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Posterior Circulation Stroke: Diagnostic and Therapeutic Challenges in the Emergency Department

Posterior Dolaşım İnmesi: Acil Serviste Tanı ve Tedavi Zorlukları

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ABSTRACT

Background: This study aimed to evaluate the diagnostic and therapeutic challenges of posterior circulation stroke in the emergency department, identify clinical presentation patterns, laboratory findings, and factors associated with clinical outcomes.

Methods: This single-center, retrospective observational study was conducted in collaboration with the Emergency Department and Department of Neurology at Eskişehir Osmangazi University Hospital between 2019 and 2023. A total of 606 patients diagnosed with posterior circulation stroke were included. Clinical, laboratory, imaging, treatment data, time-to-hospital arrival, reperfusion therapies, and outcomes were analyzed.

Results: The most common presenting symptoms were vertigo (38.6%), nausea/vomiting (35.5%), speech disturbance (32.2%), and altered mental status (28.9%). Only 13% of the patients received intravenous (IV) thrombolysis, and 7.8% underwent endovascular therapy. In the majority of 480 patients (77%) who could not receive treatment, late presentation (>4.5 hours) was detected. Advanced age, elevated glucose, creatinine, and BUN levels, as well as lower hemoglobin values, were found to be more frequent in the poor outcome group.

Conclusion: Posterior circulation strokes pose significant challenges in emergency care due to their non-specific symptoms and delayed recognition. Enhancing clinical awareness, improving triage protocols, and refining diagnostic algorithms may facilitate early identification, timely treatment, and better outcomes for this underrecognized stroke subtype.

Keywords: Posterior circulation stroke, emergency department, ischemic stroke, thrombolytic therapy, endovascular treatment, prognosis

ÖZ

Amaç: Bu çalışmanın amacı, posterior dolaşım inmelerinin acil servis koşullarında tanı ve tedavisinde karşılaşılan zorlukları değerlendirmek, klinik sunum özelliklerini, laboratuvar bulgularını ve sonlanımlarla ilişkili faktörleri belirlemektir.

Yöntemler: Bu tek merkezli, retrospektif gözlemsel çalışma, 2019–2023 yılları arasında Eskişehir Osmangazi Üniversitesi Hastanesi Acil Servisi ve Nöroloji Anabilim Dalı iş birliğiyle yürütülmüştür. Posterior dolaşım inmesi tanısı ile izlenen 606 olgu çalışmaya dâhil edilmiştir. Klinik, laboratuvar, görüntüleme ve tedavi verileri ile hastane başvuru zamanlaması, reperfüzyon uygulamaları ve sonlanımlar değerlendirilmiştir.

Bulgular: Hastaların başvuru semptomları arasında baş dönmesi (%38,6), bulantı-kusma (%35,5), konuşma bozukluğu (%32,2) ve bilinç değişikliği (%28,9) ön planda yer aldı. Olguların yalnızca %13'üne intravenöz tromboliz ve %7,8'ine endovasküler tedavi uygulanabildi. Tedavi alamayan hastaların çoğunda geç başvuru (>4.5 saat) saptandı. Kötü klinik sonlanımla anlamlı ilişkili faktörler arasında ileri yaş, yüksek glukoz, kreatinin ve BUN düzeyleri ile düşük hemoglobin değerleri yer aldı.

Sonuç: Posterior dolaşım inmeleri, özgül olmayan semptomlarla seyretmesi ve tanı koymadaki gecikmeler nedeniyle acil servislerde yönetimi güç inme alt grubudur. Bu hasta grubunun erken tanınmasını kolaylaştıracak klinik farkındalık, triyaj sistemleri ve tanısal algoritmaların geliştirilmesi, tedaviye erişimi ve prognozu iyileştirebilir.

