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Qualitative Research

Managing transient ischaemic attacks in Australia: a qualitative study

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Abstract

Background. Stroke risk after transient ischaemic attack (TIA) is highest in the first few days. It is greatly reduced by commencing commonly used medications. Current Australian guidelines recommend that all TIAs be managed urgently by secondary-care specialists (mandatory for high-risk TIAs). The majority of TIAs present to general practice which creates a dilemma when specialist care is not readily accessible. There is a lack of evidence relating to the determinants of general practitioners' (GPs) actions in this situation.
Objective. To explore GP management of TIA presentations.
Methods. A qualitative study using semi-structured interviews of a maximum variation sample of senior and trainee GPs from New South Wales, Australia. Data collection and thematic analysis were concurrent and iterative, employing constant comparison, co-coding, participant transcript review, reflexivity and continued until thematic saturation was achieved.
Results. Management of TIA was heterogeneous and depended upon the GP's engagement with the individual case. The level of engagement was predicated on the GP's predisposition toward managing transient neurological presentations generally, the clinical phenotype of the presentation and logistical or health system factors. Management was categorised as triage, guided collaboration, consultative collaboration and independent management. Collaboration with secondary care increased the GP's capability to diagnose and manage future TIAs.
Conclusion. Heterogeneity of TIA management equates with variation from guideline recommendations. However, Australian guidelines may not be practicable due to variability in access to secondary-care specialists. Future models of care should consider systems approaches such as telemedicine to promote collaboration and assist GPs to comply with guidelines.

Key words: Cerebrovascular disorders, general practice, neurology, qualitative research, stroke, transient ischemic attack.

Introduction

Transient ischaemic attack (TIA) is an emergency because the risk of recurrent stroke is high, with estimates of 10%–15% within 90 days (1). Much of this risk arises in the first 48 hours (2). In 2009, 6% of all deaths in Australia were from stroke (3) and in 2012, more than 420 000 people were living with the effects of stroke (4). Given this high population burden of cerebrovascular disease, effective prevention strategies are required. Stroke risk post-TIA can be greatly reduced by early treatment with simple therapies (5) as reflected in the Australian National Stroke Foundation guidelines

(NSF-guidelines) (6). These also recommend urgent management of high-risk TIA by specialist stroke physicians – either by hospital admission or by rapid-access TIA clinic (6). Lower risk TIAs are recommended to have urgent investigation and then TIA clinic/specialist review within 7 days. Similar recommendations for managing TIA are made by the National Institute for Health and Care Excellence in the United Kingdom (7) and also by the American Heart Association (8). However, as in many countries, access to TIA clinics/specialists is often not ideal in Australia. Acute-access TIA clinics are not widely available (especially outside major cities) and those that exist struggle to see patients within the recommended timeframes (median waiting time of 7 days) (9,10), leading to a high risk of potentially avoidable morbidity and mortality. The recommendations for assessment in a rapid-access clinic (6) are largely based on UK evidence (5) and the relevance to Australian practice (especially rural practice) is uncertain. The organisation of care, access to imaging and access to specialists in Australia are very different from that in the United Kingdom. Recent evidence suggests that TIAs in Australia mostly present to general practice (11), so general practitioners (GPs) may face a dilemma whereby a lack of access to urgent expert stroke care may dictate that they practise contrary to NSF-guideline advice.

There is little evidence of how GPs in Australia manage TIA, and what information is available does not explore the 'why' of the GP's decisions (12,13). Given the practical challenges in the delivery of NSF-guideline-recommended TIA management in many regions of Australia (10), we sought to explore the experiences of early career GPs and more senior GPs in their evaluation and management of TIA.

Method

This qualitative study employed a thematic analysis (14) approach with one-on-one semi-structured interviews with GP registrars (who are GP trainees with recent experience of hospital TIA management) and experienced GPs who supervise GP registrars. The interviews were undertaken in person or via telephone from June 2014 to March 2015. A telephone interview was offered, where distance prevented meeting in person. Participation was invited by e-mail to all GP registrars and supervisors of two regional GP vocational training organisations in New South Wales, Australia. During recruitment, demographics were monitored to achieve a maximum variation sample based upon gender, urban/rural practice, Australian/internationally trained and experience. This ensured that a diversity of accounts about approaches to TIA management were elicited.

