ORAL PRESANTATION PROGRAM

18 April 2025 | 19 April 2025

Salon 1 | Salon 2 | Salon 3 | Salon 4 | Salon 5

07:30 - 09:00	**Sözlü Bildiri Oturumu** Moderators: Uğur Lök, Levent Albayrak
07:30 - 07:35	**3173 Did you eat salad too? Anticholinergic poisonings** **SPEAKERS :**Ogün Gül
07:35 - 07:40	**6088 A Rare Case of Autoimmune Hepatitis in Emergency Department Presenting with Severe Jaundice in a Young Woman** **SPEAKERS :**Onur Bozdağ
07:40 - 07:45	**5472 Evaluation of the relationship between blood lipase level and computed tomography severity index in patients presenting to the emergency department with abdominal pain** **SPEAKERS :**Abdülaziz Doğan
07:45 - 07:50	**4933 A retrospective study, analysis of Syrian patients under temporary protection presenting to the emergency department** **SPEAKERS :**Abdülaziz Doğan
07:50 - 07:55	**5601 Simultaneous Acute Myocardial Infarction and Ischemic Stroke: A Rare but Challenging Case** **SPEAKERS :**Orhan Enes Tunçez
07:55 - 08:00	**3089 Adams-Stokes Syndrome**

08:05 - 08:10	**9762 Right adrenal hemorrhage masquerading as nephrolithiasis: a case of atypical presentation and diagnostic challenges** **SPEAKERS :**Ömer Jaradat
08:10 - 08:15	**9212 Concurrent ischemic stroke and st-elevation myocardial infarction: a lethal confluence in stroke-heart syndrome – case report and clinical implications** **SPEAKERS :**Ömer Jaradat
08:15 - 08:20	**3793 Valvular Regurgitation in Acute Ischemic Stroke: A TOAST Analysis of Cardioembolic Subtypes** **SPEAKERS :**Ömer Jaradat
08:20 - 08:25	**4553 Case series with Artificial İntelligence (AI) in the Emergency Department: Diagnostic accuracy of Chatgpt-4 in intracranial hemorrhage** **SPEAKERS :**Ömer Metin
08:25 - 08:30	**7775 A late complication due to intragastric balloon placement, Gastric perforation: A case report** **SPEAKERS :**Ömer Metin
08:30 - 08:35	**5420 A Rare and Distressing Case** **SPEAKERS :**Ömer Turalıoğlu
08:35 - 08:40	**3257 Retrospective Analysis of Patients Presenting to the Emergency Department with Thoracic Trauma** **SPEAKERS :**Ömer Yüceer
08:40 - 08:45	**2546 Comparison of the efficacy of urapidil and nicardipine in hypertensive emergency and urgency patients with chronic renal failure** **SPEAKERS :**Özcan Ağyürek
08:45 - 08:50	**8391 Portal Vein Thrombosis in a Patient Presenting with Abdominal Pain: A Case Report** **SPEAKERS :**Yavuz Selim Güzel
08:50 - 08:55	**2886 Unexpected density on CT imaging in a case of esophageal atresia** **SPEAKERS :**Yasin Yağcılar
08:55 - 09:00	**9675 A CASE OF HYPERLIPIDEMIA DEVELOPING PULMONARY EMBOLISM DURING PLASMAPHERESIS** **SPEAKERS :**Yasemin Pişgin
16:30 - 18:00	**Sözlü Bildiri Oturumu** Moderators: M. Nuri Bozdemir, Ceren Şen Tanrıkulu

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*Dear **Ömer Jaradat**,*

*The Abstract you submitted titled " **Valvular Regurgitation in Acute Ischemic Stroke: A TOAST Analysis of Cardioembolic Subtypes** " has been accepted as "Oral Presentation" by the scientific committee, within the scope of the 21th National Emergency Medicine Congress, 12th Intercontinental Emergency Medicine Congress, 12th International Critical Care and Emergency Medicine Congress, which will be held by the Turkish Emergency Medicine Specialists Association (ATUDER-EPAT) between 17-20 April 2025 at Starlight Resort Hotel Antalya. We would like to remind you that "you should be registered for the congress" in order for your Abstract to be included in the Abstract Book to be published after the congress.*

Kind regard,

Prof. Dr. Basar CANDER

President of the Association of Emergency Medicine Specialists (ATUDER)

Prof. Dr. Mehmet Gül

Congress President

Valvular Regurgitation in Acute Ischemic Stroke: A TOAST Analysis of Cardioembolic Subtypes

