

# Transient ischemic attack and ischemic stroke, risk factors and preventive roles of the first contact physicians

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## ABSTRACT

**Objectives:** This study had been designed to find the relative frequency of each of ischemic stroke's risk factors and to evaluate the action of the first contact physician for transient ischemic attack (TIA) cases.

**Methods:** This study is a cross sectional study that enrolled 100 randomly selected patients with clinical and radiological diagnosis of ischemic stroke, who had attended Al-Yarmouk Teaching Hospital, Baghdad, Iraq during the period between the 1st of January 2002 and the 1st of July 2002.

**Results:** The patients' age range was 40-79 years old (mean 63.57 years, SD 8.31, coefficient of variation 0.31). Forty-four patients (44%) were smokers, 34 patients (34%) were hypertensive, and 28 patients (28%) were diabetics. Of those under the age of 55, 78.6% had 2

or more risk factors. Positive history of TIA was observed in 28 patients (28%), 64.3% of whom (18 patients) had consulted a physician for their TIA symptoms and 35.7% of them had ignored their symptoms. Only 25% of those with positive history of TIA had been managed properly by the first contact physician. Thirteen patients (46.4% of those with history of TIA) had been treated with antithrombotic drugs.

**Conclusions:** Significant numbers of patients don't worry about the symptoms of TIA and ignore it, another group are not subjected to full investigations to reach the cause and risk factors of TIA. Workshops are needed to increase education levels of the population about TIA and the modifiable risk factors of stroke.

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Stroke is regarded as one of the leading causes of death and disability in the developed, as well as the developing countries, it is considered the third leading cause of death in the United States of America (USA).<sup>1,2</sup> Ischemic stroke is responsible for approximately 80% of cases of cerebrovascular accident, whose annual incidence is approximately 0.5-1.0 per 1000 population in the USA, 1.5 per 1000 population in Western European countries and 3 per 1000 population in several Eastern countries and Japan. This variability in annual incidence of stroke could be attributed at least partly on environmental, dietary, and smoking habits.<sup>3,4</sup> Still,

the primary prevention of ischemic stroke by controlling and correcting its risk factors is at least an equally or even more important and cost effective way to deal with cases of cerebral ischemia. Particularly, if we review the findings of the so many studies made on treatment and prevention of ischemic stroke, indicating that primary prevention of the well known ischemic stroke risk factors cause a sharp decline in the incidence of stroke.<sup>4,6</sup> A transient ischemic attack (TIA) could be regarded as the most significant predictor of the presence of atherosclerotic disease in the territories of cerebral circulation. Transient

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ischemic attack patients have an annual risk of important vascular events (death from all vascular cause, non fatal stroke or non fatal myocardial infarctions) of between 4-11%.<sup>7,8</sup> So prevention of secondary vascular events that can occur after an episode of TIA by proper management of those patients by the first contact physician, plays a vital role in the primary prevention of ischemic stroke. This target can be achieved via the use of prophylactic anti-platelets therapy with aspirin, ticlopidine, or clopidogrel. Warfarin can be used in patients with a significant risk of cardiogenic thromboembolism, while surgical treatment is a good option for those with TIA and carotid stenosis of more than 70%. However, unfortunately, first contact physicians still manage TIA cases improperly, and too few of them prescribe anti-platelets for TIA patients, and anticoagulants are used insufficiently for secondary prevention after cerebral embolism.<sup>9</sup> Therefore, the first step to reach the hope for proper prevention of acute ischemic stroke is the proper assessment and correction of the faulty actions that can be made by the first contact physician and general practitioners.

This study had been designed to find the relative frequency of each of ischemic stroke's risk factors and to evaluate the action of the first contact physician for TIA cases.

**Methods.** This study is a cross-sectional study that enrolled 100 randomly selected patients with the clinical and radiological diagnosis of ischemic stroke, who had attended Al-Yarmouk Teaching Hospital, Baghdad, Iraq during the period between the 1st January 2002 and 1st July 2002. The patients included in this study had full history regarding the symptoms of anterior and posterior circulation TIA that preceded the event of stroke. The patients were asked regarding the diagnosis; investigations carried out for them and if they received specific treatment for TIA. The patients were examined thoroughly. Investigations which had been carried out after admission included full blood count, urea and electrolytes, and fasting blood sugar lipid profile, ECG, chest x-ray, echocardiography, Doppler study and brain CT.

