RESEARCH ARTICLE

Journal of Anatolian Medical Research
JAMER 2025;10(2):24-27
DOI: 10.55694/jamer.1700647

Investigation of Anticoagulant and Antiaggregant Drugs Used by Patients Diagnosed with Acute Stroke in the Emergency Department

Acil Serviste Akut Stroke Tanısı Alan Hastaların Kullandığı Antikoagülan ve Antiagregan İlaçların Araştırılması

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ABSTRACT

Aim: *The aim of this study was to analyze the anticoagulant & antiaggregant drugs used by patients diagnosed with ischemic stroke in their medical history.*

Materials and Methods: *Our study was conducted retrospectively in the Emergency Department of Kayseri City Hospital. Patients over the age of 18 who were diagnosed with acute ischemic stroke and followed up between 01.01.2024-31.12.2024. The study was completed with 302 patients. Demographic data (age, gender), comorbidities, medications used by the patients were recorded and clinical outcomes were investigated.*

Results: *The median age of the 302 patients included in the study was 72 years (IQRs: 62-79, min:30 max:97). 52.3% (n=158) of the patients were male and 47.7% (n=144) were female. While 11.9% (n=36) of the patients had a history of atrial fibrillation, 32.1% (n=97) of the patients had a history of antiplatelet or anticoagulant agent use. Acetylsalicylic acid was used by 14.2% (n=43), clopidogrel by 7.3% (n=22) and oral anticoagulant agents by 10.6% (n=32). There was a statistically significant difference in in-hospital mortality according to the antiplatelet, antiaggregant or anticoagulant agents used (p= 0.012).*

Conclusion: *Accordingly, the mortality rate was lower in patients using acetylsalicylic acid compared to clopidogrel and oral anticoagulants.*

Keywords: *Stroke, anticoagulant agents, mortality*

ÖZET

Amaç: *Bu çalışma ile iskemik inme tanısı almış olan hastaların özgeçmişlerinde kullanmış oldukları antikoagülan&antiagregan ilaçların analizinin yapılması amaçlanmıştır.*

Gereç ve Yöntemler: *Çalışmamız Kayseri Şehir Hastanesi Acil Servisinde retrospektif olarak yapıldı. 01.01.2024-31.12.2024 tarihleri arasında başvurmuş 18 yaş üstü akut iskemik inme tanısı alıp takip edilmiş hastalar ile yapıldı. 302 hasta ile çalışma tamamlandı. Araştırma için hastaların demografik verileri (yaş, cinsiyet), ek hastalıkları, kullanmış oldukları ilaçları kaydedilip klinik sonlanımları araştırıldı.*

Bulgular: *Çalışmaya dahil edilen toplam 302 hastanın yaş ortanca değeri 72 (IQRs:62- 79, min:30 max:97) yıldı. Hastaların %52,3' ü (n=158) erkek %47,7' si (n=144) kadındı. Hastaların %11,9' unda (n=36) atriyal fibrilasyon öyküsü varken hastaların %32,1' i (n=97) antiplatelet veya antikoagülan bir ajan kullanım öyküsü vardı. Hastaların %14,2' si (n=43) asetilsalisilik asit, %7,3' ü (n=22) klopidogrel ve %10,6' sı (n=32) oral antikoagülan ajan kullanıyordu. Hastaların kullandığı antiplatelet, antiagregan veya antikoagülan ajan açısından hastane içi mortalite incelendiğinde istatistiksel anlamlı farklılık edildi (p= 0,012).*

Sonuç: *Buna göre asetilsalisilik asit kullanan hastalarda ölüm oranı klopidogrel ve oral antikoagülana göre daha düşüktü.*

Anahtar Kelimeler: *İnme, antikoagülan ilaçlar, mortalite*

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Cite this article as: Ünlü F, Baykan N, Balaban Ç, Özer EA, Toker İ. Investigation of Anticoagulant and Antiaggregant Drugs Used by Patients Diagnosed with Acute Stroke in the Emergency Department JAMER 2025;10(2):24-27.

