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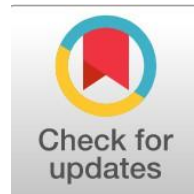
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Incidence of Acute Ischemic Stroke in Patients With Anti-Platelet Treatment

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Abstract

General Background: Acute ischemic stroke remains a leading cause of mortality and long-term disability worldwide, and antiplatelet therapy is a central strategy for primary and secondary prevention of thrombotic cerebrovascular events. **Specific Background:** Aspirin and clopidogrel are widely prescribed to reduce platelet aggregation; however, ischemic stroke may still occur despite continued treatment. **Knowledge Gap:** Data from Al-Muthanna City regarding the incidence of acute ischemic stroke among patients receiving antiplatelet therapy and their associated clinical characteristics are limited. **Aims:** This study aimed to determine the incidence of acute ischemic stroke in patients receiving antiplatelet therapy and to describe related demographic, anatomical, and treatment characteristics. **Results:** In this cross-sectional study of 102 patients admitted to Al-Hussain Teaching Hospital between September 2025 and March 2026, the mean age was 67.14 ± 7.80 years, and males constituted the majority of cases. Hypertension was the most common comorbidity. Aspirin was the predominant antiplatelet agent (70.5%), followed by clopidogrel (29.5%). Most patients reported regular medication use (84.3%), and 72.5% had received therapy for more than one year. Stroke lesions were most frequently located in the frontal and parietal lobes. Bleeding complications were uncommon and generally mild. **Novelty:** This study provides regional evidence that acute ischemic stroke occurs despite sustained antiplatelet therapy and good adherence. **Implications:** The findings support individualized risk assessment, continuous monitoring, and consideration of adjunctive preventive strategies in high-risk patients.

Highlights:

- Acute ischemic stroke was documented in patients receiving long-term antiplatelet treatment.
- Aspirin was the most frequently prescribed agent, with high reported adherence.
- Frontal and parietal lobes were the most common sites, and bleeding events were infrequent.

Keywords: Acute Ischemic Stroke, Antiplatelet Therapy, Aspirin, Clopidogrel, Stroke Prevention

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Introduction

Stroke remains one of the most significant causes of mortality and long-term disability worldwide, representing a major public health challenge (1). Among the different types of stroke, acute ischemic stroke accounts for approximately 80–85% of all cases and results from the occlusion of cerebral arteries leading to reduced blood flow and subsequent brain tissue infarction (2). The global burden of ischemic stroke continues to increase due to population aging, urbanization, and the rising prevalence of vascular risk factors such as hypertension, diabetes mellitus, and dyslipidemia (3).

Preventive strategies play a crucial role in reducing stroke incidence, with antiplatelet therapy forming a cornerstone in both primary and secondary prevention (4). Drugs such as aspirin and clopidogrel are widely prescribed to inhibit platelet aggregation and reduce thrombotic events (5). Despite their proven efficacy, a considerable number of patients still develop acute ischemic stroke while receiving antiplatelet therapy, raising important clinical concerns regarding treatment effectiveness and patient outcomes (6).

The persistence of ischemic stroke in patients under antiplatelet treatment suggests the involvement of multiple contributing factors, including drug resistance, inadequate adherence, inappropriate dosing, and the presence of uncontrolled comorbid conditions (7). Therefore, assessing the incidence of acute ischemic stroke among patients receiving antiplatelet therapy is essential for improving preventive strategies and optimizing clinical management.

The occurrence of acute ischemic stroke in patients receiving antiplatelet therapy represents a significant clinical challenge (8). It highlights potential limitations in current preventive strategies and the need for a better understanding of contributing factors.

In regions such as Al-Muthanna, limited data are available regarding the incidence of ischemic stroke among patients on antiplatelet therapy and the associated clinical characteristics (9). Local studies are essential to provide context-specific insights, considering variations in population demographics, healthcare access, and treatment practices. This study aims to address this gap by evaluating the incidence and associated factors of acute ischemic stroke in patients receiving antiplatelet therapy, thereby contributing to improved clinical management and preventive strategies. These study aimed to assess the incidence of acute ischemic stroke in patients receiving antiplatelet therapy in Al-Muthanna city and to evaluate the associated demographic, clinical, and treatment-related factors.