**Results.** The age range of the patients enrolled in the study was 40-79 years old (mean 63.57 years and SD 8.31 years, coefficient of variation 0.31). This study revealed that 14 patients (14%) were under the age of 55 years and 86 patients (86%) were at or above the age of 55 years. **Table 1** shows patients' distribution according to their age and gender. This study indicated that 44 patients (44%) were smokers. **Table 2** shows patients' distribution according to risk factors of ischemic stroke. It was found that 58 patients (58%) had 2 or more risk

factors and 78.6% of those were under the age of 55 (11 out of 14), while 86.2% (50 patients) of those with 2 or more risk factors were male patients. This study revealed that 28 patients (28%) had a positive history of TIA, of whom 64.3% (18 patients, 18%) had sought medical help by consulting a physician for their symptoms of TIA. They can be grouped into 2 main subgroups as shown in **Figure 1**. This study revealed that 13 patients with TIA (46.42% of those with TIA) had been treated appropriately, namely, 7 (53.8%) with aspirin, 3 (23%) with dipyridamole, and one (7.6%) with a combination of the 2 previous drugs, and only 2 (15.3%) treated with warfarin.

**Discussion.** Atherosclerosis involving the cervical vessels, intracranial vessels or the aorta is the most common cause of ischemic stroke.<sup>2,10</sup> Smoking, hypertension, diabetes mellitus and hyperlipidemia are considered as significant risk factors for atherosclerosis and stroke. It had been shown by another study that smoking does not affect stroke severity or patient's outcome, but stroke patients who smoke are on average 9 years younger than non-smoking patients.<sup>11</sup> Lowering blood pressure in hypertensive patients to below 140/90 mm Hg, and in diabetics below 135/80 mm Hg can prevent 4 out of 10 strokes.<sup>12</sup> It is now generally accepted that lipid-lowering treatment should be considered in all stroke patients, particularly those with a history of coronary heart disease and myocardial infarction. Statin drugs have shown a relative risk reduction in stroke of 12-48%, in addition, gemfibrozil has also been shown to reduce the relative risk of stroke by approximately 25%.<sup>13</sup> Younger patients with stroke are more likely to have various and unique etiologies for ischemic stroke instead of the atherosclerosis and arteriosclerosis that have higher incidence in older patients. This study revealed that 78.6% of those under the age of 55 years had 2 or more risk factors. This finding can indicate that young patients need more risk factors to have stroke than the elderly patients.<sup>14-15</sup> Furthermore, this study revealed that 86.2% of those with 2 or more risk factors (50 patients) were male (70.4% of male patients who had been enrolled in this study).

The presence of prior stroke or TIA is considered as one of the important treatable risk factors for ischemic stroke, it increases the risk of stroke by an average of 5% per year.<sup>3</sup> Hence, proper treatment of TIA is one of the golden roles in the prevention of ischemic stroke, but the medical services have failed to achieve this aim because of 2 important phenomena. The first is related to patients' ignorance of TIA symptoms, while the second phenomenon is the action of the first contact physician and general practitioners regarding the

