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Three months prognosis of transient ischemic attack (TIA) in Erbil Governorate

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Abstract

Background and objective: A transient ischemic attack is a brief episode of neurological dysfunction resulting from focal cerebral ischemia not associated with permanent cerebral infarction. transient ischemic attack carries a substantial short-term risk of stroke, hospitalization for cardiovascular events, and death. We aimed to evaluate prognosis of transient ischemic attack within three months follow up period, and identifying the predicting factors.

Methods: Thirty patients with transient ischemic attack were evaluated and followed up for 3 months to identify their prognosis. ABCD2 score was used for risk stratification in index and follow up transient ischemic attack patients.

Results: Within three months of follow up, 10% of patients developed transient ischemic attack and stroke each. There was an association between increasing age and increasing risk of index transient ischemic attack. Hypertension was the highest risk factors for index transient ischemic attack.

Conclusion: Despite standard preventive medications, some patients will still have events later on.

Keywords: prognosis, Transient ischemic attack.

Introduction

A transient ischemic attack (TIA) is a brief episode of neurological dysfunction resulting from focal cerebral ischemia not associated with permanent cerebral infarction[1]. The duration of a focal neurologic deficit that leads to cerebral infarction has arbitrarily been determined to be 24 hours or greater. Any focal neurologic deficit that resolves completely within 24 hours is considered a TIA[2]. The prevalence of TIAs ranges from 1.6 to 4.1 percent, depending on gender and age[2]. TIA carries a substantial short-term risk of stroke, hospitalization for cardiovascular events, and death. Most studies have found that the risk of stroke is more than 10% in the 90 days after a TIA[3,4], with half of those strokes occurring within the first 2 days[5,6]. The risk of a subsequent ischemic stroke may be less after a completed stroke than after a TIA, with reported 3- month risk generally ranging from 4% to 8%[7,8,9,10,11]. Thus, patients with TIA are actually more unstable in terms of new stroke than those presenting with an initial stroke. Because diffusion-weighted imaging shows a small amount of brain tissue damage in most cases of TIA, TIAs often represent ministrokes[12] and hence should be considered an emergency[13]. Since their description in the 1950s, TIAs were considered as giving to clinicians the best opportunity to avoid a completed stroke and its devastating personal, social, or sometimes fatal consequences[14]. Although the concept of TIA arose in the 1950s and effective therapies for stroke prevention post-TIA had been well established[14], the first publication of the effectiveness of round-the-clock access to diagnose and treat TIA without delay only appeared in 2007[15]. Simultaneously, the EXPRESS study (Effect of urgent treatment of transient ischemic attack and minor stroke on early recurrent stroke) brought convincing evidence that

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the combination of proven therapies (thrombolytics, anti-platelets or anti-coagulants) given to patients within 24 hours of symptom onset dramatically reduced the risk of subsequent stroke at 3 months[16]. Current theories on the pathogenesis of TIA suggest that effective measures to prevent stroke also prevent the recurrence of TIA. The initial approach is to modify risk factors that are amenable to treatment. The $ABCD_2$ score[17,18] is an easily used clinical prediction instrument that combines vascular risk factors and features of the event to identify patients at high risk of early stroke after TIA[19].

Methods

Thirty patients with TIA were studied in Rizgary Teaching Hospital between January 2011 and January 2012. All patients were interviewed and a thorough medical and neurological examination was carried out by a neurology specialist. Any patient who fulfilled the traditional definition of TIA was included. Patients were excluded from the study if they had features of infarction on brain imaging relevant to this attack or if they had signs and\ or symptoms lasted for more than 24 hours. Patient's personal information, including name, age, gender, occupation and residency were obtained. A brain imaging (CT scan and/or MRI) was obtained for each. All images were analyzed by a radiologist. The study entry $ABCD_2$ score was assigned using clinical information collected at the time of recruitment. The $ABCD_2$ score is based on five components: age (60 years = 1 point), blood pressure (systolic 140 mm Hg and/or diastolic 90 mm Hg = 1 point), clinical features (unilateral weakness = 2 points; speech disturbance without weakness = 1 point), duration of symptoms in minutes (60 = 2 points; 10–59 = 1 point) and diabetes (present = 1 point). The $ABCD_2$ score has a minimum score of 0 and a maximum score of 7. Data were entered into a computer using SPSS computer program.