Anahtar Kelimeler: Posterior dolaşım inmesi, acil servis, iskemik inme, trombolitik tedavi, endovasküler tedavi, prognoz

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INTRODUCTION

Stroke is a major cause of morbidity and mortality worldwide and is recognized as a significant public health issue. It imposes a substantial physical, psychological, and economic burden not only on public health budgets but also on individuals and their families. Divided into two main subtypes, ischemic and hemorrhagic, approximately 85% of all strokes are ischemic.[1] Posterior circulation (PC) strokes constitute about 20% of ischemic strokes, representing an important subgroup.[2]

Emergency department management is a critical process that directly affects patient prognosis through timely intervention and appropriate treatment strategies in ischemic strokes. However, PC strokes may present with less prominent and nonspecific symptoms compared to AC strokes, potentially leading to diagnostic delays and a high rate of misdiagnosis. Yet acute-phase interventions such as thrombolytic therapies and endovascular procedures are closely linked to the time elapsed since symptom onset; therefore, early diagnosis and rapid treatment play a decisive role in clinical outcomes.[3]

PC strokes can impair essential functions by affecting vital structures such as the brainstem, cerebellum, thalamus, and occipital lobe due to vascular occlusions in the vertebrobasilar system. Although the clinical presentation is generally heterogeneous, nonspecific symptoms such as dizziness, nausea–vomiting, and ataxia cause three times more diagnostic errors in emergency departments compared with AC strokes.[4,5] This highlights the need for special attention and a systematic approach to PC strokes in the fast-paced emergency department setting. This study aims to retrospectively evaluate the clinical characteristics, diagnostic processes, and treatment outcomes of patients who presented to the emergency department of a tertiary care center and were diagnosed with PC stroke. By identifying current challenges in the management of PC strokes, the study seeks to offer evidence-based recommendations for improving diagnostic and treatment protocols and to help address gaps in the literature. The findings are expected to serve as a guide for the early recognition and optimal management of PC strokes in emergency departments.

MATERIAL AND METHODS

Ethics Committee

This study is a single-center, retrospective observational study conducted in collaboration between the Emergency Department of Eskişehir Osmangazi University (ESOGU) Health Practice and Research Hospital and the ESOGU Department of Neurology. Prior to initiating the research, the necessary approval was obtained from the Non-Interventional Clinical Research Ethics Committee (Date: May 16, 2023, Decision No: 16). The study was conducted in accordance with the principles of the Declaration of Helsinki.

MAIN POINTS

- Subtype change occurred in 43.9% of recurrent ischemic strokes.
- Most frequent subtype reclassification was from cryptogenic to cardioembolic subtype.
- Cardioembolic strokes showed 100% consistency at recurrence.
- Recurrence was earlier in cardioembolic than in other subtypes.
- Findings support early long-term cardiac monitoring in recurrence.

Study Center

The study was carried out in a hospital with a capacity of 1,010 beds, providing tertiary-level healthcare and offering uninterrupted 24/7 service. This center has been structured as a stroke center since 2010 and is one of the few institutions in Türkiye with an official protocol. It provides comprehensive stroke care to Eskişehir and surrounding provinces within the scope of the "Brain Crisis Protocol," supported by an organized stroke team consisting of an emergency medicine physician, interventional neurologist, emergency department nurse, and radiology technician, all actively on duty 24 hours a day.

Data Collection

In this study, 606 ischemic stroke cases with posterior circulation involvement, who were admitted retrospectively between January 1, 2019, and January 1, 2023, and subsequently hospitalized in the neurology ward, stroke unit, or intensive care unit from the emergency department, were examined. Data were collected from the hospital information management system after obtaining the necessary official permissions. Data entry was performed by physicians working in the ESOGU Department of Emergency Medicine and the Department of Neurology.

The data used in the study were retrospectively collected from the hospital information management system after obtaining the required official permissions. Data recording was carried out by emergency medicine physicians in the Eskişehir Osmangazi University Department of Emergency Medicine and by neurology physicians in the Department of Neurology. Patients diagnosed with transient ischemic attack (TIA) were excluded from the study.

