International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 24s, 2025
https://theaspd.com/index.php

Assessment of Left Ventricular Dysfunction in Acute Ischemic Stroke

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ABSTRACT
Left ventricular dysfunction (LVD) is prevalent among acute ischemic stroke (AIS) patients and is significantly associated with poor outcomes. This study evaluated 80 AIS patients to determine the prognostic role of LVD. Severe LVD (EF ≤30%) showed a strong correlation with in-hospital mortality ($\chi^2 = 39.88$, $p < 0.0001$). Hypertension and coronary artery disease were major risk factors. Early echocardiography can identify high-risk patients for timely intervention.
Keywords: *Acute ischemic stroke, Left ventricular dysfunction, Ejection fraction, Hypertension, Coronary artery disease, Stroke outcome, Echocardiography*

INTRODUCTION
Acute ischemic stroke (AIS) is a leading cause of morbidity and mortality worldwide. Left ventricular dysfunction (LVD), characterized by reduced ejection fraction (EF), has been increasingly recognized as an important determinant of prognosis in AIS. This study aimed to evaluate the prevalence of LVD among AIS patients and assess its association with in-hospital mortality and stroke outcomes.

METHODOLOGY
This hospital-based cross-sectional study was conducted at Adichunchanagiri Hospital and Research Center over 18 months. A total of 80 AIS patients were enrolled. Clinical evaluation, echocardiography, and laboratory investigations (lipid profile, CBC, CRP) were performed. Ejection fraction was categorized into normal (>50%), mild (41–50%), moderate (31–40%), and severe (≤30%). Statistical analysis was done using SPSS with chi-square and t-tests.

RESULTS

EF Category	Expired	Survived	Total
Normal (>50%)	0	53	53
Mild (41–50%)	0	6	6
Moderate (31–40%)	3	0	3
Severe (≤30%)	5	13	18
Total	8	72	80

The mean age was 58.8 ± 12.2 years. LVD was present in 33.75% of patients. Severe LVD was strongly associated with mortality, while patients with normal or mild EF had better outcomes. Hypertension and CAD were significant comorbidities ($p < 0.001$).

DISCUSSION
The study demonstrates a significant correlation between reduced ejection fraction and poor stroke outcomes. Severe LVD predicted in-hospital mortality, supporting the role of echocardiography as a vital prognostic tool. Findings align with prior studies highlighting cardiovascular dysfunction as a determinant of AIS prognosis. The interplay between hypertension, CAD, and stroke severity emphasizes the need for integrated care in stroke patients.

CONCLUSION

Left ventricular dysfunction is a common and significant predictor of prognosis in AIS patients. Routine echocardiographic screening is recommended to identify high-risk patients. Preventive measures targeting hypertension, CAD, and lifestyle factors are essential to reduce LVD burden and improve outcomes.

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