



A STUDY TO ASSES THE PREVALENCE OF TROPONIN T ABNORMALITY IN ACUTE STROKE

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ABSTRACT

Background: The brain–heart connection was described early in the 20th century when Levy¹ showed that changes in central nervous system metabolism influenced cardiac function¹ the last decade it has become evident that acute stroke in many cases is accompanied by a rise in the concentration of troponins in serum, indicating concomitant coronary diseases. **Objectives:** To assess the prevalence of troponin T abnormalities in acute stroke. **Material And Methods:** Team of trained resident who clinically diagnose case of acute stroke confirm with senior neurophysician and imaging, Serum cardiac troponin T (quantitative) was done 18-24hrs after onset of neurological deficit. **Conclusion:** Troponin T was elevated in 4.4% of patients of stroke.

KEYWORDS : Troponin, Stroke

INTRODUCTION-

Repolarization disturbances and dysrhythmias occurring in acute stroke may be due to release of catecholamines into the patients general circulation, direct neuronal effects mediated from the CNS via neurones ending on the heart or coexisting ischaemic heart disease. Whereas hormonal and neuronal effects on cardiac function at present are of uncertain clinical relevance, coexisting ischaemic heart disease represents a major issue. During the last decade, it has become evident that acute stroke in many cases is accompanied by a rise in the concentration of troponins² in serum, indicating concomitant coronary disease.

AIMS & OBJECTIVES:

To assess the prevalence of troponin T abnormalities in acute stroke.

MATERIALS & METHODS

The present study was conducted in 90 patients diagnosed of acute stroke admitted in indoors of Neurology and the Department of Medicine, G.R. Medical College and J.A. Groups of Hospitals, Gwalior from December 2016–November 2017.

The Study sample includes patients with Acute stroke presenting within 48-72 hrs. of onset of symptoms irrespective of pre-existing cardiovascular disorder. Acute stroke was diagnosed according to General History, Neurological examination and confirmed by Radiological Investigations.

Detailed history and clinical examination was done and the result recorded on a patient proforma. Data from the patient regarding blood pressure, hyperlipidaemia, diabetes mellitus, cigarettes smoking, previous stroke and coronary heart disease were recorded.

A 12-lead ECG³ was recorded in all patients on admission and day 1 and day 2 and Interpreted by consultant.

Serum cardiac troponin T⁴ (quantitative) was done 18-24hrs after onset of neurological deficit.

Blood samples were collected 12-72 hrs after admission.

Patient outcome were recorded as discharge to rest or death in hospital.

Inclusion Criteria:

- Age > 18yrs irrespective of sex
- Onset of neurological deficit within 72hrs irrespective of preexisting heart disease

Exclusion Criteria:

- Head trauma occurred within 1 week prior to stroke
- Patient had artificial functioning pacemaker
- Alternate diagnosis were not excluded
- Patient who didn't gave consent for inclusion in study

The study was approved by the Regional Committee for Ethics in

Medical Research.

For the clinician, it is important to know whether troponin t abnormalities encountered in stroke patients are caused by a coexisting acute coronary syndrome, as this would call for cardiologic intervention. Thus far, little is known about the clinical consequences of troponin changes in acute cerebrovascular disease.

OBSERVATION

A total of 90 patients were included in this study with the Diagnosis of stroke satisfying the inclusion and exclusion criteria. Depending on the type of stroke, case s were divided into two groups. Group 1 Ischemic & Group 2 Hemorrhagic.

Table No. 1

Type	Number of cases (n=90)
Ischemic	56 (62.2%)
Hemorrhagic	34 (37.8%)

Table No. 2 Table Showing Troponin T Level In Stroke

TROPONIN T	Ischemic (n=56)	Hemorrhagic (n=34)
Normal	53 (94.6%)	33 (97%)
Elevated	3 (5.4%)	1 (3%)

Above table shows increased incidence of positive TnT in Ischemic stroke.

