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RESEARCH ARTICLE

A Prospective Observational Study on Drug use Evaluation of Antiplatelet Agents in Tertiary Care Hospital.

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ABSTRACT:

OBJECTIVES: The objective of the current research is to evaluate the drug use pattern of antiplatelet agents in a tertiary care hospital.

METHODOLOGY: A prospective and observational study was designed and conducted in general medicine department of a tertiary care hospital, ESI hospital, Ayanavaram for a period of 6 months. A total number of 110 patients were included in the study and followed to evaluate the drug use pattern of the antiplatelet agents. This study was conducted in In-patients of general medicine department prescribed with antiplatelet drugs.

RESULTS: A total number of 110 patients were studied according to the inclusion criteria. Among the study population male patients (55%) are highly prescribed with antiplatelet drugs than female patients (45%). According to age distribution the patients with the age group of 51-60 are highly prescribed with antiplatelet drugs. The patients diagnosed with Ischemic heart disease (48%) are highly prescribed with antiplatelet drugs. Drug interaction in the prescribtion were assessed and reported. Aspirin and clopidogrel are the mostly prescribed antiplatelet drugs which are prescribed in combination (89%).

CONCLUSION: We found that 89% of drug use of antiplatelet drugs are achieved in the study and the drug use was assessed to be rational. Further studies are essential to assess the drug use pattern and standard treatment guidelines.

KEYWORDS: Rational use, Antiplatelet agents, Cardiovascular diseases, Combination therapy.

INTRODUCTION:

WHO defined Drug Use (DUE) Evaluation as an ongoing, systematic, criteria-based program of medicine evaluations that will help ensure appropriate medicine use. If therapy is determined to be inappropriate, interventions with providers or patients will be necessary to optimize pharmaceutical therapy. This terminology is similar to the drug use review (DUR) and medication use review (MUR).[1] The primary intent of the drug utilization research is to smoothen the process of drug utilization and promote the rational use of drugs in the population.

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Drug Utilization Evaluation (DUE) is a study to detect variability in drug use and to support the interventions made to improve the therapeutic outcomes and quality of life of the patient. Drug use evaluation of antiplatelet drugs is essential considering the spectrum of use and the risk associated with the therapy. [2]

Cardiovascular disease (CVD) is the leading condition to cause high mortality and morbidity. Among all the cardiovascular diseases ischemic heart disease (IHD)such as myocardial infarction and angina pectoris is the world's major health problem.[3] Platelets have a major role in arterial thrombosis, which is the final event complicating cardiovascular diseases and peripheral vascular diseases, and antiplatelet therapy improves the survival of the patients with these conditions.[4] Aspirin and clopidogrel (in combination or alone) are the widely

studied drug and have most favourable risk-benefit profiles of the drugs that are available.[5] Antiplatelet therapy is intended to prevent and/or reverse platelet aggregation in arterial thrombosis most prominently in ischemic stroke and myocardial infarction.[6] Nowadays the duel antiplatelet therapy is commonly practiced for both acute events and secondary prevention in the patients. Antiplatelet therapy decreases the incidence of cardiovascular events by about 20-25% in patients with established cardiovascular disease or at high risk of cardiovascular disease.[7] The current study was designed to evaluate the utilization of antiplatelet drugs in tertiary care hospital.

ANTIPLATELET AGENTS:

Antiplatelet agents inhibit platelet aggregation and prevent formation of the platelet plug. Platelet plug forms in places of vascular injury to stop bleeding, and it can also cause pathological atherosclerosis and thrombosis.[8]

ASPIRIN:

Brand Name:

Aspiritab, Ecotrin, Bayer Aspirin.

Indications:

prophylaxis and primary treatment of cardiovascular diseases such as Angina. Ischemic stroke, etc

Dosage: 325mg, 81mg, 125mg, 60mg, 162mg.[9]

Mechanism of action:

Prostaglandins and thromboxane are essential for the platelet aggregation. Aspirin irreversible inactivates the cyclooxygenase enzyme which is required for the prostaglandin and thromboxane synthesis.

Adverse drug reactions:

Allergic reactions, seizures, upset stomach, mild headache.