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EPAT ATUDER 26 Silver Jubilee 1999-2025

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TİKA

Valvular Regurgitation in Acute Ischemic Stroke: A TOAST Analysis of Cardioembolic Subtypes

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INTRODUCTION

Acute ischemic stroke (AIS) remains a leading cause of morbidity and mortality worldwide, accounting for approximately 62% of all cerebrovascular events (1). The etiology of AIS is heterogeneous, necessitating systematic classification to guide diagnosis, treatment, and prognosis. The Trial of ORG 10172 in Acute Stroke Treatment (TOAST) classification system categorizes ischemic strokes into five subtypes: large artery atherosclerosis, cardioembolic, small vessel occlusion, stroke of other determined etiology, and stroke of undetermined etiology (2). Among these, cardioembolic strokes are particularly critical, constituting 20–30% of ischemic strokes, and are often associated with severe disability and recurrence (3). Atrial fibrillation (AF) is the most common cause of cardioembolic stroke, but emerging evidence suggests that structural cardiac pathologies, such as valvular disorders, may also contribute to thromboembolic risk (4).

Mitral regurgitation (MR) and tricuspid regurgitation (TR) are valvular abnormalities characterized by backward blood flow into the left and right atria, respectively. MR affects 2–3% of the general population, with prevalence increasing with age (5), while TR is present in up to 85% of adults, though severe cases are less common (6). While these conditions are traditionally viewed as hemodynamic disorders, their association with ischemic stroke remains understudied. MR and TR may predispose to thrombus formation due to atrial enlargement, stasis, or endothelial dysfunction (7). However, current guidelines do not classify MR or TR as independent risk factors for stroke, and their role in cardioembolic stroke pathogenesis remains debated (8). This gap in knowledge underscores the need for studies evaluating the interplay between valvular regurgitation, AF, and stroke mechanisms.

The present study aims to investigate the prevalence of MR and TR in AIS subtypes, particularly cardioembolic strokes, and their association with AF. By analyzing echocardiographic, electrocardiographic, and clinical data, this work seeks to clarify whether valvular regurgitation independently contributes to thromboembolic risk or acts synergistically with AF. Given the high prevalence of MR and TR in aging populations, understanding their role in stroke etiology could refine risk stratification and therapeutic strategies.

MATERIALS AND METHODS

Study Design and Methodology

This thesis study was conducted at Kırşehir Ahi Evran University Training and Research Hospital after obtaining approval from the Non-Interventional Research Ethics Committee of Kırşehir Ahi Evran University Faculty of Medicine (decision number: 2022-02/19, date: January 25, 2022).

The data for this thesis study were obtained by retrospectively analyzing the diagnostic and therapeutic processes during the hospitalization of patients admitted to the Emergency Medicine Clinic of Kırşehir Ahi Evran University Training and Research Hospital between January 1, 2019, and December 31, 2021, who were diagnosed with acute ischemic stroke after excluding intracerebral hemorrhage via computed tomography (CT) and subsequently admitted to the neurology inpatient ward or intensive care unit. This period included the COVID-19 pandemic, which affected the entire world.

A total of 403 acute ischemic stroke patients were enrolled in the study, meeting the predefined inclusion criteria of being aged over 18 years and having a confirmed diagnosis of acute ischemic stroke, while exclusion criteria comprised individuals under 18 years of age, those diagnosed with acute hemorrhagic stroke or transient ischemic attack (TIA), patients with incomplete medical data, those who did not undergo CT imaging, and pregnant individuals.

Data Collection

Due to the retrospective nature of our study, informed consent was not obtained from the included patients. Patients meeting the inclusion criteria were enrolled in the study group. Patient data were accessed through medical records, hospital archives, and the automation system. Sociodemographic characteristics such as age, gender, and length of hospitalization were recorded.

Established ischemic stroke risk factors—hypertension, diabetes mellitus, hyperlipidemia, coronary artery disease, congestive heart failure, alcohol and tobacco use, and history of prior ischemic stroke—were evaluated and recorded. Neurological examinations at emergency department admission and clinical follow-up examinations in the neurology ward or intensive care unit were documented.

Electrocardiography (ECG) was performed at admission, and rhythm Holter monitor results recorded during hospitalization in the neurology ward or intensive care unit were analyzed for atrial fibrillation. Echocardiographic findings during hospitalization, including ejection fraction, valvular pathologies, and cardiac pathologies potentially causing cardioembolic stroke, were also evaluated and recorded.