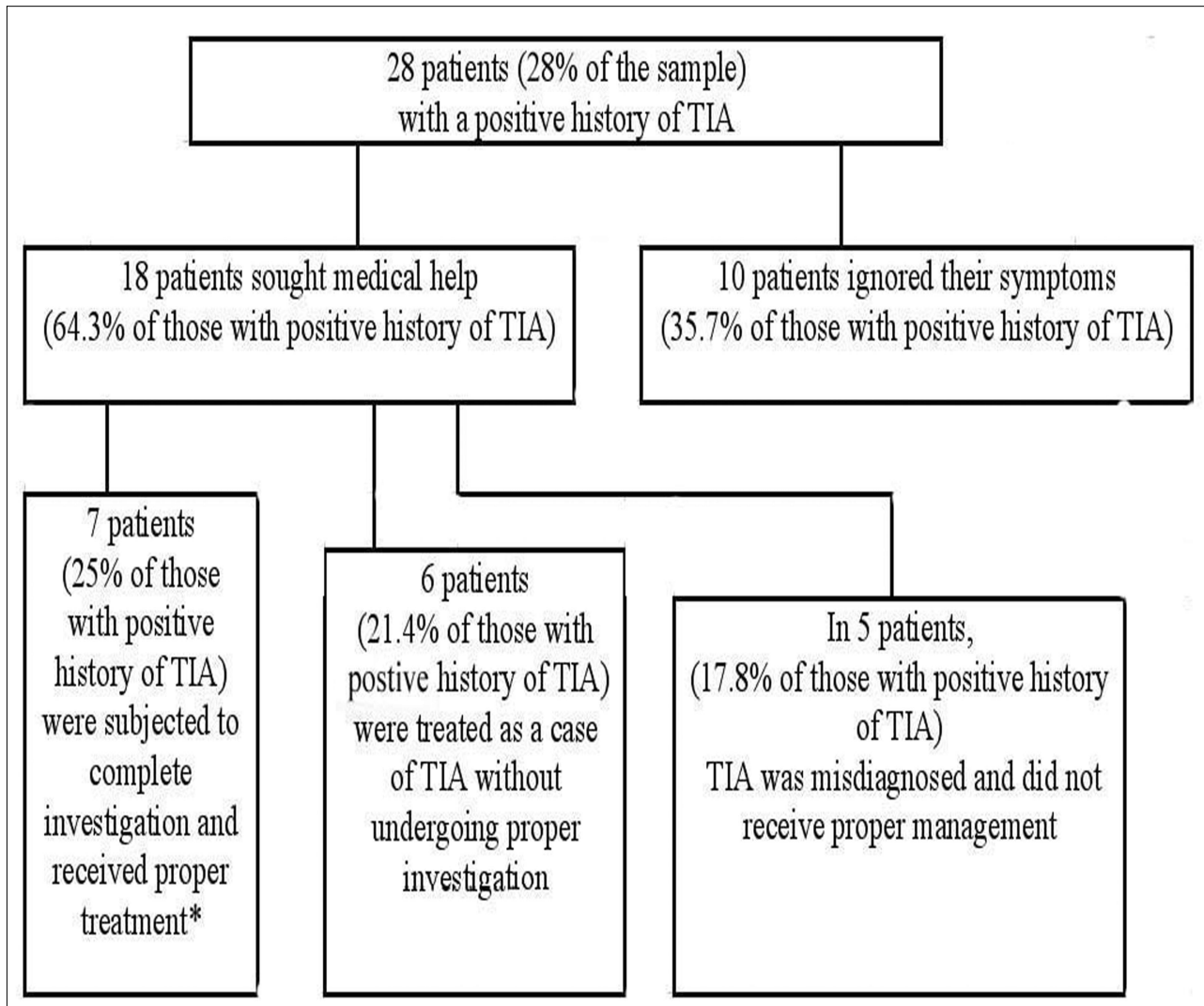
**Table 1** - Patients' distribution according to their age and gender.

Age (years)	Male N (%)	Female N (%)	M:F ratio
40-44	2 (2.8)	0 (0)	2:0
45-49	2 (2.8)	2 (6.9)	1:1
50-54	6 (8.5)	2 (6.9)	3:1
55-59	9 (12.7)	6 (20.7)	1.5:1
60-64	19 (26.7)	5 (17.2)	3.8:1
65-69	13 (18.3)	7 (24.1)	1.8:1
70-74	12 (16.9)	6 (20.7)	2:1
75-79	8 (11.3)	1 (3.5)	8:1
<b>Total</b>	<b>71 (100)</b>	<b>29 (100)</b>	<b>2.4:1</b>