An initial interview schedule (see Table 1) was constructed from the literature, but interviews were informant-led as far as possible, allowing for the emergence of new themes. These were iteratively included in subsequent interview schedules. The interviews explored personal experience of managing TIA and used hypothetical scenarios (see example in Table 2) of transient neurological symptoms to assess intended management of TIA, given it is not a common presentation, and therefore a participant may have had limited personal experience (13). The interviewer had discretion to choose individual scenarios from a group of 11 (guided by the interviewer's intent to explore issues beyond the participant's experience of managing TIAs). The components of any scenario could be altered incrementally during the interview to iteratively pursue interesting threads of data. Use of scenarios or vignettes is an established technique in qualitative research (15). Summarising and paraphrasing techniques were used during the interviews to confirm the interviewer's understanding of the participant's meaning (16).

Recruitment continued until thematic saturation was achieved. Interviews were recorded and transcribed verbatim. Participants were provided with their transcript to review and annotate if desired. Interviews were conducted by one interviewer (AD). Data collection and analysis were iterative and concurrent, employing inductive thematic analysis of transcripts and a process of constant comparison to determine emerging themes. Independent coding by a further investigator (PM) with subsequent comparative coding was undertaken to ensure accuracy and completeness. Differences in interpretation were resolved by discussion and consensus. Themes were collated and then abstracted to form a theoretical description. At all stages reflexivity was employed to maintain awareness of the investigators' experience of TIA (personally, clinically and academically, AD and PM being GP registrar and GP, respectively) as well as the privilege of reviewing fellow practitioners' management.

This study was approved by the University of Newcastle, Australia, Human Research Ethics Committee; reference number H-2014-0130.

Results

Twenty-two interviews were conducted following invitations to 360 GP supervisors and 407 GP registrars. Eight participants were GP supervisors and 14 were GP registrars. Of these participants, 8 worked rurally, 3 were internationally trained and 12 were female (see Table 3). The face-to-face interviews and most telephone interviews were conducted in an office setting where the GP worked.

The themes of 'Engagement' and 'Spectrum of Management' emerged from the data. A basic finding was the heterogeneity of GP initial management of TIA presentations. We categorised management as 'Triage', 'Guided Collaboration', 'Consultative Collaboration', 'Independent Management', and 'Misdiagnosis', and these form the theme 'Spectrum of management' (see Figure 1). The management adopted for a particular presentation was predicated upon three components that form the theme of 'Engagement': the GP's general predisposition toward transient neurological presentations, the clinical phenotype of the presentation and logistical or health system factors. These combined to influence the GP's engagement with the case, which in turn guided management choices. The greater the engagement, the more actively the GP investigated, collaborated and followed up a case. At either end of the 'Spectrum of management' sit 'Triage' and 'Independent Management', representing minimal

Table 1. Interview schedule

Establish rapport
Enquire about participant's personal experience with diagnosing and managing TIA • Determine comfort level for diagnosing TIA and its mimics • Determine what drives the decision to refer to secondary care or not • Enquire about where their TIA knowledge came from • Do they hope to manage TIA alone in the future • What resources do they use to help diagnose and manage TIA
Choose and discuss as many hypothetical case scenarios as time allows • What is the likely diagnosis and differential • What immediate steps will they take to manage it • What is the short-term plan over the next week • Determine how they reached their diagnosis • Determine what influenced the choice of management actions
Enquire about knowledge about, and use of the NSF-guidelines
Close the interview

NSF = Australian National Stroke Foundation; TIA = transient ischaemic attack.

Table 2. Example hypothetical scenario

Vivian is an 88-year-old Vietnamese lady who had a non-ST-segment elevation myocardial infarction at 75 (no interventions at the time), has left ventricular dysfunction (left ventricular ejection fraction<40%) and chronic kidney disease stage 3a (estimated glomerular filtration rate 48, no micro-albuminuria)
Yesterday she had been outside for about 2 hours just enjoying walking around her garden when she started to feel giddy and nauseous. She decided to walk inside (about 20 m walk) and sit down [optional inclusion: she felt a little unbalanced while walking]. Her husband found her slumped to the right in her chair, unconscious (this was thought to be within minutes of start of event). She responded when he shook her and called her name. The giddiness and nausea passed in less than 5 minutes. She is unclear whether there was a spinning sensation or if she just felt light-headed.
She rested for the remainder of the day. She felt fine when she stood up after a long rest in her chair. Nothing like this has happened to her before and she feels normal now.
She takes aspirin 100 mg od, perindopril 10mg od, bisoprolol 10mg od, atorvastatin 40 mg od, and frusemide 40mg od.
Upon examination, her heart rate is 52 regular, sitting blood pressure is 109/84, standing 95/75 with heart rate 54 and waist is 89 cm. All other examination is normal.

