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Estimated Troponin Level in patients with Acute Ischemic Stroke In Al-Muthanna province / Iraq

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Abstract:

Background : Acute ischemic stroke patients may exhibit increased levels of serum troponin, which is an indicator of damage to the heart muscle caused by reduced blood flow. Additionally, there is a connection between the release of free radicals and cytokines, which can contribute to acute cardiac injury in conjunction with acute ischemic stroke.

Aim of study: Estimated Troponin Level in patients with Acute Ischemic Stroke

Patient and methods: 100 iraqi Acute ischemic stroke patients from neurological ward in AL-Muthanna teaching hospital, confirmed by computed topography scan imaging were enlisted in this study. Serum troponin T level was measured and 12 lead standard electrocardiogram (ECG) was performed .

Result: Of the 100 patients, 11 had high troponin level which associated with increased age and ischemia ECG abnormalities. were associated with patients with increased troponin. An assessment for ischemic heart disease should be conducted in light of the link between ischemic stroke and IHD.

Keyword: stroke, Troponin , ECG ,and IHD

Introduction:

Ischemic stroke ranks as the second most significant contributor to mortality and the third most prevalent cause of death and disability globally. It is characterized as a sudden decrease in blood flow to the brain resulting from a blockage in a blood artery produced by either a blood clot or an embolism.Heart diseases and strokes have some similar risk factors(1).

Elevated levels of the heart muscle regulatory protein troponin T are commonly observed in individuals with acute ischemic stroke. This elevation of troponin is indicative of a poor prognosis and increased mortality.The release of troponin may be caused by the pathomechanism of either co-existing coronary artery disease or myocardial ischemia, or by neurogenic cardiac injury resulting from autonomic activation following an acute ischemic stroke. Hence, there is ambiguity over the appropriate approach to diagnose and treat acute ischemic stroke patients who have elevated troponin levels.

Methodology:

We collected information from our database of potential ischemic stroke cases, which included all individuals who had an ischemic stroke during a 7-day timeframe. A study was conducted on a sample of 100 Iraqi acute stroke patients, who were chosen randomly from the neurological ward of AL-Muthanna Teaching Hospital. The patients' ages varied from 35 to 60 years. In our hospital lab, a positive troponin was defined as being equal to or more than 0.3 ng/mL. Regression models, both unadjusted and adjusted, were created to determine the association between high troponin levels and the two subtypes of stroke: cardioembolic and embolic stroke of unknown cause. Important factors such as demographics (age and sex) were taken into account throughout the analysis. The clinical presentation include cardiac arrhythmia, risk factors, a history of ischemic heart disease, computed tomography (CT) findings indicating involvement of the insular region in the infarct, and abnormal electrocardiogram (ECG) results such as ST depression, P wave enlargement, and left ventricular hypertrophy (LVH).

Stastic analysis:

Statistics analysis:In order to define and evaluate the information that the researcher has obtained, a variety of techniques are used during the crucial phase of data analysis in medical research. The type of data gathered determines the analysis method to be used; in quantitative research, for example, numerical data is analysed using descriptive and inferential statistics. A version 18 of the Statistical Package for Social Sciences (SPSS) was used to analyse and interpret the data.

Result :

The study's objectives. The data analysis results are presented in this chapter in a methodical manner using tables that align with

Table 1 Demographic characteristics of study sample

variable	descriptive	F	%
Age	<35	5	5.0
	35-45	12	12.0
	45-60	39	39.0
	>60	44	44.0
	Total	100	100.0
	M= 65.4 SD= 14.6		
Gender	female	67	60.9
	male	33	30.0
	Total	100	100.0
History of heart disease	(-ve)	74	74.0
	(+ve)	26	26.0
	Total	100	100.0

Risk factors	Hypertension	44	44.0
	Diabetes	33	33.0
	both	23	23.0
	Total	100	100.0

F= frequency, %= percentage, m = mean, SD = standard deviation

This table shows that third of the sample age was more than (60) years, the female more than two third of the sample (60.9%), while more than two third of sample had history HD (67.9) and third of them had hypertension (44.0%).

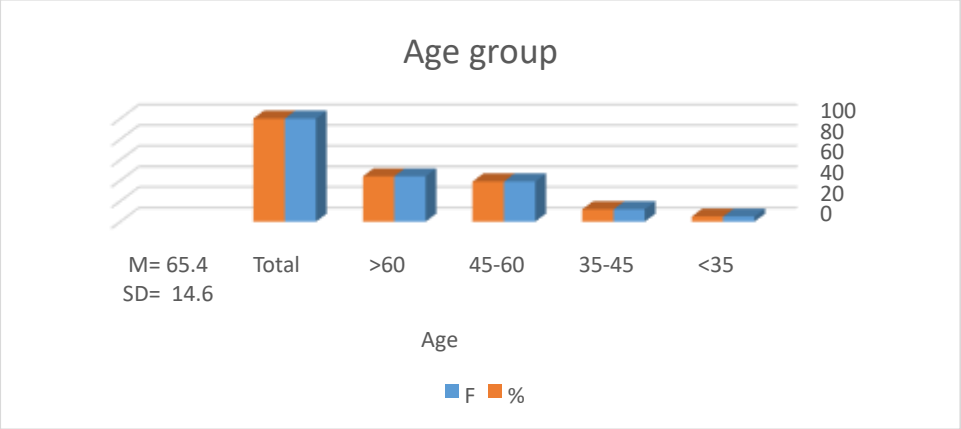

Figure 1 study sample distribution according to age

Table 2 disturbance of study sample according to the value of troponin

Troponin value		F	Value of troponin	%
Value	<0.3 mg/ml	89	Negative	89.0
	>0.3 mg/ml	11	Positive	11.0
	Total	100	100	100.0

F= Frequency, % percentage

This table shows that most of the sample troponin value was negative with (89.0%) with less <0.3 mg/ ml.