Pregnancy Category:

low dose aspirin 60 -100 mg daily is sometimes recommended for pregnant women with recurrent pregnancy loss, clotting disorder and preeclampsia

Contraindications:

Blood thinners (warfarin, Coumadin, jantoven) and other salicylates such as nuprin backache caplet, kaopectate, pamprin, tricosal, trilisate, etc.

CLOPIDOGREL:

Brand Name:

Plavix

Indications:

stroke, unstable angina, atherosclerosis.

Dosage:

325 mg,300 mg, 75 mg.

Mechanism of action:

The active metabolite of clopidogrel selectively inhibits the binding of adenosine diphosphate (ADP) ti its platelet $P2Y_{12}$ receptor and subsequent ADP-mediated activation of the glycoprotein GPIIb/IIIa complex, thereby inhibiting platelet aggregation.

Adverse drug reactions:

chest pain, collection of blood under the skin, pain in general, nosebleed, shortness of breath.

Pregnancy Category:

physician advice is required.

Contraindications:

dabigatran or certainproton pump inhibitors such as omeprazole, esomeprazole, Allergic reactions, bleeding stomach ulcer, bleeding in the brain, Anticoagulants.

OBJECTIVE:

The objective of the current research is to evaluate the drug use pattern and rational use of antiplatelet agents in a tertiary care hospital.

METHODOLOGY:

A prospective and observational study was designed and conducted in general medicine department of a tertiary care hospital, ESI hospital, Ayanavaram for a period of 6 months. A total number of 110 patients were included in the study and followed to evaluate the drug utilization pattern of the antiplatelet agents. This study was conducted in In-patients of general medicine department prescribed with antiplatelet drugs. The data were collected from the medical record on daily basis after getting approval from the institutional ethics committee. The data collection format was designed and data of patients matching inclusion criteria were recorded.

INCLUSION CRITERIA:

- Male and non-pregnant female patients prescribed with antiplatelet agents in general medicine department.
- Patients aged above 30 years

EXCLUSION CRITERIA:

- Lactating and Pregnant women.
- Patient aged below 30 years.

RESULTS:

1.GENDER WISE DISTRIBUTION:

TABLE 1: GENDER WISE DISTRIBUTION

SL.NO	GENDER	NO OF PATIENTS	PERCENTAGE %
1.	MALE	60	55
2.	FEMALE	50	45

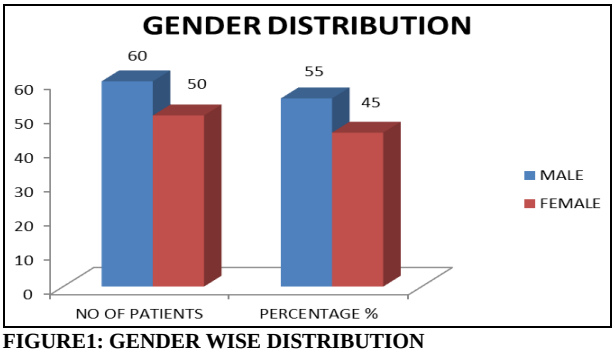

FIGURE1: GENDER WISE DISTRIBUTION

Among study population of 110 patients 60 patients are male (55%) and 50 patients are female (45%).

2.AGE DISTRIBUTION:

TABLE 2: AGE DISTRIBUTION

SL.NO	AGE GROUP	NO OF PATIENTS	PERCENTAGE%
1.	31-40	5	2
2.	41-50	17	16
3.	51-60	54	50
4.	61-70	34	31

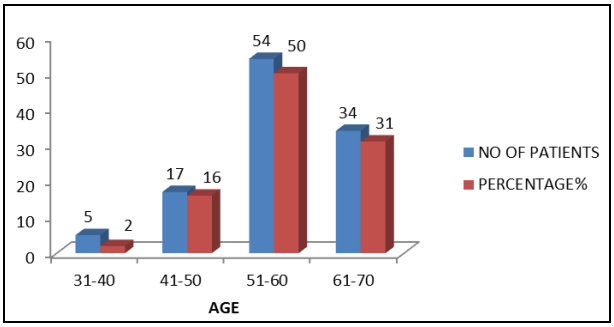

FIGURE2:AGE DISRTIBUTION

Among the study population the age was ranging from 30-70 years. the age was categorized into groups such as 31-40, 41-50, 51-60 and 61-70. In this there were 5 patients (2%) in 31-40,17 patients (16%) in 41-50, 54 patients (50%) in 51-60 and 34 patients (31%)in 61-70.

