Can the UK guidelines for stroke be effective? Attitudes to the symptoms of a transient ischaemic attack among the general public and doctors

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ABSTRACT – This questionnaire-based study assessed the attitudes of the general public to the symptoms of a transient ischaemic attack (TIA) and determined the current level of knowledge about the management of TIA among doctors. The public chose to wait for symptom recurrence before seeking medical advice for amaurosis (41%) and upper limb (UL) monoparesis (51%), sensory loss (68%), or paraesthesia (95%). However, medical advice would be sought most often for slurred speech alone (89%) or combined with UL monoparesis (99%). Most physicians confirmed that these symptoms could represent a 'carotid TIA' but many considered diverse symptoms as relevant. While most general practitioners would prescribe anti-platelet therapy, 22–40% would not refer first-time TIA patients, depending upon the presenting symptom. In conclusion, the general public does not recognise the importance of TIA symptoms and the need for rapid assessment. This is compounded by deficiencies in the medical management of TIA. Stroke guidelines will remain ineffective without public awareness campaigns and physician education.

KEY WORDS: health campaign, medical management, public awareness, stroke prevention, transient ischaemic attack

Introduction

Stroke is the third most common cause of mortality in the UK and the single largest cause of long-term disability. Up to 23% of ischaemic strokes are preceded by a transient ischaemic attack (TIA)[1] and the initial risk is as high as 5% in the first 48 hours.[2] In patients with a significant carotid stenosis a TIA represents an important opportunity for intervention and stroke prevention.

The *National clinical guidelines for stroke* were developed to allow effective, early management of TIA,[3] and state that TIA should be assessed and investigated in a specialist clinic within seven days of the event and that carotid endarterectomy should be performed within two weeks when a significant carotid artery stenosis is confirmed. If surgery is delayed beyond 12 weeks it attracts little or no benefit,[4] while early management reduces stroke risk by as much as 80%.[5] Despite the evidence for early management of TIA, this rarely occurs due to delays in patient presentation and medical management. The aim of this study was to assess the attitudes of the general public to potential symptoms of TIA and to determine the current level of knowledge about its management among NHS doctors.

Subjects and methods

General public

An orally administered questionnaire was used to assess the responses of 200 members of the public to symptoms of monocular visual loss, upper limb (UL) weakness, UL sensory loss, UL 'pins and needles' and speech disturbance with or without UL weakness. Twelve members of the public (6%) declined to respond to the questionnaire. Subjects were presented with the following three possible options for each symptom:

A: Wait to see if it happens again before seeking medical advice

B: Go to your general practitioner (GP) as soon as possible

C: Go to the accident and emergency (A&E) department the same day.

Subjects were selected at random from members of the public in a busy shopping centre. Demographic details are shown in Table 1.

Medical doctors

Postal questionnaires were sent to 60 GPs chosen at random from the trust database, of which 40 were returned (66% response rate). The questionnaire was also completed by 135 trainee doctors in a variety of disciplines at the General Infirmary, Leeds; 19 foundation year 1 (FY1), 18 medical senior house officers (SHO), 20 basic surgical trainees (BST), 18 medical specialist registrars (SpRs) and 20 surgical SpRs in a variety of specialties.

Statistical analysis

Statistical analysis was performed with SPSS® v15.0. The Pearson Chi-squared test (χ^2) was used to assess any potential difference. Statistical significance was assumed with p value <0.05.

Results

General public

There was a considerable variation in the response of the general public towards symptoms of a TIA. Many would wait for symptom recurrence before seeking medical attention following monocular visual loss (41%, GP 53%, A&E 6%), UL weakness (51%, GP 47%, A&E 2%), UL sensory loss (68%, GP 30%, A&E 2%) and UL pins and needles (95%, GP 4%, A&E 1%). In contrast, only 11% would wait for recurrence (GP 72%, A&E 17%) after speech disturbance, reducing to 1% when combined with UL weakness (GP 55%, A&E 44%). When the public sought medical attention the majority chose to see their GP rather than attend A&E.

