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Original Articles

TRANSIENT ISCHEMIC ATTACK: CLINICAL FEATURES AND OUTCOME

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Summary

A Transient Ischemic Attack (TIA) is a state of emergency and an independent risk factor for ischemic stroke. The social significance of the disease is determined, based on the probability of occurrence of subsequent cerebrovascular incidents and their frequency among groups. The purpose of the present study was to perform a comparative analysis of clinical features and outcome in patients with TIA for at least 24 months after onset had been registered, according to the pathogenesis and to ABCD (2) score. Two hundred and fifty-seven patients were monitored at the Neurology Clinic, First MHAT – Sofia after suffering an initial TIA. All subjects were studied using a clinical evaluation of pathogenetic mechanisms and an ABCD (2) algorithm. A diagnosis of TIA was confirmed by neuroimaging. The comparison between specific pathogenetic mechanisms demonstrated a statistically significant difference. Two TIA subgroups were involved – thromboembolic and cryptogenic ($p<0.05$). Also, according to the ABCD (2) score results, significant differences were found between groups at low (1-3) and high (6-7) risk, and those at intermediate (4-5) and high risk ($p<0.01$). Detailed investigation and assessment of patients with TIA are important concerning the prognostic outcome.
Key words: transient ischemic attack, ABCD (2), stroke, pathogenesis

Introduction

A transient ischemic attack (TIA) is a medical emergency [1] and an independent risk factor for ischemic stroke.

TIA is initially assessed using the clinical score, based on five features. These include age ≥60 years (1 point), blood pressure ≥140/90 mmHg (1 point), clinical features: unilateral weakness (2 points), speech impairment without weakness (1 point), duration ≥60 min (2 points), 10-59 min (1 point), and the presence of diabetes mellitus (1 point) or ABCD (2) score [2-4].

Over recent years, the concept of TIA has undergone considerable changes, focusing on two aspects: the introduction of the term "emergency" with regard to diagnostic and treatment modalities, and reconsideration of the duration of clinical symptoms

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in the light of recent neuroimaging tests and the ability to identify brain injury [5].

The social significance of the disease is determined, based on the probability of the occurrence of subsequent cerebrovascular incidents: recurrent TIA and ischemic cerebral infarctions, cardiovascular complications, and death, and their frequency among patient groups [6].

The purpose of the study was to perform a comparative analysis of the clinical features and outcome of patients with TIA for at least 24 months after onset had been registered, according to the pathogenesis and to the ABCD (2) score, and to predict the risk of subsequent cerebrovascular events.

Materials and Methods

Study population

For the present analysis, 257 consecutive patients were followed-up at least 24 months after suffering an initial TIA at the Neurology Clinic, First MHAT in Sofia. Detailed neurological examinations were performed on all subjects, and the diagnosis of TIA was confirmed by neuroimaging with computed tomography (CT) or magnetic resonance imaging (MRI).

Methods

TIA was defined as a focal ischemic neurological deficit, including at least weakness in the limbs and/or aphasia. Clinically, it disappears within 24 h, in the absence of CT or MRI evidence of a corresponding cerebral infarction [7, 8]. Many pathogenetic mechanisms are responsible for TIA. The most common ones [9, 10] in our study were thromboembolic, hemodynamic, angiodystonic, and cryptogenic. The other assessment was based on the approved and validated ABCD (2) score [11].

All the patients underwent routine complete blood count, and coagulation status, biochemical indexes, including lipid profile, were determined. Neuroimaging examinations and non-invasive hemodynamic measurement of the cerebral blood circulation were also performed. The cardiac status evaluation was based on several diagnostic tests.

After the onset of clinical symptoms and within the mandatory follow-up period, secondary preventive treatment was started, and the treatment course focused on the co-existing modifiable risk factors, was optimized.

Data are presented as means and standard deviations for continuous variables and as numbers of patients and percentages for categorical variables. Statistical data were calculated by one-way ANOVA, with comparative characteristics of factors, using the F distribution and Tukey's honestly significant difference (HSD) post hoc test. A p-level of 0.05 was considered statistically significant.

Results

The clinical contingent comprised 257 TIA patients.

As noted earlier, the main pathogenetic mechanisms of TIA were described.

In the subgroup of thromboembolic TIA (n=107) subsequent strokes/TIAs within 24 months occurred in 6 (5.61%) of all the patients. The TIAs associated with hemodynamic mechanisms were 72, and cerebral accidents during the follow-up period were 4 (5.56%). Forty-five subjects had angiodystonic TIAs, and there were 3 (6.67%) subsequent cerebrovascular events. Among 33 patients with cryptogenic TIA, 2 (6.06%) had strokes/TIAs (Figure 1).

Thromboembolic TIAs were more common in women (45.65%), while TIA as a result of hemodynamic factors was predominant in men (34.45%). A comparison between the pathogenetic mechanisms demonstrated statistically significant differences, and two TIA subgroups were involved - thromboembolic and cryptogenic ($p<0.05$, HSD [0.05] = 33.54).