3.INDICATION BASED SEGREGATION:

TABLE 3 : INDICATION BASED SEGREGATION

SL NO	INDICATION	NO OF PATIENTS	PERCENTAGE
1.	ISCHEMIC HEART DISEASE	52	48
2.	STROKE	8	7
3.	HYPERTENSIVE HEART DISEASE	35	31
4.	RHEUMATIC HEART DISEASE	4	3
5.	PERIPHERAL HEART DISEASE	12	11

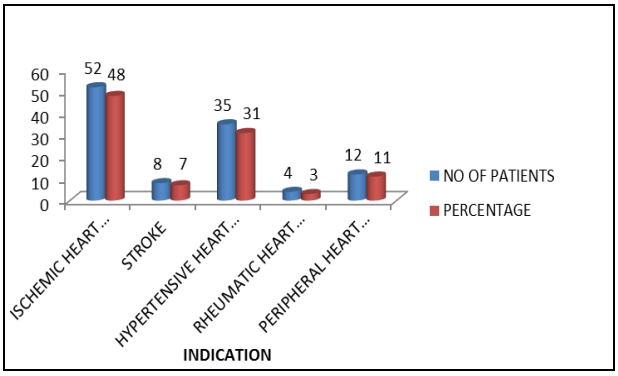

FIGURE3: INDICATION BASED SEGREGATION

In the study population the antiplatelet therapy was prescribed for patients with indications such as IHD, stroke, hypertensive heart disease, rheumatic heart disease, peripheral heart disease.

4.BASED ON CO-MORBID CONDITIONS:

TABLE 4: BASED ON CO-MORBID CONDITION

SL NO	CO-MORBIDITIES	FREQUENCY	PERCENTAGE %
1	DIABETES MELLITUS	56	51
2	HYPERTENSION	54	49
3	OBESITY	30	27

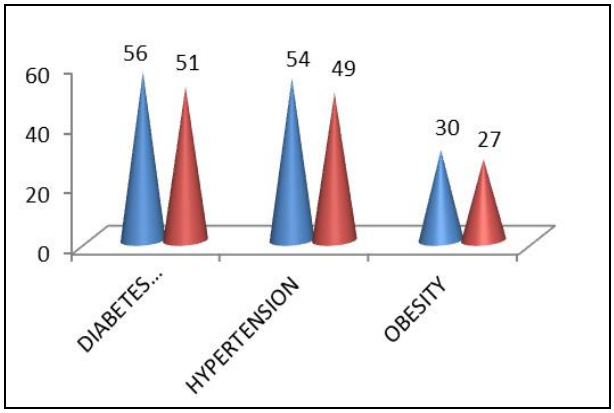

Figure4 : Based on Co-Morbid Condition

In the study population i.e, the patients using antiplatelet therapy have comorbid conditions such as diabetes mellitus (51%), hypertension (49%) and obesity (30%) are present.

5.MOST PRESCRIBED ANTIPLATELET AGENT:

TABLE 5: MOST PRESCRIBED ANTIPLATELET AGENTS

SL NO	ANTIPLATELET AGENT	FREQUENCY	PERCENTAGE %
1	ASPIRIN	110	100
2	CLOPIDOGREL	98	82

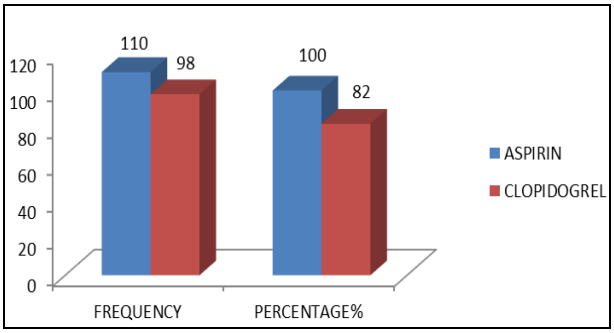

FIGURE5 : MOST PRESCRIBED ANTIPLATELET AGENT

In the tertiary care hospital among the study population aspirin and clopidogrel was the widely used antiplatelet agent where aspirin was prescribed for 100% of the study population and clopidogrel was prescribed for 98 patients (82%) in a combinational therapy with aspirin.