Although the incidence of cerebrovascular disease is greater in men there was no significant difference between the sexes in their responses (Table 2). Similarly age did not appear to influence the responses. It was not possible to assess if there was a difference in responses between socioeconomic groups as the majority of those interviewed (65%) were from classes I and II.

Medical doctors

Of the 135 medical doctors who completed the questionnaire, all correctly identified that TIA was an abbreviation for a transient ischaemic attack, and that this lasted <24 hours.

Awareness of the hallmark symptoms and signs of a TIA was generally good (Fig 1) although alternative non-focal symptoms (syncope, vertigo, confusion) were frequently considered to represent such an event. This was apparent across all specialties and grades, except for medical SpRs (Fig 2).

Most doctors were aware that a TIA carried a risk of a subsequent stroke and the majority of medical registrars (60%) correctly identified the risk as 11–20% during the month following a TIA. In comparison many others (GP 23%, surgical SpRs 21%, FY1 21%) underestimated the risk.

Table 1. Age distribution of members of the general public responding to the questionnaire. Values expressed as percentage in parentheses. There was no difference in the age distribution between men and women (χ^2 p=0.35).

	Number (%)		
Age	Group	Men	Women
40–49	55 (29)	24 (25.5)	31 (33)
50–59	41 (22)	24 (25.5)	17 (18)
60–69	40 (21)	17 (18)	23 (24)
70–79	35 (19)	21 (22)	14 (15)
80–89	17 (9)	8 (9)	9 (10)

In accordance with current guidelines, medical registrars were best at choosing the most appropriate management for a TIA. This included early initiation of antiplatelet therapy (APT) and statins, carotid imaging and prompt referral to a neurovascular specialist. In contrast other doctors showed marked variability in their initial management, which often depended on the presenting symptom.

Antiplatelet therapy

The initiation of APT was suboptimal for all TIA symptoms and particularly so for UL sensory and motor deficits. Doctors were more likely to prescribe APT with monocular visual loss (p=0.03) than any other symptom. No surgical SpRs would commence APT for a patient experiencing transient speech disturbance and GPs were significantly less likely to initiate either APT or statins than medical SpRs (p<0.01).

Carotid imaging

Following a TIA only 5–10% (depending on symptom) of GP thought that a carotid duplex ultrasound (DUS) was an appropriate investigation and were more likely to request routine blood tests (p<0.05). Similarly, medical SpRs were more likely to

Table 2. Comparison of responses to transient ischaemic attack (TIA) symptoms by gender.

TIA symptom	Men			Women			p value (χ^2)
	A	B	C	A	B	C	
Amaurosis fugax	48	47	5	34	58	8	0.12
UL hemiparesis	54	45	1	54	46	0	0.60
UL hemianaesthesia	69	30	1	66	30	4	0.39
UL hemiparathesia	96	4	0	95	3	2	0.34
Slurred speech	8	78	14	7	72	21	0.42
Slurred speech and UL hemiparesis	0	62	38	1	49	50	0.12

All values are expressed as percentages. A: wait to see if it happens again before seeking medical advice; B: go to your general practitioner (GP) as soon as possible; C: go to the accident and emergency department the same day. UL = upper limb.

request a cerebral computed tomography scan then DUS (p=0.02). The mean frequency for requesting DUS in patients with any of the hallmark symptoms by each of the groups of doctors is shown in Fig 3. When DUS was not requested a variety of other investigations were chosen, including cervical spine X-ray and spinal magnetic resonance imaging in patients presenting with UL symptoms.

Referral to specialist

Referral to an appropriate specialist varied among doctors and again depended on the presenting symptom. Surprisingly, other than for UL sensory loss surgical SpRs would refer at similar levels to medical registrars (p=0.12). However, this may reflect their failure to understand the neurological symptoms since referral occurred without initiating AP or requesting DUS. A number of BST (20%) would refer patients with motor or sensory deficits to orthopaedic surgeons and this is mirrored by their requests for imaging of the spinal column. After a first TIA 22–40% (depending upon presenting symptom) of patients would not be referred by their GP for further investigation and management. The data for each of the hallmark symptoms is shown in Fig 4.

