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A quantitative study on usage and effect of thrombolytic agent in MI patients at tertiary care hospital

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Purpose: The thrombolytic agent is one of the treatment ways of managing diseases such as acute myocardial infarction, stroke, and heart attack. While the acute myocardial infarction (MI) is a major cause of morbidity and mortality among the Indian population, this study is performed to (1) determine the possible factors associated with effect of thrombolytic drug on myocardial infarction (MI), (2) compare the practical pattern and effectiveness of thrombolytic agents in MI patients, (3) identify the ADR associated with the thrombolytic agent post-treatment, (4) determine the overall effectiveness of the thrombolytic treatment with respect to morbidity and mortality, and (5) evaluate the thrombolytic therapy with standard guideline.

Methods: It is a quantitative study conducted in Bangalore Baptist Hospital for six months among 200 inpatients diagnosed with MI and received thrombolytic agent. The admitted cases were selected for the study on the effect of the thrombolytic agent in MI patients. Moreover, the cases' charts were reviewed for potential drug interactions; the drugs involved in interactions (dose, route, frequency, therapy duration, and indication), the laboratory investigations, the followed up, the drug-related problems of the thrombolytic agent and the pharmacist's intervention were the source of study. Alternately, the prescription audit as an important component of clinical pharmacy was applied to evaluate the status of prescriptions in order to optimize the medication use, minimize the number of medication-related problems, and improve the medication therapy. Further, the literature reviews and the clinical pharmacist's intervention were applied in this study. The comparison between the treatment procedure and guideline was done for better understanding of the link between the ADRs, Morbidity and mortality ratios. The severities of the drug interactions were assessed and categorized as major (can cause permanent damage or life risk), moderate (can cause harm, and treatment are required) or minor (can cause small or no clinical effect, with no treatment required). As an ethical consideration, the patients' records were stored confidentially, and for further analysis, the Excel was used. The findings were categorized based on the pharmacodynamics mechanism.

Results: The study showed the maximum number of the patient between ages 41 to 60 were receiving thrombolytic medication, with a diagnosis of AMI. 46% of cases had streptokinase injection, 75% of patients had dysrhythmia, and 25% had bleeding. Common dysrhythmia was 78.2% premature ventricular contraction. 46% of patients had slow ventricular tachycardia, 16% had a premature atrial contraction, and 4% had other arrhythmias. The means were CPK 604, LDH 565.4, CKMB 58.2, and CTNI 8.7. In auditing the prescription errors, 30.4% contains inappropriate abbreviation, 28.4% prescription contains drugs without generic name, 13.7% prescription not legible, 7.8% variation in dose, 6.9% frequency not mentioned, 5.9% rout not mentioned, 2.9% without signature or name of physician, 2% not in capital letter, and 2% mislabeling. There was no pharmacokinetic interaction in which synergism 81.75% and antagonism 18.6% type of interaction. During treatment, 25% of men died due to intracranial bleeding, and 34% female died due to GI bleeding. The patients with previous myocardial infarction had a higher long-term mortality rate with streptokinase (34.9 versus 21.5% with placebo, $p = 0.03$). At six months, there were significantly more cases of reinfection in the streptokinase group (7.2 versus 4.5%, $p = 0.02$).

Conclusions: The outcome showed that the majority of thrombolytic was prescribing to a male patient. It was concluded that Alteplase and Reteplase were highly prescribed the thrombolytic drug and the majority of a patient receiving thrombolytic have stayed more than eight days in the hospital. It was found that majority of prescription include no generic name with inappropriate abbreviations. On the other hand, there was a very high incidence of interaction between thrombolytic and other drugs and the most drugs interacting with thrombolytic were Aspirin, Heparin, and Enoxaparin. Also, the chance of morbidity during treatment was high while mortality was low.