6.SOCIAL HABITS:

TABLE 6: SOCIAL HABITS

SL. NO	SOCIAL HABITS	FREQUEN-CY	PERCENTAGE %
1	SMOKER	44	40
2	NON-SMOKER	66	60

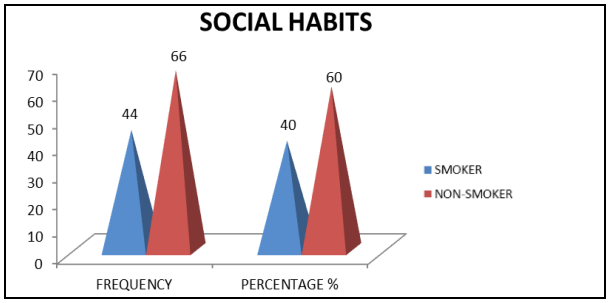

Figure6: Social Habits

Among the study population 44 patients prescribed with antiplatelet agents are having a habit of smoking.

7.UTILIZATION PATTERN OF ANTIPLATELET AGENT:

TABLE 7: UTILIZATION PATTERN

SL NO	UTILIZATION PATTERN	FREQUENCY	PERCENTAGE %
1	MONO-THERAPHY	12	11
2	DUAL-THERAPY	98	89

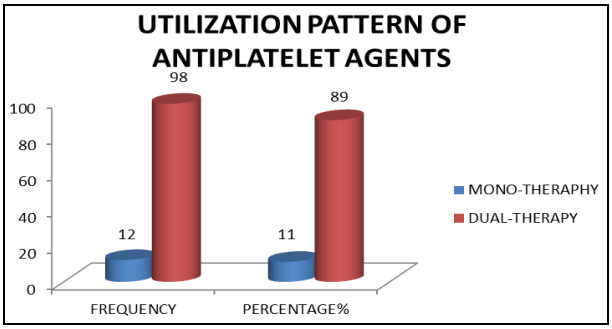

FIGURE7: UTILIZATION PATTERN

Among study population the aspirin and clopidogrel combination was prescribed i.e, dual therapy for 12 patients (98%) and aspirin alone is prescribed for 98 patients (89%).

8.DRUG INTERACTIONS:

TABLE 8: DRUG INTERACTION

SL. NO	INTERACTIONS	FREQUENCY	PERCENTAGE %
1	IBUBROFEN	3	3
2	OMEPRAZOLE	1	1
3	CLOPIDOGREL	98	89
4	ASPIRIN	98	89

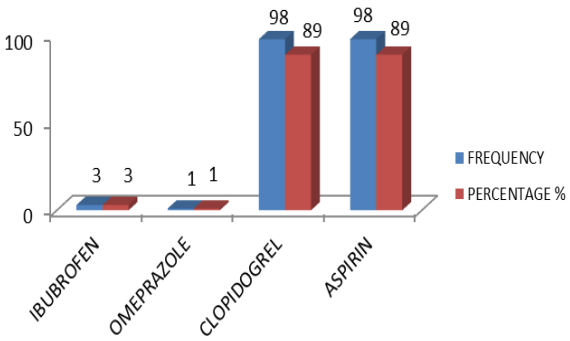

FIGURE:DRUG INTERACTIONS

Majority of the Drug Interaction in the prescription is due to dual therapy of Antiplatelet agents i.e. Aspirin (89%) and Clopidogrel (89%), where this combination is prescribed weighing benefit over risk. And other interactions are due to Ibuprofen (3%) and Omeprazole (1%).