Table 3. Participant demographics of a maximum variation sample – data collected from June 2014 to March 2015

Participant code	Role	Gender	Years of practice (since medical degree)	Practice location	Training	Nearest secondary care service (minutes driving time)	Interview method[a]
R1	Registrar	Male	1–5	Urban	Australian	1–10	Face-to-face
R2	Registrar	Female	1–5	Urban	Australian	11–30	Face-to-face
R3	Registrar	Male	1–5	Rural	Australian	>90	Face-to-face
R4	Registrar	Male	6–10	Urban	Australian	11–30	Face-to-face
R5	Registrar	Male	1–5	Rural	Australian	11–30	Face-to-face
R6	Registrar	Female	1–5	Urban	Australian	1–10	Telephone
R7	Registrar	Female	6–10	Urban	International	11–30	Telephone
R8	Registrar	Female	1–5	Rural	International	31–60	Face-to-face
R9	Registrar	Female	1–5	Rural	Australian	11–30	Telephone
R10	Registrar	Female	1–5	Urban	Australian	1–10	Telephone
R11	Registrar	Female	6–10	Urban	Australian	11–30	Face-to-face
R12	Registrar	Female	1–5	Urban	Australian	11–30	Face-to-face
R13	Registrar	Female	1–5	Rural	Australian	31–60	Face-to-face
R14	Registrar	Female	6–10	Urban	Australian	1–10	Telephone
S1	Supervisor	Male	26–30	Rural	Australian	11–30	Face-to-face
S2	Supervisor	Female	36–40	Urban	Australian	1–10	Face-to-face
S3	Supervisor	Male	36–40	Urban	Australian	1–10	Face-to-face
S4	Supervisor	Male	16–20	Rural	International	1–10	Telephone
S5	Supervisor	Male	21–25	Urban	Australian	1–10	Face-to-face
S6	Supervisor	Male	36–40	Urban	Australian	11–30	Face-to-face
S7	Supervisor	Female	21–25	Rural	Australian	>90	Telephone
S8	Supervisor	Male	26–30	Urban	Australian	11–30	Telephone

[a]Interview durations had a median of 32 minutes and an interquartile range of 29–36 minutes.

and maximal engagement with a case. 'Misdiagnosis' represents delayed recognition and management and sits outside the 'Spectrum of management'.

Spectrum of management: Triage

If suspecting a TIA, 'triage' involved immediately directing the patient to an emergency department or rapid-access TIA clinic. If directed to a TIA clinic then brain imaging may occasionally be ordered in advance and antiplatelet therapy may be started, but engagement with management was minimal.

> S2-"So if I'm worried I send them to hospital and if I'm not that worried I'd organise an appointment at the TIA clinic."

Spectrum of management: Guided collaboration

In 'guided collaboration', the practitioner would telephone the on-call neurology service to discuss the case. The defining feature was an uncertain participant seeking guidance. Typically, the participant fully complied with instructions from the neurologist without engaging in negotiation or discussion of the course of action.

> R13-'I spoke to the advanced trainee at [hospital] and he basically said 'This is what we're gonna do". Actually he was the one who told me "Start aspirin, start half a ramipril, start Lipitor at this [dose], we're gonna see her this week."'

Spectrum of management: Consultative collaboration

'Consultative collaboration' also involved telephone discussion with the neurology service but was characterised by professional interaction and the negotiation of a management plan. The plan could be individualised for the particular presentation, informed by the GP's knowledge of the patient and of local logistics. Sometimes, the GP was confident of their approach and would present their diagnosis and management, seeking confirmation or further suggestions.

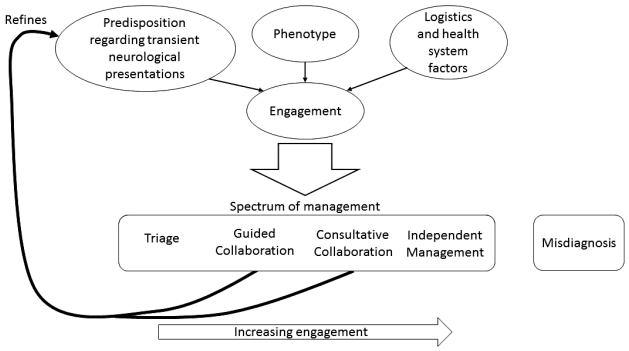

Figure 1. Schema for general practitioner initial management of transient ischaemic attack.

