

Electrocardiographic changes in acute ischemic stroke In Kirkuk : Azadi teaching hospital

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ABSTRACT

Background:

Recent onset of cerebrovascular disease of ischemic nature have electrocardiographic changes, in those patients who had no primary heart disease. We estimate the prevalence of electrocardiographic changes for being of significant one.

Material and Methods:

Descriptive study of one year duration through which (72) patients were roused in this study whom they were admitted to Azadi teaching hospital as acute ischemic stroke of new onset with no previous heart disease. The result was compared with match group of (72) patients whom were admitted to other unit of the same hospital with no stroke as control group.

Results:

Of (72) patients of the study sample about (59.7%) were males and (40.3%) were Females, their mean of age (62.5 years) with the range of (40-85) year. The control group of patients was consisting of (52.7%) males and (47.3%) females mean age was (61.5%) years with range of (45-80) year.

Frequency of electrocardiographic changes of the study sample was (59.9%) while with the control group of the patient was (26.4%)

Conclusion:

Observation of this study , was suggested that the electrocardiographic abnormalities are common among new onset of acute ischemic stroke in spite of normal functioning heart, predominantly as T inversion followed by ST depression and these changes are of significant value for these patients.

Cardiac abnormality, including coronary flow disturbance may play a role in causation of acute ischemic stroke and it is important as prognostic measures.

Keyword: Electrocardiographic changes , ischemic stroke.

Introduction

Stroke is the first common cause of sever disability and third most common cause of death behind heart disease and cancer in the developed and developing countries(1).

Incidence of stroke is approximately is same in both gender while after the age of 75 years is being greater in women(2) .

Stroke is the neurological defect of cerebrovascular cause, that persist beyond

24 hours due to cerebral infarction or intra cerebral haemorrhage(3) .

Ischemic stroke, electrocardiographic changes and QT prolonge, are representing the preexisting coronary artery disease, these changes of low spescifity myocardial ischemia specially in acute phase of ischemic stroke(4).

Demnonstration of brain injury or lesion affection on the heart are with experimental animales(5) .

Cardiac changes in patient with acute stroke were reported in 1947(6).

Dogan et at declared that electrocardiographic abnormalities in

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acute ischemic stroke are about (65%) of acute ischemic stroke who are with no primary heart disease (7).

The aim of this study is to show that the electrocardiographic changes in acute ischemic stroke of new onset with no primary heart disease in need for reevaluation of the heart condition.

Material and Methods

Study sample of (72) patients with new onset of acute ischemic stroke which had been admitted to Azadi teaching hospital through the period between 10th of October 2013 and 10th of October 2014. Stroke according to WHO criteria as rapidly developing sign of focal or global disturbance of cerebral function (8). The diagnosis and subtype of stroke was confirmed by computerized tomography of the brain.

Inclusive criteria: (study cross section)

Cerebrovascular disease .

Admission with in first 24hours of the event.

Electrocardiogram done on 24 hours of admission.

Age of the patient is 45 years of age and older.

With the exclusive of:

Past history of cardiac disorder.

Hemorrhagic storke or head trauma.

Liver, kidney and metabolic disorder

Age younger than 45 years of age.

Basilar artery insufficiency .

Stroke for more than 24 hours onset.

This study sample was compared with (72) patients with no stroke, of age matched group who admitted to the same hospital through same period.

Results

Table-1-

Study sample and control group are distributed according to the gender were about (59,7%) of study sample male and (40.3%) are female mean age (62.5)years.

While the control group (52.7%) were male and the female was about (47.3%) with mean age about (61.5) years.

Table-2-

Frequency of electrocardiographic changes among study sample and control group were (59.9%) of study sample having abnormal trace of electrocardiography as (43) patients, while (19) patient out of (72) of control group having abnormal electrocardiographic trace.

Table-3-

Demonstrates the frequency of different changes in the electrocardiography for both study sample and control group: T inversion are more common followed by ST segment depression through the study group patients.

While for the control group of patients was more less, as T inversion about (16.6%) and ST depression about (1.4%) of them.

Discussion

Normal functioning heart is under the control of central nervous system(9).

Central nervous system regulates the heart rate, blood pressure, vasomotor tone and cardiac output (10).