Methodology

Study Design

This cross-sectional study was conducted to assess the incidence of acute ischemic stroke in patients receiving antiplatelet therapy who were admitted to Al-Hussain Teaching Hospital. A total of 102 patients were included in the study. Data collection was carried out over a period extending from between 22 of September 2025 to 25 of march 2026

Ethical Approval

The study was approved by the relevant ethical committee. To ensure patient confidentiality, no personal identifiers were recorded, and each participant was assigned a unique identification number. All collected data were handled with strict confidentiality and used solely for research purposes.

Statistical Analysis

Descriptive statistics, including frequencies and percentages, were used to summarize baseline characteristics of the study population. The Chi-square test and Fisher's exact test were performed to assess associations between study variables. A p-value of less than 0.05 was considered statistically significant.

All statistical analyses were conducted using IBM SPSS version 29 software.

Results

Table 1. Demographic Characteristics of the Study Participants (N = 102)

Variable	Category	n (%) / Mean ± SD
Age (years)	Mean ± SD	67.14 ± 7.80
Sex	Male	73 (69.6)
	Female	34 (32.4)
Comorbidity	Hypertension	87 (85.0)
	Diabetes	32 (31.0)
	IHD	23 (22.0)
Residence	Al-Warka	38 (37.3)

	Al-Suwer	20 (19.6)
	Al-Majd	20 (19.6)
	Al-Rumaitha	20 (19.6)
	Samawah	2 (2.0)
	Salman	2 (2.0)

A total of 102 patients diagnosed with stroke were included in this study. The demographic characteristics of the participants are presented in Table 1. The mean age of the patients was 67.14 ± 7.80 years, indicating that most participants were elderly. Regarding sex distribution, the majority of patients were male (96.6%), while females accounted for 3.4%, and 4.9% were recorded as unknown. Concerning residence, the largest proportion of patients came from Al-Warka (37.3%). This was followed by Al-Suwer, Al-Majd, and Al-Rumaitha, each contributing 19.6% of the study population. Only a small percentage of patients were from Samawah and Salman (2.0% each).

Table 2. Anatomical Site of Stroke Lesions

Site of stroke	n (%)
Frontal lobe	19 (18.7)
Parietal lobe	18 (17.6)
Internal capsule	16 (15.7)
Temporal lobe	13 (12.8)
Occipital lobe	11 (10.8)
Basal ganglia	16 (15.7)
Brainstem	8 (7.8)
Other	1 (1.0)

Table 2 illustrates the distribution of stroke lesions according to the affected brain regions. The frontal lobe was the most frequently affected site (18.7%), followed closely by the parietal lobe (17.6%). Lesions involving the internal capsule accounted for 15.7% of cases. Other affected areas included the temporal lobe (12.8%) and occipital lobe (11.8%). Brainstem lesions represented 7.8% of cases, while basal ganglia involvement accounted for 15.6%. Only 1.0% of cases were categorized as other locations.

Table 3. Antiplatelet Therapy, Treatment Duration, and Bleeding Complications

Variable	Category		n (%) / Mean \pm SD	
	Antiplatelet therapy	Aspirin		Dose 100 mg 53 (73.6%)
		Clopidogrel 75 mg		30 (29.5)
Duration of therapy (days)	< 1 years	28 (27.5%)		80.42 \pm 50.99
	>1 years	74 (72.5%)		
Regular medication use	Yes			86 (84.3)
	No			16 (15.7)
Stopped medication	Yes			14 (13.7)
	No			88 (86.3)
Bleeding complications	None			92 (90)
	Gastrointestinal bleeding			4 (3.92)
	Epistaxis			2 (1.96)
	Gum bleeding			2 (1.96)

SD = Standard deviation; mg = milligrams

Table 3 summarizes antiplatelet therapy patterns, treatment duration, and bleeding complications among the study participants. The majority of patients received aspirin therapy (70.5%), while 29.5% were treated with clopidogrel (75 mg). Among patients receiving aspirin, 73.6% were prescribed 100 mg, whereas 27.4% received 75 mg. The mean duration of therapy was 80.42 ± 50.99 days, with 27.5% of patients receiving treatment for less than one year and 72.5% for more than one year. Most patients (84.3%) reported regular medication use, while 15.7% reported irregular use. Additionally, 13.7% of patients had stopped their medication, whereas 86.3% continued therapy. Regarding safety outcomes, 90% of patients experienced no bleeding complications, while gastrointestinal bleeding occurred in 3.92%, epistaxis in 1.96%, and gum bleeding in 1.96% of cases.

