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Research

Assessment of Longterm Outcomes of Ticagrelor in Coronary Artery Disease Patients

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Conflict of interest: Nil

Abstract:

Objective: The mainstay of antiplatelet medication for the treatment of coronary artery disease, especially acute coronary syndrome and post-percutaneous procedures, is ticagrelor. In order to show that ticagrelor is safe and effective in lowering major adverse cardiac events (MACEs) such as MI, stroke, and cardiovascular death, as well as its safety concerns regarding bleeding risk and side effects like breathing difficulties and significant bradycardia, the study aims to evaluate the long-term outcomes of ticagrelor in patients with coronary artery disease [CAD]. **Methodology:** One hundred and twenty people took part in the prospective observational study. Researchers looked examined the clinical outcomes following long-term medication usage and the incidence of significant adverse cardiac events in patients with coronary artery disease (including ACS, history of MI, or post PCI treated with ticagrelor). **Results:** Our study primarily focused on age, gender, and individuals with a history of coronary artery disease. The purpose of the study was to evaluate the long-term effects of ticagrelor on coronary artery disease in 120 individuals, with 84 males (70%) and 36 females (30%) making up the study population.People with lifestyle variables, such as smoking and alcohol use, as well as comorbidities, such as diabetes mellitus and hypertension, were part of the study population. According to the results of the research, the most common side effects of the medicine during long-term usage were dyspnea (47.5% of patients), bleeding (29.2% of patients), bradycardia (8.3% of patients), and significant adverse cardiac events (29.2% of patients). **Conclusion:** Patients with coronary artery disease who took ticagrelor for an extended period of time had a markedly lower risk of death from any cause and a marked decrease in the occurrence of major adverse cardiovascular events (MACE).A higher quality of life in terms of one's health was also linked to the medicine. Be cautious, nevertheless, because there is an increased risk of bleeding during treatment, especially little bleeding and dyspnea. Patients with coronary artery disease (CAD) have an attractive alternative for long-term antiplatelet treatment with ticagrelor, which may improve clinical results and quality of life.

Keywords: Coronary artery disease, Ticagrelor safety, Effectiveness, Bleeding, Dyspnea, Bradycardia, Quality of life.

Introduction:

Coronary artery disease (CAD) remains one of the leading causes of morbidity and mortality worldwide, accounting for a substantial proportion of cardiovascular-related deaths. The disease is primarily characterized by atherosclerotic plaque formation within coronary arteries, leading to reduced myocardial perfusion and increased risk of acute clinical events such as myocardial infarction (MI), unstable angina, and sudden cardiac death. Despite advancements in interventional cardiology, including percutaneous coronary intervention (PCI), optimal pharmacotherapy—particularly antiplatelet therapy—continues to play a central role in both acute management and long-term secondary prevention of CAD [1-13].

Platelet activation and aggregation are pivotal in the pathophysiology of atherothrombosis, especially in conditions such as acute coronary syndrome (ACS) and post-PCI states. Dual antiplatelet therapy

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(DAPT), typically consisting of aspirin and a P2Y12 receptor inhibitor, is considered the cornerstone of treatment to prevent thrombotic complications. Among the available P2Y12 inhibitors, ticagrelor has emerged as a potent, reversible, and direct-acting oral antiplatelet agent that provides faster and more consistent platelet inhibition compared to traditional agents such as clopidogrel [14-22].

Ticagrelor has demonstrated significant clinical benefits in reducing major adverse cardiovascular events (MACEs), including cardiovascular death, MI, and stroke, particularly in high-risk CAD populations. Large-scale clinical trials have highlighted its superiority over clopidogrel in improving survival outcomes without a substantial increase in overall major bleeding, although a higher incidence of non-procedure-related bleeding has been observed. In addition to its antiplatelet properties, ticagrelor may exert pleiotropic effects, including improved endothelial function and enhanced coronary blood flow, further contributing to its therapeutic efficacy.