Received: 17.05.2025
Accepted: 17.06.2025
Online Published: 31.08.2025

INTRODUCTION

A stroke occurs when blood flow to the brain is either blocked or when there is sudden bleeding within the brain. There are two main types of stroke; ischemic stroke, which results from a blockage in the blood supply to the brain, and hemorrhagic stroke, which is caused by bleeding in the brain. Ischemic stroke is a medical emergency that can lead to permanent brain damage, long-term disability, or even death. Symptoms of a stroke can vary from mild weakness to paralysis or numbness on one side of the face and body. Other symptoms include a sudden, severe headache, sudden weakness, difficulty seeing, and difficulty speaking or understanding speech (1).

The goal of ischemic stroke treatment is to prevent embolism that causes ischemia or to limit the progression of thrombosis in strokes resulting from unstable intra-arterial thrombosis. The agents used for these purposes are anticoagulants and antiplatelet drugs (2). While the fatality rate is 22% after a first stroke, it increases to 41% in recurrent strokes. Recurrent strokes typically cause greater disability and increase the financial burden. Therefore, all measures to prevent stroke recurrence should begin during the acute phase (3).

The aim of this study was to analyze the anticoagulant and antiplatelet drugs used in the medical histories of patients diagnosed with ischemic stroke.

MATERIALS and METHODS

Our retrospective study was conducted in the Emergency Department of Kayseri City Hospital from January 1, 2024, to December 31, 2024.

Inclusion criteria included being over 18 years of age, presenting to our hospital's emergency department, and being diagnosed with acute ischemic stroke. Exclusion criteria included patients under 18 years of age, those with incomplete data, patients diagnosed with transient ischemic attack (TIA) resembling acute ischemic stroke, and patients with ischemic stroke not in the acute phase.

After these exclusions, the study was completed with the remaining 302 patients. Patient demographics (age and gender), comorbidities, and medications were recorded, and clinical outcomes were analyzed. Among the medications used, anticoagulants and antiplatelet agents were specifically examined. In-hospital mortality was analyzed according to medication use. Patient outcomes in the emergency department and near-term mortality were also evaluated. Permission for the study was obtained from the City. Hospital Non-Interventional Clinical Research Ethics Committee (Date: 25 February 2025,, Number: 338).

Statistical Analysis

The data were statistically analyzed using IBM SPSS 27 (Statistical Package for the Social Sciences). The Kolmogorov-Smirnov test was employed to assess whether the distributions of continuous variables were normal. Descriptive statistics for continuous variables are presented as median values, interquartile ranges (IQR), and minimum and maximum values. Since the age variable did not follow a normal distribution, the Mann-Whitney U test was used to compare continuous variables between two groups. Qualitative variables are reported as frequencies and percentages. Differences between categorical variables were analyzed using the Chi-square test. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The median age of the total 302 patients included in the study was 72 (IQRs: 62- 79, min: 30 max: 97) years. Of the patients, 52.3% (n=158) were male and 47.7% (n=144) were female. While 11.9% (n=36) of the patients had a history of atrial fibrillation, 32.1% (n=97) of the patients had a history of antiplatelet or anticoagulant agent use.

Table 1. Demographic data of patients

	n	%
Age, median, IQR, years	72	62- 79 (min:30, max:97)
Female	144	47.7
Male	158	52.3
Atrial fibrillation	36	11.9
Use of anticoagulants/antiplatelets	97	32.1
Acetylsalicylic acid	43	14.2
Clopidogrel	22	7.3
Warfarin	19	6.3
Rivoroxaban	8	2.6
Apixaban	5	1.7
Emergency department outcome		
ICU admission	131	43.4
Service hospitalization	171	56.6
Hospital outcome		
Recovery without sequelae	194	64.2
Sequelial recovery	64	21.2
Mortality	43	14.2

ICU: Intensive care unit, ***IQR:*** Interquartile range

Table 2. Comparison data in terms of intensive care unit hospitalization and mortality