Demographic data of the cases; vital signs at presentation to the emergency department; electrocardiography (ECG) findings; laboratory results; comorbidities; lifestyle habits such as alcohol and tobacco use; presenting symptoms; imaging reports; and treatment modalities administered (intravenous thrombolytic therapy [Recombinant tissue plasminogen activator - rtPA], endovascular therapy [EVT], anticoagulant therapy) were obtained from patient medical histories and consultation notes. Data regarding clinical status and prognosis were collected from patient discharge summaries and follow-up visit notes. To ensure standardization in neurological examination and prognosis assessment, scales such as the NIHSS (National Institutes of Health Stroke Scale) and the mRS (modified Rankin Scale) were used. An mRS ≤ 2 was accepted as an indicator of functional independence and defined as a "good neurological outcome."

In the prehospital management process, patients' modes of arrival to the emergency department, symptom onset times, and the intervals between symptom onset and hospital arrival (symptom-to-door time) were evaluated in minutes.

In emergency department management, the following temporal parameters were analyzed: door-to-CT time, door-to-needle time, and in patients undergoing EVT, door-to-puncture time. All intervals were calculated in minutes, and the information was obtained from patient discharge summaries, consultation records, and angiography reports.

Statistical analysis

Continuous variables were defined as median [25th percentile – 75th percentile] along with minimum and maximum values. Categorical

variables were expressed as frequencies and percentages (%). The Shapiro–Wilk test was used to assess the normality of data distribution. For comparisons between two independent groups that did not show normal distribution, the Mann–Whitney U test was used. For categorical data, the appropriate test was selected from Pearson's Chi-square, Yates-corrected Chi-square, Fisher's Exact Chi-square, and Pearson Exact Chi-square tests based on cross-tabulation. All statistical analyses were performed using IBM SPSS Statistics for Windows, Version 21.0 (IBM Corp., Armonk, NY, USA). A P value <.05 was accepted as the threshold for statistical significance.

RESULTS

Of the 606 cases included in the study, 391 (64.5%) were male. The ages of the cases ranged from 18 to 99 years, with a median age of 69 years (Q1–Q3: 60–78). The median age by sex was 67 years (Q1–Q3: 57–74) in females and 58 years (Q1–Q3: 47–66) in males, and this difference was statistically significant (P<.001).

Vital signs and laboratory results at the time of presentation to the emergency department are presented in Table 1. Among the patients, 406 (67%) had hypertension (HT) and 198 (32.5%) had diabetes mellitus (DM), while tobacco and alcohol use were reported in 20.8% and 2.3% of the cases, respectively (Table 2). In terms of stroke etiology, large-artery atherosclerosis was the most common (34.5%); the distribution by sex according to the TOAST classification is shown in Table 2.

Table 1. Distribution of initial vital signs, laboratory results, and imaging findings of the cases upon first presentation to the emergency department.

	Median (Q1-Q3)
Vital Signs	
Body Temperature (°C)	36.4 (36.1-36.5)
Systolic Blood Pressure (mmHg)	150 (134-173)
Diastolic Blood Pressure (mmHg)	83 (78-94)
Pulse (beats/min)	83 (75-88)
Laboratory	
Glucose (mg/dl)	140 (113-186)
Creatinine (mg/dl)	0.97 (0.82-1.17)
BUN (mg/dl)	17.7 (13.8-22.4)
INR	1.01 (0.95-1.07)
Hemoglobin (g/dl)	14.1 (12.7-15.3)
Platelets (10^3/µL)	236 (191-282.25)
Imaging (CT/CTA)	n (%)
Basilar artery occlusion	80 (13.2)
Posterior cerebral artery occlusion	77 (12.7)
Vertebral artery occlusion	67 (11.1)
Internal carotid artery occlusion	49 (8.1)
Imaging (MRI)	
Cerebellar infarct	177 (29.2)
Pontine infarct	164 (27.1)
Thalamic infarct	59 (9.7)
Medulla oblongata infarct	44 (7.3)
Mesencephalic infarct	39 (6.4)

BUN: Blood Urea Nitrogen, INR: International Normalized Ratio

Table 2. Differences between females and males in terms of comorbidities, habits, and TOAST classification