However, despite its clinical advantages, ticagrelor is also associated with certain safety concerns that may influence long-term adherence and patient outcomes. Common adverse effects include dyspnea, bleeding complications, and, less frequently, bradyarrhythmias. Dyspnea, in particular, has been reported as a frequent but often transient side effect, while bleeding risk remains a critical consideration in prolonged therapy. Therefore, balancing efficacy with safety is essential when prescribing ticagrelor for extended durations [23-32].

Given the growing emphasis on long-term management of CAD and the need for real-world evidence, it is crucial to evaluate the sustained effectiveness and safety profile of ticagrelor in diverse patient populations. While randomized controlled trials provide robust evidence, prospective observational studies offer valuable insights into clinical outcomes in routine practice settings, including the influence of comorbidities and lifestyle factors.

In this context, the present study aims to assess the long-term outcomes of ticagrelor therapy in patients with coronary artery disease, including those with ACS, prior MI, or those who have undergone PCI. Specifically, the study focuses on evaluating its effectiveness in reducing major adverse cardiac events (MACEs) and its safety profile, particularly concerning bleeding risk, dyspnea, and bradycardia. By analyzing clinical outcomes in a real-world cohort, this study seeks to provide a comprehensive understanding of the risk–benefit profile of ticagrelor in long-term CAD management [33-36].

METHODS AND MATERIALS

SOURCE OF DATA:

Case report form
Prescription of patient
Patient case sheet or medication chart
Lab reports

STUDY DESIGN AND DURATION:

This research is an observational prospective study..

STUDY DURATION:

6 months.

STUDY CENTER:

The cardiology department of Kamineni Academy of Medical Sciences, Research Center, and Hospitals in L.B. Nagar, Hyderabad, has both an outpatient clinic and inpatient units.

INCLUSION CRITERIA:

1. Age ≥ 18 years.
2. Diagnosed with CAD.
3. Initiated on ticagrelor therapy.
4. patient who are willing to consent.

EXCLUSION CRITERIA :

1. Age <18.
2. Contraindication to ticagrelor.
3. Active bleeding or high bleeding risk.
4. Severe renal impairment (CrCl < 30 mL/min).
5. pregnancy and lactation.

STUDY SITE:

The study will be carried out at Kamineni Hospital, a tertiary care facility with cutting-edge patient amenities in L.B. Nagar.

METHODS OF COLLECTION OF DATA :

STUDY TOOLS:

•Self designed case report form.

• One of the most popular tools for evaluating a patient's medication adherence is the Morisky medication adherence scale (MMAS).

STUDY PROCEDURE:

The investigator would identify subjects who met the inclusion and exclusion criteria during the OP and IP visit. A self-designed case report form would be used to collect demographic and illness data from the investigator. After being informed about the

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study, the individuals' willingness to participate would be determined.

STATISTICAL ANALYSIS:

SPSS Software

SAMPLE SIZE:

100-120 patients of coronary artery disease cases in the department of cardiology during the study period of 6 months .

RESULTS:

A total of 120 patients were diagnosed with CAD initiated on ticagrelor therapy

1. GENDER WISE DISTRIBUTION

Table 1 indicates total no of patients w.r.t Gender 84 males and 36 females in a study as mentioned in fig