At least one of the following imaging modalities performed at admission was reviewed: computed tomography (CT), computed tomography angiography (CTA), or diffusion-weighted imaging (DWI). The presence of large vessel atherosclerosis and the vascular territory of the infarct area were noted. Stroke subtypes were classified and recorded using the Trial of ORG 10172 in Acute Stroke Treatment (TOAST) and Oxfordshire classifications.

Since our hospital is the only tertiary center in Kırşehir province, nearly all follow-ups of patients were conducted by our neurology clinic. Subsequent clinical outcomes and mortality data were obtained from the hospital automation system and patients' e-Nabız (national digital health platform) records.

Statistical Analysis

Statistical analyses were performed using the Statistical Package for the Social Sciences 23.0 (SPSS Inc; Chicago, IL, USA). Normality assumptions for continuous variables were tested using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The homogeneity of variances was assessed via Levene's test. Descriptive statistics for variables are presented as mean ± standard deviation, median (min-max), and frequencies (n (%)).

Continuous variables were analyzed using ANOVA based on variable type and assumption fulfillment. Post-hoc comparisons of significant differences identified by ANOVA were performed using the Duncan multiple comparison test. Groups without significant differences in Duncan's test were labeled with the same letter. Categorical data were analyzed using the Chi-square test or Fisher-Freeman-Halton exact test, depending on category counts and expected values. A p-value <0.05 was considered statistically significant.

RESULTS

The study group comprised 403 patients. Analysis of demographic characteristics revealed an age range of 21–100 years, with a mean age of 72.35±12.43. Of the patients, 50.4% (n=203) were female and 49.6% (n=200) were male (Table 1).

Table 1: Age and gender characteristics of acute ischemic stroke patients.

Parameter	**Patients**
Age (years)	72.4 ± 12.4
Gender	
Female	203 (50.4%)
Male	200 (49.6%)

The values are expressed as n (%) or mean ± SD.

All patients had available electrocardiograms. Atrial fibrillation was significantly more prevalent in the cardioembolic stroke group (88.6%, n=109; *p*=0.000). Echocardiographic findings were evaluated for all patients. Reduced ejection fraction (EF <40%) was most frequently observed in the cardioembolic stroke group (26.3%, n=30; *p*=0.000). Mitral regurgitation (MR) (19.3%, n=22) and tricuspid regurgitation (TR) (16.7%, n=19) were also significantly more common in the cardioembolic stroke group (*p*=0.000). Left ventricular hypertrophy (LVH) was significantly higher in the atherothrombotic stroke group (21.1%, n=43; *p*=0.000) (Table 2).

Table 2. Diagnostic cardiological test analysis of acute ischemic stroke subtypes according to the TOAST classification.

Parameter	TOAST Classification					*p*-value
	Atherothrombotic n (%)	Cardioembolic n (%)	Lacunar n (%)	Other Etiologies n (%)	Undetermined n (%)	
Age (mean)	72.2±12.4a	74.7±13.2a	68.3±12a	51.8±19b	72.8±11a	**0.000**
Female (n, %)	100 (49.0%)	64 (56.1%)	26 (52.0%)	2 (33.3%)	11 (37.9%)	0.378
ECG Findings						
SR	185 (94.9%)	14 (11.4%)	48 (96.0%)	5 (83.3%)	22 (75.9%)	**0.000**
AF	10 (5.1%)	109 (88.6%)	2 (4.0%)	1 (16.7%)	7 (24.1%)	
Ejection Fraction						
≥50%	186 (91.2%)	73 (64.0%)	49 (98.0%)	6 (100.0%)	24 (82.8%)	**0.000**
41–49%	10 (4.9%)	11 (9.6%)	0 (0.0%)	0 (0.0%)	1 (3.4%)	
<40%	8 (3.9%)	30 (26.3%)	1 (2.0%)	0 (0.0%)	4 (13.8%)	
Echocardiography						
MR	10 (4.9%)	22 (19.3%)	0 (0.0%)	0 (0.0%)	3 (10.3%)	**0.000**
TR	8 (3.9%)	19 (16.7%)	1 (2.0%)	1 (16.7%)	2 (6.9%)	
LVH	43 (21.1%)	13 (11.4%)	4 (8.0%)	0 (0.0%)	1 (3.4%)	
Normal	142 (69.6%)	50 (43.9%)	45 (90.0%)	5 (83.3%)	21 (72.4%)	

Values are expressed as n(%) or mean ± SD. TOAST: Trial of ORG 10172 in Acute Stroke Treatment; SR: Sinus Rhythm; AF: Atrial Fibrillation; MR: Mitral Regurgitation; TR: Tricuspid Regurgitation; LVH: Left Ventricular Hypertrophy. *ANOVA; &: Chi-square test; €: Fisher-Freeman-Halton exact test.