		Female (n=215)	Male (n=391)	
		n (%)	n (%)	P
Etiology				
Hypertension	(n=368)	152 (70.7)	216 (55.2)	<.001
Diabetes	(n=205)	85 (39.5)	120 (30.7)	.028
Coronary Artery Disease	(n=139)	44 (20.5)	95 (24.3)	.283
History of Prior Stroke	(n=131)	45 (20.9)	86 (22)	.761
Heart Failure	(n=57)	28 (13)	29 (7.4)	.024
Hyperlipidemia	(n=40)	11 (5.1)	29 (7.4)	.275
Malignancy	(n=36)	9 (4.2)	27 (6.9)	.175
Valvular Heart Disease	(n=13)	11 (5.1)	2 (0.5)	<.001
Habits				
Smoking	(n=126)	10 (4.7)	116 (29.7)	<.001
Alcohol Use	(n=14)	1 (0.5)	13 (3.3)	.043
TOAST Classification				
Large-Artery Atherosclerosis	(n=209)	65 (30.2)	144 (36.8)	
Cardioembolism	(n=131)	50 (23.3)	81 (20.7)	
Small-Vessel Atherosclerosis	(n=159)	64 (29.8)	95 (24.3)	.007
Stroke Due to Other Determined Etiologies	(n=50)	9 (4.2)	41 (10.5)	
Stroke of Undetermined Etiology	(n=57)	27 (12.6)	30 (7.7)	

Pearson Chi-Square Test

Regarding the distribution of symptom onset times, 49.5% (300 cases) occurred between 08:00–15:59, 32.2% (195 cases) between 16:00–23:59, and 18% (109 cases) between 00:00–07:59. The interval between symptom onset and presentation to the emergency department ranged from 5 minutes to 30 days. The distribution of symptom-to-door times was as follows: within 0–59 minutes in 87 cases (14.4%), within 1–2 hours in 65 cases (10.7%), within 2–3 hours in 57 cases (9.4%), within 3–6 hours in 114 cases (18.8%), within 6–12 hours in 108 cases (17.8%), within 12–24 hours in 77 cases (12.7%), and 24 hours or later in 98 cases (16.2%) (Table 3).

Table 3. Patients' presentation time interval and the duration between symptom onset and emergency department admission

Presentation Times (Time Intervals in Hours)	n (%)
08:00-15:59	300 (49.5)
16:00-23:59	195 (32.5)
00:00-07:59	109 (18)
Symptom-to-Door Time (Hours)	
0-1	87 (14.4)
1-2	65 (10.7)
2-3	57 (9.4)
3-6	114 (18.8)
6-12	108 (17.8)
12-24	77 (12.7)
>24	98 (16.2)

Following presentation to the emergency department, neurology consultations were requested within 1–485 minutes, with a median time of 26 minutes (Q1–Q3: 10–90). The door-to-computed tomography (CT) time ranged from 5 to 330 minutes, with a median of 19 minutes (Q1–Q3: 12–32). Presentation times and in–emergency department workflow parameters are summarized in Table 4.

Table 4. Patient management times in the emergency department

Time Intervals	Median (Q1-Q3)
Consultation Times	26 (10-90)
Door-to-CT Times	19 (12-32)
IV rtPA (n=79), Door-to-Needle Time	62.5 (47-74.25)
EVT (n=47), Door-to-Puncture Time	102 (78.5-176)

CT: Computed Tomography

When stroke symptoms were evaluated, speech disturbance was the most frequently observed finding in 324 cases (53.5%), followed by motor deficit in 318 cases (52.5%). Differences in presenting complaints between females and males are summarized in Table 5.

Table 5. Distribution of symptoms between females and males

		Female (n=215)	Male (n=391)	
		n (%)	n (%)	P
Dizziness	(n=257)	79 (36.7)	178 (45.5)	.036
Ataxia	(n=182)	49 (22.8)	133 (34)	.004
Altered Consciousness	(n=156)	67 (31.2)	89 (22.8)	.024
Syncope	(n=62)	29 (13.5)	33 (8.4)	.050
Speech Disturbance	(n=353)	135 (62.8)	218 (55.8)	.093
Motor Deficit	(n=338)	131 (60.9)	207 (52.9)	.058
Central Facial Palsy	(n=149)	66 (30.7)	83 (21.2)	.010
Visual Loss	(n=154)	47 (21.9)	107 (27.4)	.136
Nausea and Vomiting	(n=131)	48 (22.3)	83 (21.2)	.753