9.GUIDELINES COMPLIANCE:

TABLE 9: GUIDELINES COMPLIANCE

SL NO	GUIDELINES COMPLIANCE	PERCENTAGE%
1	YES	89
2	NO	11

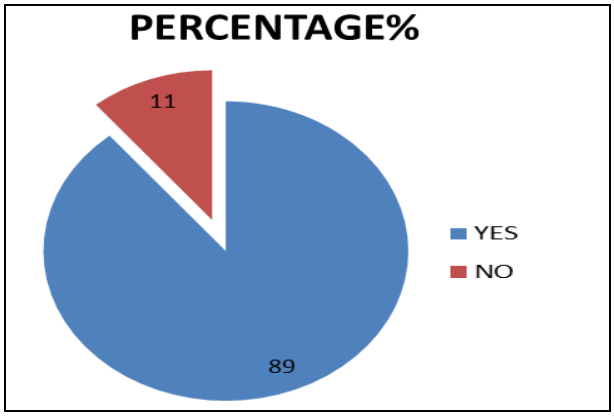

FIGURE9:GUIDELINES COMPLIANCE

The compliance of the guidelines for prescribing Antiplatelet drugs in the tertiary care hospital was estimated to be 89%.

DISCUSSION:

Cardiovascular diseases are the leading non-communicable disease and leading cause of disability and death in the world. Most death occur annually from CVDs than from any other cause. An estimation of 17.3 million people died from CVDs in 2008. It represents 30% of all global deaths. By 2030, almost 23.6 million people are estimated to die from CVDs. Cardiovascular diseases are projected to remain the single leading

causes of death. In the current study, it has been observed that the two antiplatelet drugs that are prescribed in the tertiary care hospital are Aspirin and clopidogrel. In the study the frequency of antiplatelet drug prescription in male patient (55%) is high than female patient (45%). The prevalence of CVD is higher in India due to chronic manifestation of disease across the Indian population. The patients in the age group of 51-60 (50%) are highly prescribed with antiplatelet drugs. Drug use evaluation of antiplatelet shows that aspirin along clopidogrel may provide benefits over either drugs prescribed alone. This combination has been in use and was found to reduce the mortality rate of patients with acute coronary syndrome. Among the study population (52%) of the patients prescribed with antiplatelet drugs are diagnosed to have IHD. Among study population Diabetes mellitus (51%) and Hypertension (49%) are the major comorbidities associated in the patients prescribed with antiplatelet drugs. Among the study population all (100%) 110 patients are prescribed with Aspirin and (82%) 98 patients are prescribed with Clopidogrel. In the study population (40%) of the patients were found to be smokers. Among the study population 12 patients (11%) are prescribed with single Antiplatelet agent and 98 patients (89%) with combinations of Antiplatelet drugs (Aspirin and clopidogrel). Majority of the Drug Interaction in the prescription is due to dual therapy of Antiplatelet agents i.e. Aspirin(89%) and Clopidogrel (89%),where this combination is prescribed weighing benefit over risk. And other interactions are due to Ibuprofen(3%) and Omeprazole(1%). In few critical conditions the evidence based antiplatelet therapy was not followed. The compliance of the guidelines for prescribing Antiplatelet drugs in the tertiary care hospital was estimated to be (89%). The antiplatelet drugs aspirin and clopidogrel were properly utilized but other antiplatelet drugs use was missing in the tertiary care hospital. We observed the improvement of clinical condition of the patient by the use of antiplatelet drugs through the discharge summary of the patient. The present results of the study shows that according to the NICE guidelines the rational use of the antiplatelet drugs are ensured in the particular tertiary care hospital.

CONCLUSION:

The study focus on Drug Use Evaluation of Antiplatelet drugs in Tertiary care hospital where 110 patients prescribed with antiplatelet agents are included in the study population. Aspirin and clopidogrel are the most commonly prescribed Antiplatelet agents. Antiplatelet drugs are commonly prescribed in patients with Diabetes mellitus and Hypertension as a prophylaxis of Cardiovascular diseases in the patients with risk. In the study, no major drug interactions were found in the usage of Antiplatelet drugs. Whereas combinational therapy of aspirin and clopidogrel results in drug interaction but it is prescribed due to its benefits over risk. In the study population patients with smoking habit are at risk. Antiplatelet therapy was recommended as the effective therapy for both prevention and management of Cardiovascular diseases and its Complications. Antiplatelet drugs are prescribed rationally according to the National Institute for Clinical Excellence (NICE) guidelines. This is a preliminary Study, hence future studies are required for the better evaluation of antiplatelet agents. The Rational use of Antiplatelet drugs was ensured in the tertiary care hospital.

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