Results

The study sample was composed of 30 patients (15 females and 15 males). The percentage of age groups were: 6.7% aged 30-39 years, 16.7% aged 40-49 years, 26.7% aged 50-59 years, 33.3% aged 60-69 years and 16.7% aged 70-80 years, Table 1. Mean age at the index event in the study period was 56.63 years. There was an association between increasing age and increasing risk of index TIA. Table 2 depicts that 20 (66.7%) of our patients had hypertension (HT); 6 (20%) of them had HT as the only medical disease. Seven patients (23.3%) had prior TIA and the same number had prior stroke. Four patients (13.3%) had Diabetes Mellitus (DM).

Table 1: Age groups and sex of the patients.

Age groups (years)	Sex		Total
	Female	Male	
30-39	1 (3.3%)	1 (3.3%)	2 (6.7%)
40-49	3 (10 %)	2 (6.7%)	5 (16.7%)
50-59	6 (20 %)	2 (6.7%)	8 (26.7%)
60-69	2 (6.7%)	8 (26.7%)	10 (33.3%)
70-80	3 (10 %)	2 (6.7%)	5 (16.7%)
TOTAL	15 (50%)	15 (50%)	30 (100%)

Table 2: Medical history of the patients.

Medical history	TIA	
	No.	%
HT alone	6	(20%)
DM alone	1	(3.3%)
HT & DM	3	(10%)
Prior TIA	1	(3.3%)
Prior stroke	1	(3.3%)
HT plus any other disease except DM	11	(36.7%)
HT & prior TIA	5	(16.7%)
HT & prior stroke	2	(6.7%)

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It is evident that, depending on ABCD2 score, on presentation 23.3% of patients were found to be at very high risk (score 6 or 7), 26.6% at moderate risk (score 4 or 5; risk 4.1%), and 30% at low risk (score 0–3), Table 3. Unilateral weakness was a presenting symptom in 76.6% of patients with index TIA (in 20% it was the only symptom). Clinical features of the index events were as follows: unilateral weakness (76.6%), hemi-sensory disturbance (46.6%), confusion (16.6%), vertigo (10%), speech disturbance (13.3%), and visual haziness (6.6%), Table 4. Two patients with follow up TIA were females and one patient was male. Their ages were (40, 57 & 80 years respectively). Follow up Stroke patients were; two females (51 years, 70 years) and one male (79 years). Eighteen (60%) patients were not admitted because of lack of beds at hospital. Within three months of the follow up period, three patients had a recurrent TIA, three patients experienced stroke, and no one had ischemic heart disease and or died. On follow up period, the three patients who developed TIA had $ABCD_2$ scores of (3, 4 and 6), and those three who developed stroke had $ABCD_2$ scores of (4, 5 and 7). It is evident from Table 5 (Treatment of patient with TIA) that from the total of 22 patients (73.32 %) on anti-platelet drugs; two (9.09%) patients had TIA and similar number had stroke in the follow up period. No one of the two patients who received anti-coagulants had any event. Four patients (13.32%) did not receive any treatment, because one had sub-arachnoid hemorrhage and subjected to intracranial operation and the other three patients ignored their treatments. Half of those patients who ignored the treatment developed events in three month follow up period; one had TIA and the other had stroke.

Table 3: ABCD scoring.

ABCD Score	Patients	
	Number	%
1	0	0
2	3	10
3	6	20
4	6	20
5	8	26.6
6	6	20
7	1	3.3

Table 4: Distribution of symptoms by patients

Symptoms	Patients	
	Number	%
Weakness	23	76.6
Numbness	14	46.6
Confusion	5	16.6
Vertigo	3	10
Speech change	4	13.3
Visual haziness	2	6.6

Table 5: Correlation of treatment of TIA patients with outcomes in three months.