Discussion

This study evaluated the incidence of acute ischemic stroke among patients receiving antiplatelet therapy and explored the associated demographic, clinical, and treatment-related characteristics. The findings provide important insights into the occurrence of ischemic stroke despite preventive therapy and highlight several contributing factors.

The study population had a mean age of 67.14 ± 7.80 years, indicating that stroke predominantly affected older individuals. This is consistent with previous studies, which have identified advanced age as a major risk factor for ischemic stroke due to progressive vascular changes and accumulation of comorbidities (14,15). In terms of sex distribution, males constituted the majority of patients (71.6%), which aligns with findings from several regional and international studies reporting a higher incidence of stroke among males (14). However, this contrasts with other reports that have shown either a female predominance or no significant gender difference, suggesting that sex-related variations may depend on population characteristics and risk factor distribution (15). In terms of comorbidities, hypertension was the most prevalent condition (85.0%), followed by diabetes mellitus (31.0%) and ischemic heart disease (22.0%). This reflects a high burden of chronic diseases, particularly cardiovascular-related conditions, among the participants. The overlap in percentages suggests that many individuals likely had multiple comorbidities.

Regarding anatomical distribution, the frontal and parietal lobes were the most commonly affected regions. This observation is consistent with the known involvement of the middle cerebral artery territory in ischemic stroke, as reported in previous literature (16). The variation in lesion location across patients reflects the heterogeneity of stroke mechanisms and vascular involvement.

All patients in this study were receiving antiplatelet therapy, with aspirin being the most commonly used medication, followed by clopidogrel. This is in agreement with established clinical practice, where aspirin remains the first-line antiplatelet agent due to its availability, cost-effectiveness, and proven efficacy (17). The majority of patients reported regular adherence to medication, which suggests that stroke occurrence in this cohort cannot be solely attributed to poor compliance. Similar findings have been reported in other studies, indicating that ischemic stroke may occur despite appropriate antiplatelet use (18).

The occurrence of acute ischemic stroke in patients under antiplatelet therapy highlights the possibility of additional contributing factors such as antiplatelet resistance, inadequate platelet inhibition, or the presence of uncontrolled vascular risk factors (19). Genetic variability, particularly affecting clopidogrel metabolism, may also reduce drug effectiveness in certain individuals (20). These factors emphasize the complexity of stroke prevention and the limitations of a uniform treatment approach.

In terms of treatment duration, most patients had been receiving antiplatelet therapy for more than one year, suggesting long-term exposure to preventive treatment. Despite this, stroke events still occurred, which is consistent with previous studies indicating that antiplatelet therapy reduces but does not eliminate the risk of ischemic stroke (21).

Regarding safety outcomes, the majority of patients did not experience bleeding complications, and the reported adverse events were generally mild, including gastrointestinal bleeding, epistaxis, and gum bleeding. These findings are consistent with existing literature, which indicates that antiplatelet therapy is generally safe, with a relatively low incidence of serious bleeding complications (22). However, the presence of even minor bleeding events highlights the need for careful monitoring, especially in elderly patients and those on long-term therapy.

Overall, the findings of this study are in agreement with previous research demonstrating that ischemic stroke can occur despite antiplatelet therapy and that multiple factors, including patient characteristics and underlying comorbidities, play a role in determining risk (14–16). These results underscore the importance of individualized patient assessment and the need for continuous evaluation of treatment effectiveness.

Conclusion

This study demonstrated that acute ischemic stroke can occur in patients receiving antiplatelet therapy, particularly among older individuals. Aspirin was the most commonly used antiplatelet agent, and most patients reported good adherence to treatment, indicating that stroke occurrence is not solely related to non-compliance.

The frontal and parietal lobes were the most frequently affected regions, reflecting common vascular involvement patterns. Despite long-term use of antiplatelet therapy, ischemic events were still observed, suggesting the influence of additional factors such as antiplatelet resistance, comorbid conditions, and individual variability in treatment response.

In conclusion, while antiplatelet therapy remains a cornerstone in the prevention of ischemic stroke, its protective effect is not absolute. These findings highlight the need for a comprehensive and individualized approach to stroke prevention, including optimization of risk factor control, assessment of treatment effectiveness, and consideration of alternative or adjunctive therapies in high-risk patients.

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