> R3-'I talked with the stroke fellow and [he said] "that's a bit of a reasonable story for some form of vertebrobasilar insufficiency" and so we elected [to] load her with aspirin and I got her seen the next day at [hospital] with no imaging'
>
> S6-'I'd probably say, ring them up and speak to the guy and say, "I've done x, y and z, these are the results, do you wish to see them or not?" and they may well say, "Nah, look you've done everything, everything's fine, certainly sounds like it"'

Spectrum of management: Independent management

For 'independent management,' the practitioner was confident of the diagnosis and their ability to manage without specialist input (an approach not supported by current NSF-guidelines).

> R5-'if they're not quite as, high risk, I'm quite happy to arrange outpatient investigations and work them up'

Spectrum of management: Misdiagnosis

A final category was 'misdiagnosis', demonstrated by a presentation where diplopia was later diagnosed as TIA by an ophthalmologist. It was seen as a powerful learning opportunity.

> R12-'So it was good to hear that, and now that makes me think [to include TIA in the differential]'

A GP's management approach was not fixed but could vary along the spectrum of management depending upon the particular phenotype of the transient neurological presentation and other contextual patient factors.

> R11-'I'm actually not sure whether it was a TIA and they're the ones I tend to refer on. If it's really obvious that it was and I know what to do I'll just manage it myself.'

Determinants of engagement: Predisposition regarding transient neurological presentations

The GP's predisposition towards transient neurological presentations was much influenced by the perceived difficulty of TIA in general. Many thought TIA diagnosis to be singularly challenging.

> R14-'a lot of the time I find that it's a bit vague and then in terms of the work-up it's not quite clear-cut either…. I guess I am always questioning how far do I need to go in terms of investigations'

This, in turn, was to some extent moderated by individual knowledge and experience.

> S8-'it's all happened over years I suppose, experience and exposure. I worked in [casualty] for a few years and then in general practice for 20-odd years, it's sort of, just over time, exposure and feedback and follow-up.'

The participant's beliefs regarding their role and responsibility as a GP also framed the approach to managing TIAs. For some, TIA was the responsibility of a sub-specialist not a GP.

> R1-'there's not enough objective stuff to refer to, I'd rather the guys that are paid to, to make those discerning decisions [re TIA or not]'

Given the challenging nature of diagnosis of transient neurological symptoms, the practitioner's tolerance of uncertainty also influenced management decisions.

> S2- 'I would always be wanting to exclude a stroke or bleed'

These elements interact to predetermine a GPs willingness to take ownership of TIAs in general and pursue investigation and management, either alone or in collaboration with secondary care.

Determinants of engagement: TIA phenotype

Factors relating to the specific nature of the presenting case include the complexity of the presentation. Some presentations were deemed to be particularly difficult or challenging.

> S1-'the ones that cause us the most trouble are the sort of query migraineurs'
>
> R14-'This is the type of one that really gets me, the vertigo one.'

The perceived risk of a poor outcome was a further factor; the combination of diagnostic uncertainty and high risk of serious outcome (stroke/death) constituted a powerful imperative not to take on sole responsibility for management.

> S5-'my level of anxiety, if I'm pretty convinced this is a TIA, the person does seem to be a [patient with serious multi-morbidity], likely to have another one, I'd be much happier sending them up to the hospital'

Most participants exhibited a patient-centric approach; the patient's preferences regarding investigation and treatment being a strong determinant of management actions.

> R12-'so he [elderly] is keen for active management but he just wants to come here [GP surgery]'

Determinants of engagement: Logistical and health system factors

Time was seen as an elastic concept where GPs endeavoured to make the necessary time available because TIA is an urgent condition. However, sometimes a 'triage' approach was chosen as being more time-efficient (for the GP) when a collaborative or independent approach was not possible.

> S8-'I think time is fairly flexible. It hasn't prevented me doing what I needed to'
>
> R11-'if I am time-pressured now I'll tend to flick them to the hospital system more easily if I think there is something that they may need to be involved with.'

Access to specialists was a major constraint in rural locations. Distance and transport logistics made guideline compliance impractical in some patients' management, but access disadvantage could be seen in well-serviced urban locations as well.