Patients with TIA were divided into low, medium and high-risk groups according to ABCD (2) score (Figure 2). The low risk (1-3) group included 111 subjects, and subsequent cerebrovascular events were registered in 4 (3.60%) of the total. The ascertainment of cases was similar in moderate risk (4-5) group (n=128), and there was the highest incidence of stroke/TIA during the follow-up period – 7 (5.47%). ABCD (2) with scores of 6 or 7 points indicated a high risk of a stroke and selected patients in the third group. These TIAs were documented in 18 subjects, and 4 (22.22%) subsequent cerebrovascular accidents were observed.

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Among the three groups, a significant difference was found: between groups at low and high risk, and between these at moderate and high risk ($p<0.01$, HSD [0.01] = 43.73).

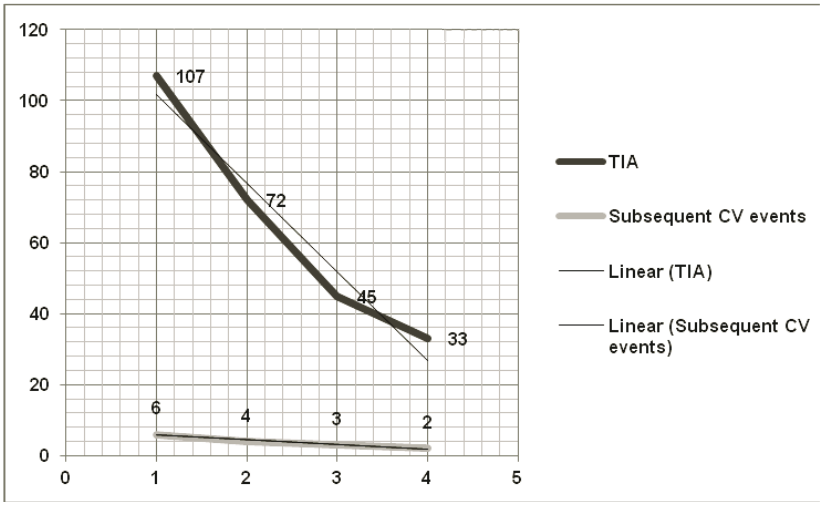

Figure 1. Distribution of patients with TIA by pathogenetic mechanisms and subsequent cerebrovascular events

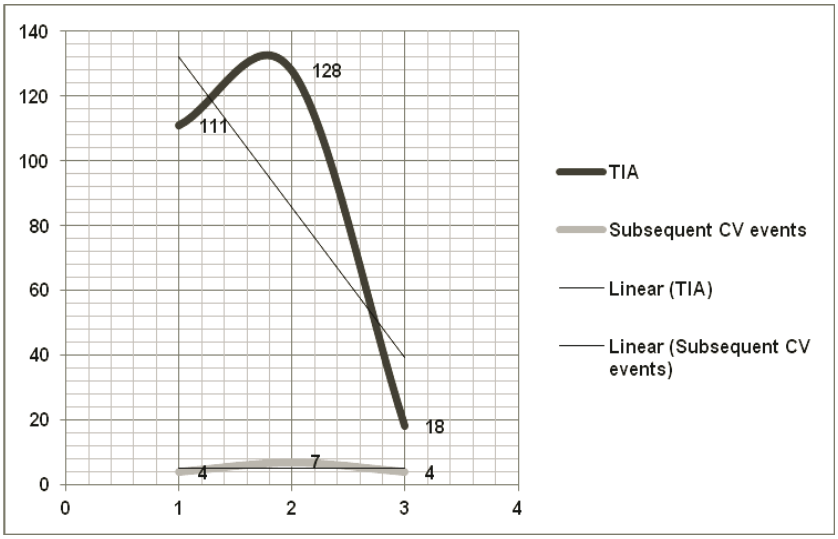

Figure 2. Distribution of patients with TIA by ABCD (2) score and subsequent cerebrovascular events

The main aim of the present study was to perform an analysis of patients with TIA, including the stroke/TIA prevalence in the 24-month period following a TIA, registered according to the *various* criteria.

Over the last ten years, large-scale clinical studies and independent analyses of subjects with TIA have demonstrated that the risk of subsequent ischemic cerebral infarctions at different time intervals after the initial event is considerably higher in TIA patients, as compared to the general population [7, 12]. A possible link between pathogenesis and clinical presentation, including duration was discussed by Kimura et al. in 1999. Investigators have reported that patients with carotid TIA and long duration of symptoms (≥60 minutes) had emboligenic cardiac or arterial diseases more frequently as compared to those with short duration TIAs (<60 minutes) [13].

The results of the ABCD (2), including duration of clinical symptoms, classified the target groups into subgroups with a low, moderate, and high risk, and determined the probability of subsequent stroke on days 2, 7,

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and 90 after TIA [2]. Furthermore, ABCD (2) score has a predictive value for long-term risk.

The information gathered from this study has several limitations. In consideration of the broad differential diagnosis and objectives, we excluded subjects with uncertain medical histories of TIA and these with minor ischemic stroke.

Conclusions

In conclusion, investigation and detailed assessment of patients with TIA with regard to the probability of subsequent cerebrovascular events within a few hours, days, and months are crucial regarding the prognostic outcome and the target secondary prevention [14-16].

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