Table No. 3 Relationship Of Troponin T With Risk Factors And Mortality

	Mortality (n=16)	
	Normal troponin (n=15)	Elevated troponin (n=1)
Hypertension	10 (66.6%)	1 (100%)
Diabetes	3 (20%)	0 (0%)
CAD	1 (6.6%)	0 (0%)
CVA	0 (0%)	0(0%)
Smoking	5 (33.3%)	1 (100%)
Dyslipidemia	2 (13.3%)	1 (100%)

Above table shows mortality is highest among hypertensive patients and higher incidence in TnT positive patient with hypertension, smoking and dyslipidemia as risk factor.

DISCUSSION

The brain – heart connection was described early in 20th century when Levy showed that changes in CNS influence the cardiac function. In clinical practice, During the last decade, it has become evident that acute stroke in many cases is accompanied by a rise in the concentration of troponin in serum, indicating concomitant coronary disease. For the clinician, it is important to know whether ECG abnormalities encountered in stroke patients are caused by coexisting acute coronary symptom, as this would call for cardiology intervention. Thus far little is known about the clinical consequences of troponin changes in acute CVD.

The present work "A study to asses the prevalence of troponin t abnormality in acute stroke" was done in G R Medical College and JA Group of Hospital, Gwalior , in which 90 patients of acute stroke was admitted in neurology and medicine wards were studied from from December 2016 –November 2017. These patient were meticulously studied for type of stroke , risk factors , vital parameters, biochemical, ECG, radiological investigation, short term outcome during 3 days hospital l stay and factors ending in mortality.

For the purpose of analysis , these 90 patients of study sample were divided into two main groups:

- Group 1 –Ischemic stroke
- Group 2-hemorrhagic stroke

Incidence Of Stroke Type

Using the "WHO 2005" definition of stroke incidence of stroke type in present study was found to be 62.2% for ischemic stroke and 37.8% for hemorrhagic stroke.

SEX-In present study, incidence of stroke were more in males 65.5 % than females 34.5%.

AGE-In present study patient were selected from 18-80 years and above o f age. Higher incidence o f stroke was seen in patients from 60-69 years age group 32.3% and 70-79years age group 21.2%.

In present study, young stroke defined as stroke in age <40 years was found in 11 (12.1%) patients.

The mean age for the population studied was 58.24. Mean age for men 57.21 and women 60.

Troponin T Level-

CTnT has a predictive value for prognosis, along with its high specificity and sensitivity to myocardial injury (*Lindahl et al. 1996*). Stroke , which also results in myocardial injury, causes elevation n in cTnT levels (*Mair 1997; James et al 2000*)

In the present study of 90 patients, TnT was found elevated in 4 patients (4.4%) when done by qualitative method which may have resulted in detecting lesser incidence of CAD. The elevation in TnT was more in ischemic group (5.4%) when compared to hemorrhagic group (3%) but this difference was statistically insignificant.

B Fure et al 2006 reported TnT elevation in 9.6% patients .cut off >0.04ug/L similar to present study Apak et al 2005 reported raised TnT in 32% cases. Cut off>_0.1ng/ml.

In the present study patients in whom TnT was elevated were found have following risk factors with strong association to TnT. In ischemic group hypertension (33%), CVA (33%), smoking (33%), dyslipidemia (33%) were associated with increased TnT levels and these incidences where much higher than patients with normal troponin. In hemorrhagic group hypertension (100%), smoking (100%), dyslipidemia (100%) were associated with increased TnT levels.

Although TnT has shown 100% correlation with risk factors but the sample size being small so that no conclusions can be drawn with certainty from this observations.

So it may be possible that abnormalities are caused by concomitant IHD rather than hormonal or neuronal effect of CVA.

CONCLUSION

The present study entitled " A study to asses the prevalence of troponin t abnormality in acute stroke " was done in GR Medical College and JA Group of Hospitals, Gwalior

- The prevalence of Troponin T in acute stroke is 4.4% of patients.
- 62% patients were of ischemic stroke and 38% were hemorrhagic stroke.
- 65.5% of these were males and 34.5% females.
- Highest incidence seen in age group 60-69 years in both sexes.
- Mortality incidence was 17.7% is in hospitalized patients.
- Outcome was grave in patients who were in hemorrhagic group (56.25%), comatose on presentation (45%), high blood pressure on admission (68.75%).
- Long term cardiac monitoring is mandatory in patient with acute stroke.

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