TABLE 1: Gender wise Distribution of study population

GENDER	NO. OF PATIENTS	PERCENTAGE
MALE	84	70%
FEMALE	36	30%
TOTAL	120	100%

2. AGE DISTRIBUTION OF VARIOUS GROUPS

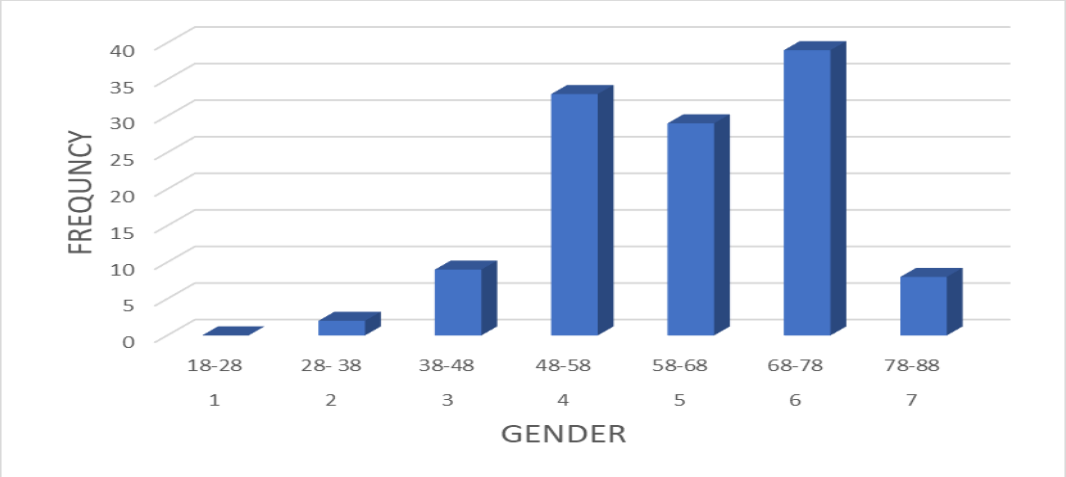

TABLE 2: Age distribution of various age groups

MEDICATION ADHERENCE

TABLE 3: shows medication adherence of study population

Medical adherence	Frequency	Percentage
Yes	116	96.60%
No	4	3.40%

TABLE 4: CLINICAL OUT COMES

OUTCOMES	PERCENTAGE OF POPULATION
DYSPNEA	47.50%
BLEEDING	29.20%
MACE	15%
BRADYCARDIA	8.30%

DISCUSSION:

A prospective observational study : “Assessment of longterm outcomes of ticagrelor in coronary artery disease patients” was carried out at Kamineni Academy of Medical Science Research centre and hospital considering both outpatients and inpatients . The data was collected for 120 patients .

In our study among 120 patients 70% were male and 30% were females,which included age group from 18-88 among which the patients with CAD were relatively higher of age group ranging between 68-78.

Among the study population the percentage of patients with comorbidities include 80% hypertensive and 28.3% diabetic. 36% were smokers and23% were alcoholic.

Although ticagrelor is effective in preventing cardiovascular events it also cause adverse effects including bleeding in 29.0% ,dyspnea in

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47.5%,MACE in 15% and bradycardia in 8.30% of population.

Although the research sample experienced minimal bleeding, the presence of lifestyle variables like smoking and alcohol consumption might raise the risk of unfavorable outcomes and exacerbate the risk of bleeding. Major adverse cardiac events (MACE) with comorbidities and mortality can be reduced with ticagrelor, according to the findings.Medication adherence improves patient outcomes and quality of life, whereas non-adherence negatively impacts patient outcomes. Because it is a reversible antiplatelet drug, any negative effects may be reversed once treatment is stopped, making it a more useful than risky option.

CONCLUSION:

The long-term effects of ticagrelor on coronary artery disease (CAD) patients have been thoroughly assessed in this study. In high-risk profiles, our results imply that ticagrelor significantly reduces severe cardiovascular events including myocardial infarction and stroke. The drug's use in the long-term therapy of CAD is supported by its improved antiplatelet effects and its ability to lower the incidence of adverse cardiac events over longer durations.

It is important to carefully choose and monitor patients, as well as weigh the advantages and dangers, especially in the setting of comorbid diseases, because the investigation revealed some detrimental effects, such as an increased risk of bleeding and dyspnea.

Finally, ticagrelor's long-term effectiveness shows a distinct advantage in the prevention of recurrent cardiovascular events, making it a significant pharmaceutical strategy for CAD patients.

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