Discussion

The data from this study are cause for concern. Depending upon the symptom 1–95% of the public would not seek medical attention following a first TIA. This contrasts with a recent Swiss study which reported that 8% of the public would take no action following a TIA symptom.[6]

From the publics' perspective dysphasia was the symptom for which they were most likely to seek medical attention, particularly if combined with a temporary motor deficit. For isolated motor symptoms, however, only 49% would seek medical attention. These findings differ from previous reports that suggest that motor symptoms lead to earlier presentation more often,[7] and with similar frequency to speech difficulties.[8]

The response to monocular visual loss and a variety of UL symptoms in this study demonstrates a remarkable disregard for their significance. However, others have reported that the public do not usually perceive visual disturbances to be a warning sign of stroke[9–12] in contrast to motor or sensory deficits.[9,11,13,14]

When medical advice is sought this is most likely to be

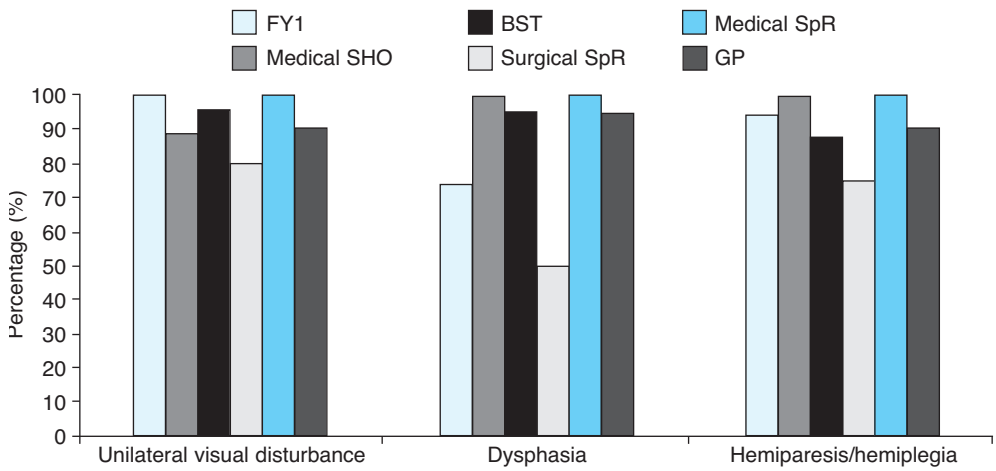

Fig 1. 'Hallmark' transient ischaemic attack symptoms chosen by doctors. BST = basic surgical trainees; FY1 = foundation year 1; GP = general practitioner; SpR = specialist registrar; SHO = senior house officer.