Treatment when patient was seen first	Follow up events			
	No events	TIA	SAH	Stroke
Anti-platelet	18(81.81%)	2(9.09%)	0	2(9.09%)
Anti-coagulant	2(100 %)	0	0	0
Only anti-hypertensive	2(100 %)	0	0	0
No Treatment	1(25%)	1(25%)	1(25%)	1(25%)

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Table 6 (Symptoms of index TIA vs follow up events) illustrates that in index patients, unilateral weakness was the presentation of all the three patients who later on developed TIA on follow up, one of them also had numbness. Weakness was the presentation of two out of three patients who developed stroke on follow up; and the third one had speech change. Hypertension was present in two out of three patients who developed TIA and was present in the same ratio of those who developed stroke on follow up. Prior stroke was also present in two out of three patients who developed TIA on follow up.

Table 6: Symptoms of index TIA vs follow up events

Symptoms	Follow up Events	
	TIA	stroke
Weakness	2	2
Numbness	0	0
Speech change	0	1
Weakness, numbness	1	0
Weakness, vertigo	0	0
Weakness, numbness, confusion	0	0
Weakness, numbness, haziness	0	0
Weakness, confusion	0	0
Confusion, speech change	0	0
Numbness, haziness	0	0
Weakness, speech change	0	0
TOTAL	3	3

Discussion

Only 6 (20%) of our patients were above 65 years, one third of them (2 patients) developed stroke. This is consistent with a previous publication by Johnston et al that had found that age older than 65 was predictive of stroke after TIA[4]. The aging is a risk factor for TIA; number of patients presented with index TIA increased exponentially with age, except for age group 60-80 years, possibly due to low mean age of people in our population. This was consistent with the study by Dawn Kleindorfer et al[3]. Majority of our patients were kurds from Erbil governorate. This is expected because most of Erbil populations are from Kurdish ethnicity; that is why it is not relevant to remark on ethnicity as a risk factor in our study. Hypertension was the most common risk factor among our patients; including those patients who presented with index TIA and also those who developed TIA in the follow up period. This was consistent with Lewington S et al meta-analysis who showed that hypertension was a major risk factor for stroke and transient ischemic attack, with the risk increasing with every rise in systolic blood pressure (BP)[20]. Two (6.6%) of patients ignored the treatment which was prescribed by the neurologists; one of them developed another attack of TIA in the follow up period. In our study, the next common risk factors following HT were prior TIA and prior stroke respectively. Number of patients who presented with TIA was directly proportional to the increasing ABCD2 scoring. Most of our patients on presentation had moderate to high ABCD2 scores (23.3% at very high risk, 26.6% at moderate risk, and 30% at low risk), this was consistent with a study by Johnston SC et al[18]. On follow up, none of patients who had ABCD2 scores 1 and 2 develop any attacks. Five out of six patients who experienced TIA and stroke on follow up had moderate to high ABCD2scores. This was consistent with the study by S. Andrew Josephson et al, which showed that in the group judged to have a true TIA, 90-day stroke risk increased as ABCD2 score increased[21] This indicates that aging; HT, DM, unilateral weakness and speech disturbance were associated with higher rates of TIA and later on follow up TIA and stroke events. Most of our patients

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in this study were not admitted because of absence of a hospital specialized to provide care to TIA & stroke patients, and lack of beds in Rozhhalat Center, related to Rizgary Hospital, which is the main referral center for TIA/stroke patients. Our rates of TIA and stroke after TIA within 90 days (10%) was very similar to the rates previously reported in spite of ignorance of admission in 60% of patients; improving admission condition in our hospitals therefore may drop the rates of events in three months. There was a limitation to our study; it was a small sample. This is because in our locality it is difficult to ascertain patients to study and commit them to follow up when they are taken care of by other specialists.

Conclusion

Despite standard preventive medications, some patients will still have events on follow up. Lack of facilities and neurology senior house officers are big challenges to acute management of patients with TIA in Erbil. Hypertension is the most important risk factor for TIA followed by prior TIA and prior stroke respectively. High ABCD2 score is predictive of high risk of index and follow up TIA.

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