Pearson Chi-Square Test

CT angiography (CTA) was performed in 88.4% of the cases (536 cases), and the most common occlusions were identified in the basilar artery (13.2%), posterior cerebral artery (12.7%), vertebral artery (11.1%), and internal carotid artery (8.1%) (Table 1). MRI findings most commonly revealed cerebellar (29.2%), pontine (27.1%), and occipital (26.7%) infarctions; OSA–PSA borderzone (10.1%), thalamic (9.7%), medulla oblongata (7.3%), and mesencephalic (6.4%) infarctions were less frequent, while acute pathology was not detected in 0.8% of the cases (5 cases) (Table 1).

Intravenous rtPA therapy was administered to 13% of the cases (79 cases), with treatment times ranging from 29 to 239 minutes, and a median door-to-needle time of 62.5 minutes (Q1–Q3: 47–74.25). A total of 452 cases (74.6%) had contraindications to IV rtPA; 54% of these presented more than 4.5 hours after symptom onset. Other contraindications included wake-up stroke (4.8%), unclear symptom onset time (3.5%), warfarin use (1.8%), novel oral anticoagulant use (0.7%), major surgery within the last 3 weeks (0.2%), and other relative reasons (9.7%). Endovascular therapy (EVT) was performed in 47 cases (7.8%), with a median door-to-puncture time of 102 minutes (Q1–Q3: 78.5–176) (Table 4).

At discharge, 292 cases (48.2%) had a good outcome (mRS ≤ 2), while 314 cases (51.8%) had a poor outcome; in-hospital mortality was recorded as 14.5% (88 cases). The median ages of the good-outcome and poor-outcome groups were 67 years (Q1–Q3: 57–75.75) and 71 years (Q1–Q3: 63–80), respectively. In the poor-outcome group, systolic blood pressure, glucose, creatinine, and blood urea nitrogen (BUN) levels were significantly higher, while hemoglobin levels were significantly lower (P<.05). Additionally, the presence of altered consciousness, syncope, and central facial paralysis was significantly associated with poor prognosis (Table 6).

Table 6. Relationship of vital signs, laboratory results, symptoms, and findings with discharge outcomes

	Good Outcome (n=292)	Poor Outcome (n=314)	P
Vital Signs and Laboratory	Median (Q1-Q3)	Median (Q1-Q3)	
Body Temperature (°C)	36.4 (36-36.5)	36.4 (36.2-36.5)	.702
Systolic Blood Pressure (mmHg)	150 (130-170)	154 (136-180)	.013
Diastolic Blood Pressure (mmHg)	82.5 (78-92)	83.5 (78-96)	.444
Pulse (beats/min)	84 (75-90)	82 (75-88)	.443
Glucose (mg/dl)	130 (108-172)	151 (119-208)	<.001
Creatinine (mg/dl)	0.94 (0.79 -1.12)	1 (0.84-1.19)	.004
BUN (mg/dl)	17.10 (13.50-20.77)	18.45 (14.30-24.30)	.001
INR	0.99 (0.94-1.06)	1.01 (0.96-1.07)	.075
Hemoglobin (g/dl)	14.30 (12.92-15.40)	13.90 (12.50-15.30)	.044
Platelets (10^3/µL)	236.50 (195-280.75)	236.50 (190-287.25)	.892
Symptoms and Findings	n (%)	n (%)	
Dizziness (n=257)	134 (45.9)	123 (39.2)	.094
Ataxia (n=182)	88 (30.1)	94 (29.9)	.957
Altered Consciousness (n=156)	44 (15.1)	112 (35.7)	<.001
Syncope (n=62)	19 (6.5)	43 (13.7)	.004
Speech Disturbance (n=353)	137 (46.9)	216 (68.8)	<.001
Motor Deficit (n=338)	125 (42.8)	213 (67.8)	<.001
Central Facial Palsy (n=149)	57 (19.5)	92 (29.3)	.005
Visual Loss (n=154)	72 (24.7)	82 (26.1)	.681
Nausea and Vomiting (n=131)	64 (21.9)	67 (21.3)	.862