	Service n= 171	ICU n= 131	p	Survival n= 259	Mortality n= 43	p
Age, median (IQR), years	70 (61- 77)	74 (62- 82)	0.008*	71 (61- 78)	75 (62- 81)	0.146*
Female, n (%)	72 (42.1)	72 (55.0)	0.027	119 (45.9)	25 (58.1)	0.138
Male, n (%)	99 (57.9)	59 (45.0)		140 (54.1)	18 (41.9)	
Atrial fibrillation, n (%)	13 (7.6)	23 (17.6)	0.008	28 (10.8)	8 (18.6)	0.144
Use of anticoagulants /antiplatelets, n (%)	52 (30.4)	45 (34.4)	0.467	80 (30.9)	17 (39.5)	0.261
Acetylsalicylic acid, n (%)	25 (48.1)	18 (40.0)	0.623	41 (51.2)	2 (11.8)	0.012
Clopidogrel, n (%)	12 (23.1)	10 (22.2)		16 (20.0)	6 (35.3)	
Anticoagulants, n (%)	15 (28.8)	17 (37.8)		23 (28.7)	9 (52.9)	

ICU: Intensive care unit

There were statistically significant differences in terms of age, gender and presence of atrial fibrillation (p values were 0.008, 0.027 and 0.008, respectively). Accordingly, patients admitted to the ICU were older (74 vs. 70 years). In addition, female patients were hospitalized in ICU at a higher rate than male patients (55% vs. 45%) (Table 2).

In terms of in-hospital mortality, patients who died were older than those who lived (75 vs. 71 years), but it was not statistically significant (p=0.146). When in-hospital mortality was analyzed in terms of antiplatelet, antiaggregant or anticoagulant agents used by the patients, there was a statistically significant difference (p=0.012). Accordingly, mortality rate was lower in patients using acetylsalicylic acid compared to clopidogrel and oral anticoagulants (Table 2).

DISCUSSION

The median age of the patients included in the study was 72 years. The likelihood of ischemic stroke in this age group is higher than in the younger population and this finding is supported by the literature (4). In the CHA2DS2-VASc scoring, female gender constitutes a risk and is scored (5), whereas male gender is more common in the study conducted by Alpaslan et al. (4), which is similar to the literature data in our region.

In the literature, it is observed with a prevalence ranging from 2% in people aged <65 years to 9% in people aged >65 years and almost 18% in the elderly (>85 years) (6). In our study, the presence of Atrial fibrillation, was investigated in the patient's medical history and it was found in 11.9% of the patients. While this data can be considered similar to the literature data, it is not close (7). This suggests that the presence of AF in our country causes ischemic stroke less frequently than in Scandinavian countries.

In the case of acute ischemic stroke, anticoagulant and anticoaggregant use in the history was compared. Xian et al. (8) found that New Oral Anti Coagulants (NOACs) were associated with a lower risk of death and better long-term outcomes, including readmission, compared to warfarin. Zeng at al. (9) further supported this conclusion by showing that NOACs were more effective and safe than warfarin in patients with atrial fibrillation and frailty. In our study, similar to the literature, the mortality rate of patients with anticoagulant drug use was lower in patients with aspirin use. The reason why aspirin and anticoagulant use was found to be higher is thought to be due to the fact that it is more adopted by the society and can be adapted more easily compared to other drug groups.

When patients who used different groups of drugs according to the emergency department outcome status were examined, no significant difference was observed in terms of hospitalization in the ward or intensive care unit. While this situation can be interpreted in the very short term of the patients, there was a difference in terms of mortality, which is the long-term evaluation, which is the most valuable. There is a need for prospective and more comprehensive studies on this situation.

Conclusion

Accordingly, mortality rate was lower in patients using acetylsalicylic acid compared to clopidogrel and oral anticoagulants. Future and more comprehensive studies on this subject are needed.

Ethics Committee Approval: Prior to the study, the approval of Hacı Bektaş Veli University Non-Interventional Clinical Research Ethics Committee numbered 2024/06 and dated 25/07/2024 was obtained.
Conflict of Interest: The authors declare no conflict of interest in this study.
Financial Disclosure: No financial support was received from any institution or organization for this study.
Author Contributions: Concept-F.,Ü.; Design - F.,Ü., N.,B.; Data Collection and/or Processing- Ç.,B., A.,E.,Ö.; Analysis and/ or Comment- İ.,T.; Literature Review-F.,Ü., N.,B.; Writing- F.,Ü., N.,B.

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