Discussion

Our study revealed that MR and TR were significantly more prevalent in the cardioembolic stroke group (19.3% and 16.7%, respectively) compared to other TOAST subtypes. Notably, AF coexisted in 57.1% of MR cases (20/35) and 77.4% of TR cases (24/31), suggesting that valvular regurgitation may exacerbate thromboembolic risk in the presence of arrhythmia. These findings align with prior studies indicating that atrial enlargement secondary to MR or TR promotes blood stasis, a critical factor in thrombogenesis (9). For instance, left atrial dilatation in MR patients increases the risk of left atrial appendage thrombus formation, even in the absence of AF (10). Similarly, TR-associated right atrial enlargement may contribute to paradoxical embolism through a patent foramen ovale, though this mechanism was not directly assessed in our cohort (11).

The high prevalence of AF in MR and TR patients (88.6% in cardioembolic strokes) highlights a potential bidirectional relationship. AF may worsen valvular regurgitation due to loss of atrial contraction and ventricular rate irregularity, while volume overload from MR/TR

could precipitate atrial remodeling and AF (12). This vicious cycle creates a prothrombotic milieu, amplifying stroke risk. Our data support this hypothesis, as 18/20 MR patients and 19/24 TR patients with AF experienced cardioembolic strokes. These observations suggest that MR and TR, when combined with AF, may serve as markers of heightened embolic risk, warranting aggressive anticoagulation in eligible patients.

Contrary to conventional views, our findings challenge the notion that MR and TR are merely bystanders in stroke pathogenesis. Although current guidelines do not recommend anticoagulation for isolated MR or TR (13), the strong AF comorbidity in our cohort implies that valvular pathologies may identify a subgroup of patients who benefit from early rhythm control or thromboprophylaxis. For example, the 2023 European Society of Cardiology guidelines emphasize AF management in valvular heart disease but do not address regurgitation-specific risks (14). Our study underscores the need to integrate valvular assessment into stroke risk scores, particularly for patients with borderline CHA_2DS_2-VASc scores.

The association between left ventricular hypertrophy (LVH) and atherothrombotic strokes (21.1%, p=0.000) further illustrates the multifactorial nature of stroke etiology. LVH, often secondary to hypertension, correlates with small vessel disease and microthrombosis (15). However, its absence in cardioembolic strokes reinforces the distinct mechanisms underlying TOAST subtypes.

Study Strengths and Limitations

This study has several limitations. First, the retrospective design precludes causal inferences. Second, the single-center cohort may limit generalizability, though our hospital's role as the sole tertiary center in Kırşehir mitigates referral bias. Third, the lack of long-term follow-up data hinders the assessment of stroke recurrence or anticoagulation outcomes. Future prospective studies should address these gaps while exploring interventions tailored to MR/TR-associated strokes.

Conclusion

This study highlights the significant prevalence of mitral and tricuspid regurgitation in cardioembolic strokes, particularly in conjunction with atrial fibrillation. While MR and TR are not traditionally recognized as independent stroke risk factors, their frequent coexistence with AF suggests a synergistic role in thrombus formation. Clinicians should consider echocardiographic screening for valvular pathologies in stroke patients, especially those with cryptogenic or cardioembolic etiologies. These findings advocate for updated risk stratification models that incorporate valvular abnormalities and AF interplay, potentially guiding personalized anticoagulation strategies. Further research is needed to elucidate whether MR and TR independently contribute to embolic risk or merely reflect atrial cardiopathy. Addressing these questions could transform secondary stroke prevention, reducing the global burden of cerebrovascular disease.

Acknowledgement

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CERTIFICATE OF APPRECIATION

ÖMER JARADAT

Thank you for your contribution to the
12th International Critical Care And Emergency Medicine Congress & 12th Intercontinental Emergency Medicine Congress
In Conjunction With 21th National Emergency Medicine Congress & 2025 Wacem Summer Summit Of Leaders
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