> R12-'but a lot of my older patients will not [travel to a specialist]'

S4-'he could see a physician… within a month, the neurologist within 3 to 6 months'

R10-'He lives alone … in a place with limited public transport access. He seems to be financially struggling a bit because he wasn't able to pay for a cab to go to the appointment … that had been made by the neurologist.'

Collaboration

An important finding was that collaboration with secondary care subjectively improved the GP's confidence and skills in diagnosing and managing future TIA presentations.

R11-'so I have used that [a previous specialist conversation] subsequently when I thought "Oh that is really similar to that other case, so it's probably not [a TIA]", so I'd be more confident'

S6-'Oh yeah, that [discussing cases with a specialist helping with managing future cases] happens a lot'

Discussion

Summary

Considering the initial management of TIA by GPs within the schema constructed in this study, there are important findings for clinical practice and service organization. As shown elsewhere (12,17), TIA is challenging for GPs. Diagnosing a TIA is difficult given the heterogeneous presentations and given diagnosis is entirely based upon history with, by definition, negative examination findings. Many of the GPs indicated that one-off telephone assistance for diagnosis and management was sought and appreciated, particularly for rural patients with poorer access to specialist care.

There was heterogeneity of management undertaken by GPs which affected choices about investigations, referral and secondary prevention. This heterogeneity impacted adherence to NSF-guidelines. Also, timely access to secondary care assessment was seen as a particular problem for rural patients.

Finally, it became apparent that GPs who spoke directly to their specialist colleagues increased their own skills base. They acknowledged that it promoted confidence and independence in future TIA diagnosis and management. This has the potential to expedite early institution of efficacious pharmacotherapy and reduce the risk of stroke prior to specialist review. It also has the potential to enable better GP assessment of transient neurological symptoms, and lead to less referrals of TIA mimics to acute neurovascular clinics (thus increasing clinic efficiency).

Strengths and limitations

The qualitative methodology is a strength of this study, given the complexity of GPs' TIA management strategies and the use of hypothetical scenarios increased data-richness (15) for an infrequent presentation to the individual GP (13). Not only was variability in management identified (and lack of guideline-congruent management), it also elicited reasons and context for the variability. This will inform future research into means of reducing this variability and achieving more consistent early TIA management.

A limitation for our finding of variability of management is that no estimate can be made of the prevalence of each approach. Also, it cannot differentiate between what a participant says they do and what they actually do.

Comparison with existing literature

There is little existing literature relating to management of TIA in general practice. A small survey of GPs in Western Adelaide suggested there was uncertainty about when and whether to start secondary prevention such as antihypertensive and statin medication (12). A large cross-sectional study of Australian GPs from 2005 to 2010 reported very low rates of brain imaging and secondary prevention for TIA-related consultations (13). However, interpretation of this study should be cautious because it did not report proportions of referral to a TIA clinic, emergency department or specialist, nor pre-existing medications, and did not distinguish between initial presentations and follow-up visits. Nevertheless, these studies suggest that compliance with NSF-guidelines may not be ideal. This situation is not isolated to Australia with recent evidence from the United Kingdom, France, and Japan pointing to sub-optimal compliance with TIA guidelines (18–20). However, none of these studies address the clinical thinking during the TIA consultation to understand why management choices are made nor is there to our knowledge any other published research that does so.

Implications for research and/or practice

Our findings may suggest scope for a telemedicine model of care to reduce access issues and enable adherence to NSF-guidelines (6). Such a model has been shown to be both practical and effective in acute stroke care (21). Ideally, such a model would entail a separate telemedicine consultation with a stroke specialist later that same day or the following day. Further research is needed to determine whether it could be a solution to access issues for rural and remote people or urban dwellers with access barriers.

Conclusion

While a qualitative study cannot estimate degree of compliance with NSF-guidelines, the range of management approaches elicited suggests it is likely there is a frequent lack of guideline-congruence in GPs' TIA management. But the complexity we have demonstrated suggests that compliance with current NSF-guidelines may be impractical in some circumstances. Guideline compliance may even be unnecessary sometimes given the current practice of 'consultative collaboration' and the scope for extensions of this with techniques such as telemedicine. Further, if such a model increased the interaction between the GP and the specialist then this study suggests that the capability of the GP may increase and reliance on rapid physical access to the neurologist may lessen to the benefit of both patient and health system.

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Declaration

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Conflict of Interest: none

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