Mann-Whitney U Test was used; BUN: Blood Urea Nitrogen, INR: International Normalized Ratio

DISCUSSION

In this study, 606 PC stroke cases were retrospectively examined, and diagnostic and therapeutic processes, as well as clinical outcomes from the time of emergency department presentation, were evaluated. The findings demonstrate that PC strokes present distinct diagnostic and therapeutic challenges in the emergency setting.

Posterior circulation strokes account for approximately 20% of all ischemic strokes.[2] Although they share pathophysiological similarities with anterior circulation strokes, anatomical and functional differences make diagnosis and management more difficult.[6] In our

study, the proportion of male cases (64.5%) was consistent with the male predominance reported in the literatüre.[7] Sex was not a determinant of prognosis, whereas advanced age was associated with poorer clinical outcomes.

Systolic blood pressure (SBP) was found to be higher in the poor-prognosis group. The literature indicates that both low and high SBP can adversely affect ischemic stroke prognosis.[8] SBP levels at presentation are particularly higher in PC strokes compared with anterior circulation strokes.[9] This finding suggests that elevated SBP may negatively impact functional recovery. Early and appropriate SBP control improves the success of recanalization therapies and reduces secondary brain injury; however, abrupt reductions in SBP are also associated with poor prognosis.[8,10] Yong et al. reported that SBP may serve as a stronger prognostic marker than other vital signs in PC stroke cases.[11]

In our study, glucose, creatinine, and BUN levels were significantly associated with discharge outcomes. Hyperglycemia is particularly linked to poor prognosis in non-lacunar strokes.[12] Low hemoglobin levels increase the risk of poor outcomes in both early and late phases. These parameters may be utilized as biomarkers in predicting stroke prognosis.

According to the Canadian Stroke Network data, the distribution of risk factors is generally similar in posterior and anterior circulation strokes.[13] In our study, HT emerged as the most common accompanying risk factor. The low rate of alcohol use may be related to the patient population or the method of data collection. Previous research has shown that comorbidities are associated with poor functional outcomes, higher mortality, and prolonged hospital stays in stroke.[14] Cardiovascular diseases, in particular, increase mortality risk and elevate healthcare utilization.[15] In our study, heart failure was identified as a significant risk factor for in-hospital mortality, indicating that specific comorbidities must be carefully evaluated in stroke management.

The time from symptom onset to hospital arrival is critical for treatment success; mild symptoms may lead to delayed presentation and treatment initiation.[16] While early presentation is associated with better outcomes in ischemic strokes, this effect is not as prominent in intracerebral hemorrhage.[17] In our study, the symptom-to-door time ranged from 5 minutes to 30 days, yet no significant relationship was found between this duration and discharge status or in-hospital mortality. This finding suggests that stroke prognosis is determined by the interplay of multiple factors, not time alone.

The timing of the neurology consultation is crucial in stroke diagnosis and treatment; the literature recommends an ideal evaluation time of the first 15 minutes.[18,19] In our study, consultation times showed a wide distribution, which may be associated with the atypical symptoms of posterior circulation strokes and differences in protocols. Although no significant relationship was found between consultation time and in-hospital mortality, the fact that poor-outcome cases were consulted earlier may be explained by early activation systems triggered in more severe patients. Rapid neurological assessment can reduce the risk of complications and improve the likelihood of recovery.
In PC strokes, dizziness, nausea-vomiting, ataxia, speech disturbance, motor deficit, and central facial palsy are common, whereas hemiparesis and dysarthria may present as shared features with anterior circulation strokes.[20,21] In our study, the most frequent findings were speech disturbance, motor deficit, and dizziness; impaired consciousness, syncope, and central facial palsy were significantly associated with poor outcomes. No significant association was detected between dizziness, visual loss, and nausea-vomiting and mortality. A high NIHSS score is strongly associated with poor short- and long-term prognosis; although it may not adequately reflect certain specific symptoms of PC strokes, it has been confirmed that a high score is reliable in predicting mortality.[22]