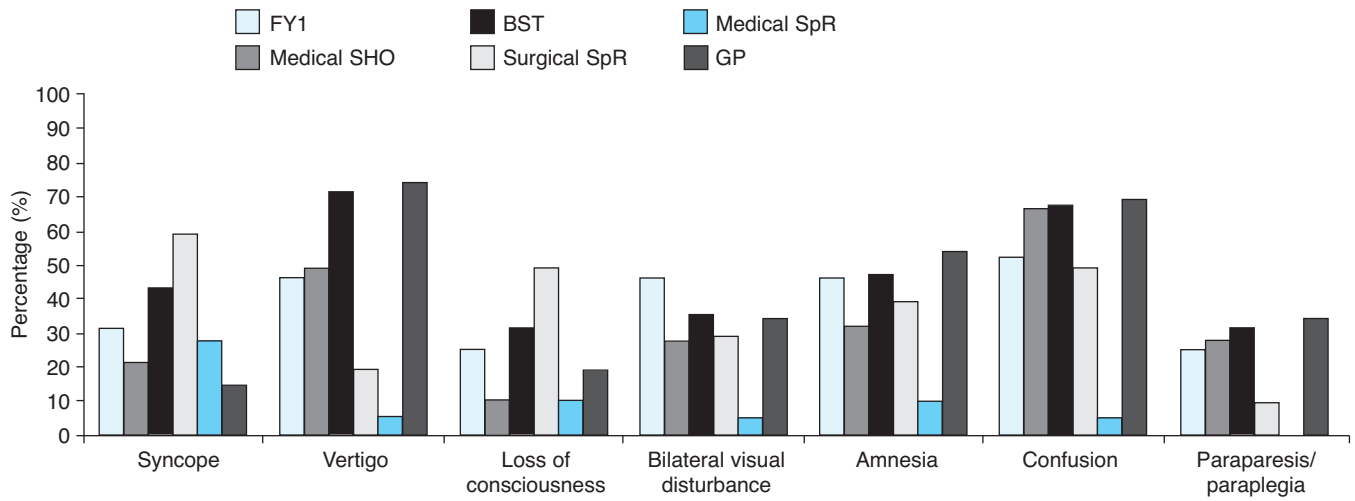

Fig 2. Non-focal symptoms or signs chosen by doctors as representing a transient ischaemic attack. BST = basic surgical trainees; FY1 = foundation year 1; GP = general practitioner; SpR = specialist registrar; SHO = senior house officer.

from a GP. A delay in obtaining an appointment compounded by a further wait after specialist referral reduces the likelihood of early assessment. Indeed Goldstein *et al* reported that 32% of TIA patients were not evaluated within a month of the first event.[15]

Although previous studies have suggested that women,[6,8,10,12,13] and either young[10,13,16] or middle aged[12,14] patients have better knowledge and awareness of TIA and stroke the present study showed no sex or age-related differences in the responses obtained. Other reports have also highlighted that awareness of cerebrovascular disease is better in those with higher levels of education[6,8,10–12,14,16,17] and higher income.[8,16,17] In this study 65% of respondents were socioeconomic class I and II and would be expected to be more knowledgeable suggesting that for the wider population appropriate responses to TIA are even less likely.

Although the study cohort appeared uninformed about cerebrovascular disease, this data would seem to mirror those of the Swiss study in which 87.2% of people did not recall having heard the term 'transient ischaemic attack' and only 2.8% regarded TIA as a potentially harmful event,[6] even though their subsequent responses were more likely to be appropriate. In contrast, this lack of public awareness that TIA is a medical emergency was also evident in another recent study where only 44.4% of patients sought medical attention following a TIA.[7] These findings make it certain that the window of opportunity for intervention following a TIA will often be missed.

The present study has also shown that access to appropriate TIA management maybe hampered by inadequate medical knowledge. While all doctors were aware that symptoms of TIA should last no longer than 24 hours it has been reported that only 43% of primary care physicians recognised that symptoms should resolve within 24 hours.[18] In the present study, GPs considered symptoms of vertigo (75%) and confusion (70%) to represent a TIA. Similar data has been reported by others which suggests that there are serious flaws in medical education,[18,19] and is further supported by the findings of the Oxford Community Stroke Project which reported that 62% of patients referred by GPs with a suspected TIA had alternative diagnoses including migraine, syncope and vertigo.[20]

The data presented here has also highlighted wide variation in the management of suspected TIA. Thus 23% of GPs would refer patients with monocular blindness to an ophthalmologist, while surgical trainees chose to refer patients with motor and sensory deficits to orthopaedic surgeons rather than neurovascular specialists.

As with the public, doctors would take action more often following speech disturbance especially when combined with UL weakness. However, with transient UL weakness alone around 20% of surgical SpRs would take no action and this rose to 40% for UL sensory loss. It is both surprising and concerning that doctors' responses generally mirrored those of the public particularly given that the majority of patients experiencing a TIA present with motor or sensory deficits.

Of even more concern, given that most TIAs occur in primary care is the finding that GPs would not refer 22–40% of TIA patients, depending on symptom type despite the majority estimating that the post-TIA risk of stroke was >20%. This is not reflected by their referral policy and demonstrates a lack of familiarity with the current guidelines.[21]

It is also clear that many doctors do not appreciate the stroke risk following a TIA since they underestimated the subsequent risk as <10%. National guidelines need to stress that the risk of a stroke is high following a TIA.