**Table 2** - Patients' distribution according to the presence of ischemic stroke's risk factors.

Risk Factor	Male (n = 71) N (%)	Female (n = 29) N (%)	Total N (%)
Hypertension	26 (36.65)	8 (27.6)	34 (34)
Diabetes mellitus	17 (23.9)	11 (37.9)	28 (28)
Hyperlipidemia	15 (21.1)	9 (31)	24 (24)
Smoking	41 (57.75)	3 (10.3)	44 (44)
History of TIA	19 (60.8)	9 (31)	38 (38)
Atrial fibrillation	4 (5.6)	2 (6.9)	6 (6)
Valvular heart disease	1 (1.4)	1 (3.4)	2 (4)

TIA - transient ischemic attack



**Figure 1** - Distribution of TIA patients according to management. \*The investigation include: fasting blood sugar, blood urea, full blood count, lipid profile, electrolytes, ECG, Doppler, echocardiography, brain CT and MRI.

proper management of TIA patients. In a study carried out in Japan to assess the referral and care for acute ischemic stroke in a tertiary emergency hospital, it was found that only 6% of the patients had TIA symptoms for which they sought medical help; this percentage cannot reflect the real size of the problem.<sup>16</sup> In our study, 35.7% of those with history of TIA had ignored their TIA symptoms completely. It has been found that first contact physicians deal with the problem of TIA in 2 different ways. Some (17.8% of those with TIA) misdiagnose TIA with other medical and neurological illnesses (psychological symptoms or rheumatological symptoms). This occurs particularly in patients who present with atypical features or those who are young and might have variable pathologies that differ from those present in elderly patients, for example, different types of coagulopathies.<sup>17</sup> While the other group of first contact physicians give TIA patients inappropriate treatment. As mentioned previously, the high risk of major vascular events may be heralded by the development of TIA symptoms. Among the patients with first-ever ischemic stroke or TIA, the calculated incidence of vascular death or recurrent stroke in the patients who survived the first episode was 5.6% per year, and after 24 months 10.9%.<sup>18</sup> In a study carried out in the USA in 2002, to assess physician test-ordering practices for the evaluation of coagulopathies as a cause of ischemic stroke, it was found that none of the physicians included would obtain coagulation tests for cardioembolic stroke patients with atrial fibrillation that accounts for approximately 20-25% of ischemic stroke.<sup>17,19-20</sup> In addition, the use of proper antithrombotic treatment by the first contact physician in prevention of ischemic stroke is markedly limited. Despite the well-known indications of the antithrombotic drugs including anti-platelets (with aspirin as the first choice) in atherothrombotic stroke and oral anticoagulants in cardioembolic stroke, it had been found in several studies that most general practitioners and first contact physicians do not use the antithrombotic drugs and if they use these drugs, they will use them in insufficient doses.<sup>13,19,21-22</sup> Only 45% of ischemic stroke patients received any antithrombotic therapy prior stroke,<sup>23</sup> (and only 46.42% of TIA patients enrolled in this study had been treated with antithrombotic drugs). This phenomenon could be attributed to multiple factors, the most important of which is the knowledge gap, and their failure in coping with the recent, rapidly changeable advances in stroke diagnosis and management, particularly, the great advances in the use and choices of antithrombotic therapy.

To overcome this problem, this knowledge gap among the general practitioners and the first contact

physician should be reduced by offering the required information on the role of antithrombotic drugs, anti-hypertensive drugs, and lipid lowering agents in the primary prevention of ischemic stroke, particularly among TIA patients as well as increasing the availability of these drugs. In addition, health education of the general population on the risks of TIA and its related vascular death and morbidity play an important role in reducing the rate of symptoms ignorance that is present among the TIA patients. Many patients were not worried about the diagnosis of TIA because they did not understand their problem due to the Arabic translation of the term of TIA. A TIA can look like angina pectoris in the pathogenesis and its natural course, but both the patient and physician behave in different ways when dealing with these 2 conditions. We face an increasingly large problem throughout the world, which needs the cooperation between official departments and the medical societies to clarify the major impact of the problem, the best way by which the physician handles such cases and the precautions which must be taken by both the patients and healthy persons.

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