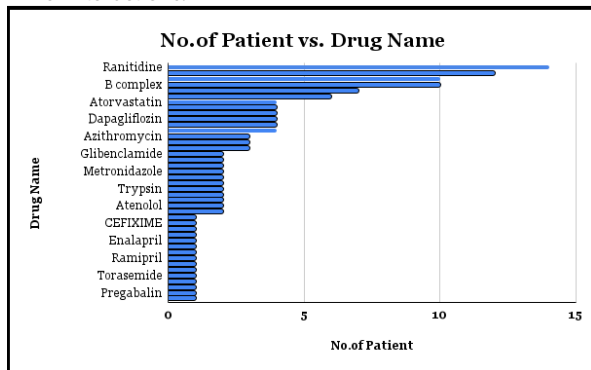


Table: 1

Limitation

Limitations of the prospective observational study include:

- Study has been carried out at a single place.
- Small sample size

DISCUSSION:

In this Observational descriptive study, fourteen case sheets were observed of the patients diagnosed with Diabetic foot ulcers along with other co-morbidities like hypertension, anemia.

In this study it was observed that the proportion of males was higher than females with 42.8%, in a study conducted it was reported that the proportion of males was higher than females, showing similarity in both the studies indicating diabetic foot ulcers are more prone to male population. [1] [2]

Most of the patients were between 50 to 60 years followed by 60 to 70 years, 40 to 50 years and the least were of age group between 70 to 80 years. In a study conducted the mean patient age was 63.1 years,[3] it is close to the majority of patients in this study therefore showing similarity.

It was observed that, based on the drugs used in the treatment, the possible drug interactions were found to be 127; one combination of drugs was contraindicated that is between ceftriaxone and calcium carbonate, as it bears the risk of potentially fatal particulate precipitation in lungs, kidneys; fourteen combinations are categorized under serious interactions, sixty-seven combinations of drugs are to be monitored closely and the rest forty-five is classified under minor interactions. The following drugs interactions were found in common with a conducted study Pantop + Iron; Ciprofloxacin + Metronidazole; Metronidazole + Ondansetron; Ondansetron + Tramadol; Ciprofloxacin + Diclofenac; Ciprofloxacin + Tramadol; Ciprofloxacin + Ondansetron; Ciprofloxacin + Metformin, thus, the similarity in both the study indicates the potential incident of DDI, therefore the combined use of such drugs should be avoided or monitored closely.

CONCLUSION:

In conclusion, diabetic foot ulcers (DFUs) continue to be a major obstacle to the management of diabetes, greatly increasing the morbidity and mortality rates of those who develop them. Because of its intricacy, management must take a multidisciplinary approach that incorporates cutting-edge wound care techniques and a variety of medical specializations. Along with this knowing possible Drug Interactions is crucial for the safe use of drugs especially when a combination of multiple classes of drugs are used.

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