The National Service Framework recommends that all patients with a suspected TIA should be given aspirin immediately unless there is a suspicion of haemorrhagic stroke or contradictions to aspirin use. Antiplatelet prescription varied among all those interviewed with only medical SpRs adhering to the guidelines. That few doctors prescribed appropriately reflects failure to appreciate both the disease process and the national guidelines. Although Tomasik *et al* reported that less than 22% of primary care physicians would prescribe an antiplatelet drug in the event of a TIA, GPs in this study were

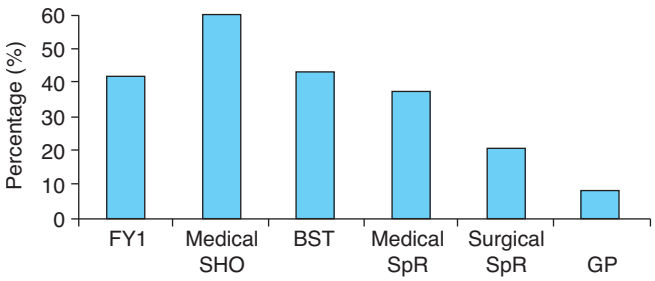

Fig 3. The mean frequency for requesting a duplex ultrasound by each of the groups of doctors for any of the hallmark symptoms of a transient ischaemic attack. BST = basic surgical trainees; FY1 = foundation year 1; GP = general practitioner; SpR = specialist registrar; SHO = senior house officer.

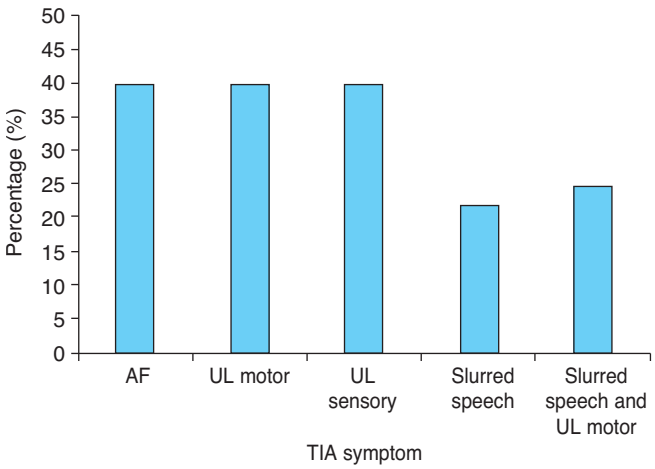

Fig 4. Percentage of general practitioners (n=40) who would not refer patients with certain symptoms for further investigation and management. AF = amaurosis fugax; UL = upper limb.

better (50–70%) depending on symptom.[22] Worryingly no surgical SpRs would prescribe aspirin for dysphasia and only 20% would do so when it was combined with UL hemiparesis. Save for medical SpRs and SHOs who are likely to have worked on acute admission or stroke units it would appear that rapid referral is more of a precedent than initiating appropriate secondary prevention measures for other doctors.

The plan of investigation for TIA patients varied considerably between doctors in different specialties and often reflected how each symptom was interpreted. Medical SpRs chose both a cerebral CT scan and a DUS for all symptoms reflecting their higher level of awareness of TIA and stroke. Alternative investigations were chosen by others (temporal artery biopsy for amaurosis fugax, C-spine radiograph for UL hemiparesis), which might be explained by the diversity of symptoms that can be associated with both TIA and other medical disorders.

It would appear that GPs are not well informed with regards to early, effective TIA management on all levels when compared to medical registrars. This suggests that they do not perceive TIA as potentially serious event. While this is unsatisfactory even among consultant neurologists variability in the management of TIA has been reported with disparity in initiating aspirin.[23]

Conclusion

This study has highlighted major deficiencies in the awareness of TIA among the general public, doctors and in particular GPs. There is considerable scope for improvement and this is mandatory if the recently proposed Stroke and TIA Initiative (Department of Health) is to be effective.[24] A national campaign is required to educate not only the public but also the medical profession. Focus must be placed on the identification of symptoms and early referral to the appropriate specialist for investigation and management. It must be made clear that a TIA is a medical emergency and requires urgent medical attention.

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