

# DETECTION OF NEURON SPECIFIC ENOLASE ASA DIAGNOSTIC BIOMARKER AND ITS CORRELATION TO FUNCTIONAL NEUROLOGICAL OUTCOME IN ACUTE ISCHEMIC STROKE

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## INTRODUCTION

Stroke is one of the four leading causes of death in most countries and the number one cause of severe neurologic disability causing functional limitations. On average, someone has a stroke every 45 seconds and someone dies of stroke every 3 minutes. The risk of stroke increases with each decade of life.

Achieving an accurate diagnosis quickly in patients with suspected acute stroke is extremely important. Patients with ischemic stroke, even with relatively mild symptoms, may be eligible for intravenous thrombolysis or other means of brain reperfusion if treatment can be started within few hours of symptom onset.

A rapid blood test to confirm a clinical and imaging diagnosis of ischemic stroke (or to aid risk stratification in confirmed cases), based on a simple and low-cost near patient technology, would be extremely useful.

A possible reliable marker of neuronal tissue damage is detection of serum neuron specific enolase (NSE) which can provide early information about neuronal damage.

## AIM OF THE WORK

The objective of the present study was to assess a (neuron specific enolase) as a diagnostic biomarker of ischemic stroke, its correlation to the volume of the cerebral infarction and to the functional neurological outcome of acute ischemic stroke patient.

## SUBJECTS AND METHODS

### SUBJECTS: Participants:

The study will be conducted on fifty subjects with an acute ischemic cerebrovascular stroke. Patients will be selected from the Neurology Department of (Nariman hospital, Alexandria University, Egypt) & from the Neurology Department of (Damanhour Medical National Institute, Albohira, Egypt).

### METHODS: The ischemic stroke patients will be subjected to:

Complete history:

Clinical Examination: Full neurological clinical examination and assessment of stroke severity by using National Institute of Health Stroke Scale (NIHSS)

3. Measurement of serum Neuron Specific Enolase (NSE) concentration on admission.

4. Routine laboratory investigations

5. Radiological investigations: (C.T. BRAIN)

6. Assessment of short term outcome within first 30 days: By using modified Rankin scale (mRS)

## RESULTS

Table 1: Correlation between NSE and different parameters (n = 50).

	NSE	
	r <sub>s</sub>	P
NIHSS	0.971*	<0.001*
Brain infarction volume		
CM3	0.941*	<0.001*
%	0.942*	<0.001*
MRS	0.859*	<0.001*

r<sub>s</sub>: Spearman coefficient

\*: Statistically significant at p ≤ 0.05

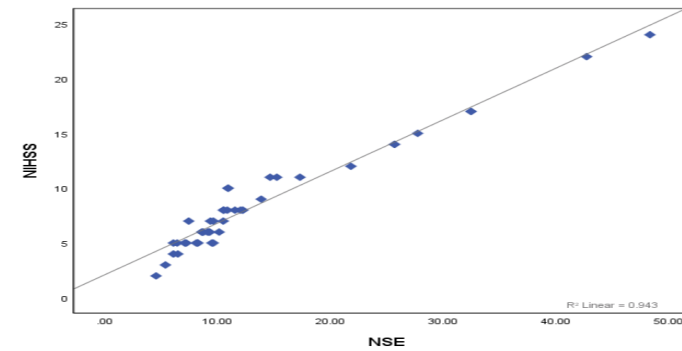


Figure 1: Correlation between NSE and NIHSS (n = 50).

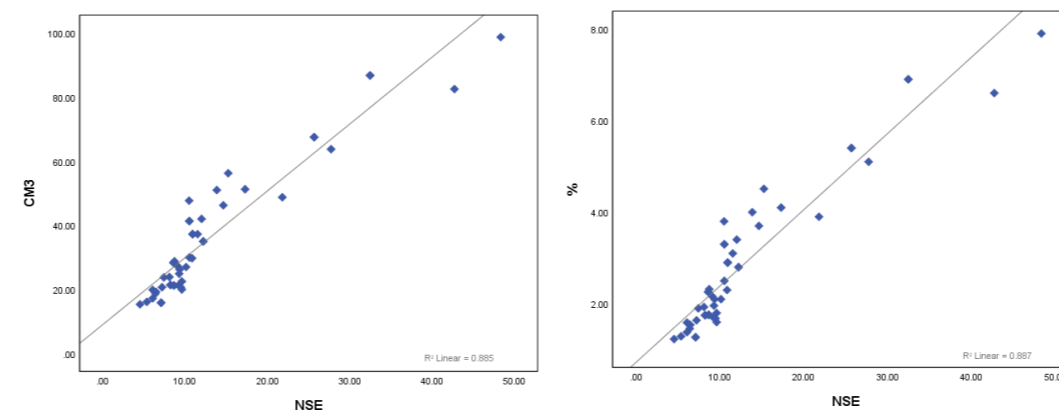


Figure 2: Correlation between NSE and Brain infarction volume (n = 50).

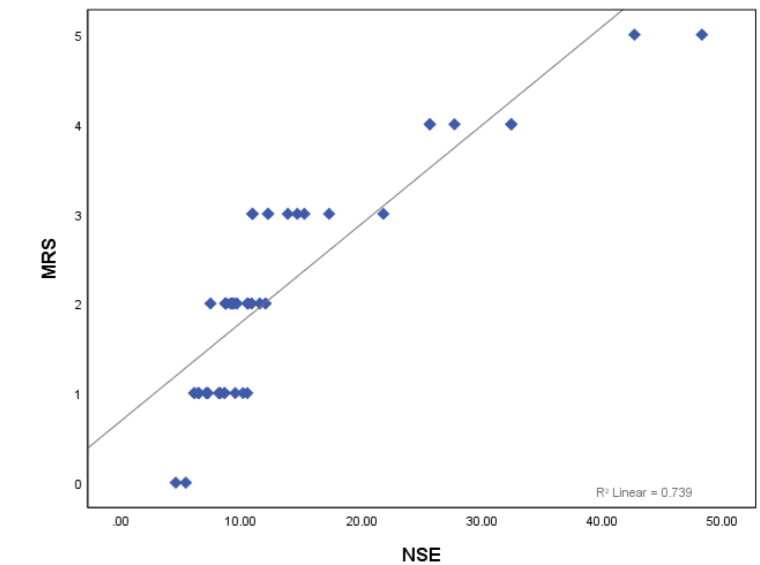


Figure 3: Correlation between NSE and MRS (n = 50).

## CONCLUSION

- Our results show higher levels of NSE in patients with ischemic stroke, indicating that NSE plays a role in the diagnosis of stroke. In terms of prognosis, there is evidence regarding the direct and indirect relationship. Moreover; Serum levels of NSE in first few days of ischemic stroke can serve as a useful marker to predict stroke severity and early functional outcome. Neuron-specific enolase (NSE) can be applied as single independent marker for prediction of mortality and short-term morbidity in ischemic stroke patients. However, to develop those observations more firmly, larger studies with serial estimation of NSE are required.