Anarrhythmia : changes in the rhythm of acute ischemic stroke as (51%) (11). And their result are inconcomitant with our study result .

Reporting frequency of new electrocardiographic changes in acute ischemic stroke as (15-30%)(6) ,so their result something less than our study group result.

Cardiac arrhythmia are common as (51%) of acute ischemic stroke, and this result is as our study sample result (12).

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Most commonly electrocardiographic changes is T inversion followed by ST depression as a sign of ischemia this mostly related to catechol amine releases.

These difference in the electrocardiographic changes is due to the definition and criteria which we depend upon it (13).

These changes are of significant value for more reevaluation of the heart condition.

Criteria for defention of Electrocardiograph trace changes :-

12 leads of ECG with standardization of (10 mm/mv) speed (25mm/s) within 24 hours after admission.

ST segment depression: as sloping or flat depression (1mm), elevation (1mm). Elevation in chest leads (v1, v2 2 mm) significant.

Q wave assessed in lead (I , 2, AVF).

T wave normally up right normal depression of less than (0.1 mm) abnormal.

U wave defined as negative wave with more (0.1 mv depth positive u wave when higher than (25%) of R (13).

References

Baldwin K ,Or., Briand M, Piazza C , Veydt A , Mc Coy S. Acute ischemic stroke update pharmacotherapy 2010; 30: 493-514.

Ghatnckar O, Person U, Asplund K, Glader EL. Costs for stroke in sweden 2009 and development since 1997. Iat Techol Asses Healh care 2014; 30: 203-9.

Deng Y, Wang Y, Yang W, Yu Y, Xu , Wang Y, et al. Risk Factors and

Imaging charcter of childhood stroke in China.

Khechinashvili G, Asplund K. Electrocardiographic changes in patient with acute stroke: asystmic reaview cerebrovascular Dis. 2002; 14 (2): 67-76.

Oppenheimer S.M. Neurogenic cardiac effect of curr upon nenro l. 1994; 7: 20-4.

Oppenheimer S.M. Hachinski VC.The cardiac consequence of stroke. Neurol Clin 1992 ; 10: 167-76.

Dogan A, Tune E, Ozturk , Erdenoglu Ak. Comparison of Electrocardiographic abnormalities in patient with ischemic and haemorahagic stroke.

The world Health Organization MONICA project monitering trends and determinates in cerebrovascular disease amajor international collaboration. WHO MONICA project principle investigators. Epidemiol 1988; 41: 105-14.

Prosser, J., Mac Gregor , L., Lees, KR, Diener, HC., Hacke,W., Davis, S. 2007. Predictors of early cardiac morbidity mortality of ischemic stroke. Stroke; 38: 2295-302.

Arab, D., Yahia , AM., Qureshi . Al. 2003 cardiovascular manifestation of acute intra cerebral lesion: intensive care Med., 18: 119-29.

Lavy , S., Yaar , I., Melamed , E., Stern, S. 1974. The effect of acute stroke on cardiac functions as observed in an intensive stroke care unit, stroke, 5: 775-80.

Talman. WT .1985. cardiovascular regulation and lesion of central nervous system. A.. nn Neurol ; 18: 1-13.

Goldstein, DS. 1979 The Electrocardiogram in stroke: relationship to pathophysiological type and comparison with prior tracing. Stroke; 10: 253-9.

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Table 1
Study and distributed according to gender

Gender	Patient group	Control group
male	43 (59.7%)	38 (52.7%)
female	29 (40.3%)	34 (47.3%)
total	72 (100%)	72 (100%)

Table 2
Electrocardiographic findings in the study and control group

E.C.G	Study	Control group
Abnormal	43 (59.9%)	19 (26.4%)
normal	29 (40.1%)	53 (73.6%)
total	72 (100%)	72 (100%)

Table 3
The frequency of E.C.G. changes among study group patients and control group

E.C.G. changes	Study group patient	Control group
Pathological Q wave	8 (11.1%)	1 (1.4%)
Atrial fibrillation	4 (5.5%)	—
Left ventricular hypertrophy	3 (4.2%)	—
T wave inversion	14 (19.4%)	12 (16.6%)
ST segment depression	9 (12.5%)	1 (1.4%)
ST elevation	5 (6.9%)	5 (6.9%)
Total	43 (59,6%)	19 (26.3%)