The retrospective nature of our study is limited by the inability to evaluate patients presenting with dizziness, nausea, vomiting, or altered mental status, particularly those with isolated vertigo or imbalance, as a separate subgroup. Yet approximately 25% of patients with PC stroke may present with an isolated vestibular syndrome,[23] which may lead to delayed diagnosis and increased mortality/morbidity. The HINTS (Head-Impulse, Nystagmus, Test of Skew) examination can detect PC stroke in patients with acute vestibular syndrome with high sensitivity (95.5%) and specificity (71.2%);[24] in some studies, when compared with MRI, sensitivity has been reported as 100% and specificity as 96%.[25] Therefore, in patients presenting with isolated vertigo, systematic history-taking, vascular risk assessment, a detailed neurological examination, and appropriate imaging will enhance diagnostic accuracy. Familiarity of emergency physicians with these clinical presentations and the use of bedside examination tools such as HINTS should be the focus of future prospective studies to prevent diagnostic and treatment delays.

In the prehospital period, rapid assessment and triage via the 112 system play a critical role in stroke management; however, in PC strokes, the inadequacy of screening scales such as FAST may delay diagnosis.[26] In our study, the rate of presentation via 112 was 63.2%, whereas this rate was 76.1% among fatal cases; this suggests that more severe cases are more frequently transported by ambulance. Although the door-to-CT time was short, its association with poor prognosis is attributable to more severe patients being imaged earlier.

The IV rtPA administration rate is 13%, and the mean door-to-needle time is 62.5 minutes; delayed presentations and clinical status limited treatment eligibility. The proportion of cases treated with EVT was 7.8%, and functional recovery was higher among those who received treatment. The median length of hospital stay was 4 days, and no significant association was found between emergency department length of stay and mortality; however, intensive care unit (ICU) admission was associated with poor prognosis. In our study, in-hospital mortality was 14.5%, good outcome at discharge was 48.2%, and at the third month it was 59.9%; this increase indicates the effectiveness of post-discharge rehabilitation. The literature shows that high mRS scores are associated with long-term mortality and that PC strokes have worse outcomes compared to anterior strokes.[27,28]
The limitations of our study include its retrospective design, single-center data, lack of lifestyle-related information, and its overlap with the pandemic period; however, the regular documentation of data partially mitigates these limitations.

CONCLUSION

PC strokes present significant challenges in terms of diagnosis and treatment in emergency departments. In our study, it was demonstrated that the symptom-to-door time exhibited a wide range; advanced age, elevated systolic blood pressure, hyperglycemia, impaired renal function, and low hemoglobin were associated with poor prognosis; advanced age, elevated glucose, creatinine, and BUN levels, and low hemoglobin values were more prominent in the poor-outcome group; that heart failure was a strong comorbidity increasing mortality; and that functional improvement was more pronounced particularly in cases undergoing EVT among reperfusion treatments. These findings indicate that rapid diagnosis, appropriate treatment selection, and close monitoring of risk factors are critical for patient prognosis in PC strokes.

Our study reveals the degree of attention required in the emergency department management of PC strokes, while also emphasizing the need for broader and prospective studies in this field.

Ethics Committee Approval: Ethics committee approval for this study was obtained from the Non-Interventional Clinical Research Ethics Committee of Eskişehir Osmangazi University (May 16, 2023, Decision no: 16). The study was carried out in accordance with the ethical principles stated in the Declaration of Helsinki.

Informed Consent: Signed informed consent was not obtained from the cases because of the retrpspective natura of the study.

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept - I.A., E.O.; Design - EO. Resources - E.O., I.A.; Supervision - A.O.O.; Materials - E.O., I.A.; Data Colection - E.K., F.B.K., O.A., M.E.C., Z.U.K., V.E.; Analysis and/or Interpretation - C.K., E.O.; Literature search - N.A.; Writing Manuscript - E.O.; Critical Review - E.O.

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