Table 3 disturbance of the study sample according to the value of ECG

ECG Reading		Frequency	Percent
Valid	Atrial fibrillation	11	11.0
	Normal	78	78.0
	St depression	11	11.0
	Total	100	100.0

F= Frequency, % percentage

This table shows that most of the sample ECG reading was normal with (78.0%), and (11.0) had atrial fibrillation and ST depression

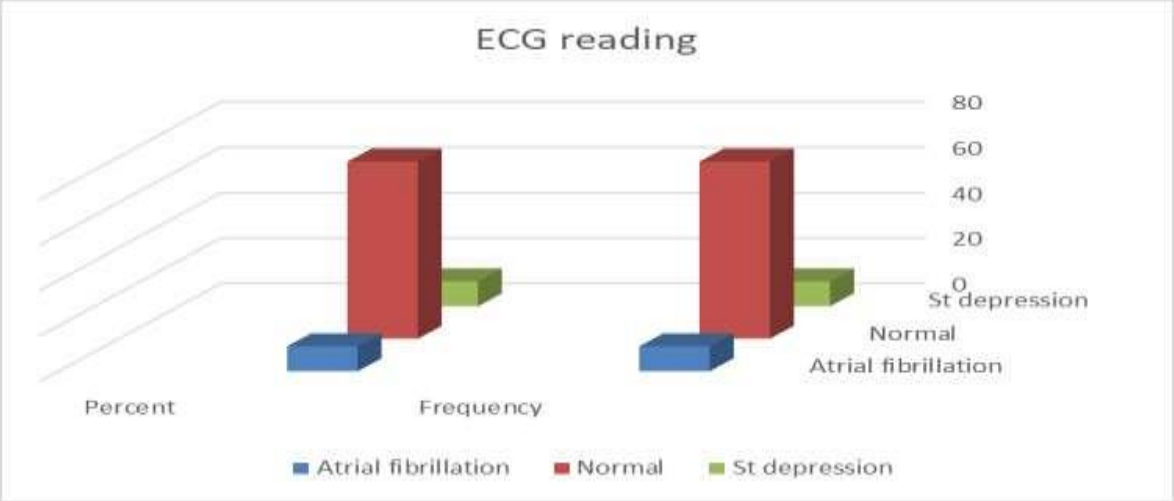

Figure 2 show the ECG Reading

Table 4 association between ECG Reading and demographic data

Overall association	Variable	Chi-square	p-value	Sig
	Age	25.733	.001	Significant
	Gender	27.534	.001	Significant
	History of HD	6.063	.05	Significant
	Risk factors	9.866	0.043	Significant

This table pointed out that there is a statistically significant association between demographic data and ECG reading.

Table 5 association between troponin value and demographic data

Overall knowledge	Variable	Chi- square	p-value	Sig
	Age	15.730	.001	Significant
	Gender	6.088	.014	Significant
	History of HD	2.431	.119	Non-Significant
	Risk factors	8.546	0.086	Significant

This table pointed out that there is statistically significant association between demographic data and troponin except history of HD.

Discussion:

Totally Our research involved 100 patients, about 5% of the sample aged less than (35) years,51% of them their ages range between (35_60) years and about 44% their age was more than (60) years. the female more than two third of the sample (60.9%), while more than two third of sample had history IHD (67.9) and third of them had hypertension (44.0%),according to Table 1.

considerable fraction of acute stroke patients have increased serum troponin, according to our finding in table 2 that show troponin was positive in 11% with more than 0.3 mg/ml of 100 patient and thus agreement with the study of(Anders B Alonso A Artemis D Schafer A Ebert A Kablau M et al)[3][4][5] it shows

Also in table 3 had atrial fibrillation and st depression in 11% , This pointed out that there is statistically significant association between higher age , gender and ischemic ECG change with troponin and this result was in line with study of (. Kral M Sanak D Veverka THutyra M Vindis D Kuncarova A et al[6][7] who found Serum troponin was significantly higher about 17.5% among older and individuals whose ECGs showed ischemia abnormalities

This mean that correlation between ischemic stroke and ischemic heart disease and should be workup for lschemic heart disease evaluation **Conclusion**:

In acute ischemic stroke there is cardiac injury that cause elevated in serum troponin

Recommendation:

Assess cardiac troponin is inadde to ECho study and electrocardiogram be careful monitoring in the neurology ward for cardiac injury by combined with cardiology team

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