

Atypical Migraine: a case study

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Received: 7 November 2021

Revised: 15 November 2021

Accepted: 18 November 2021

Published: 31 December 2021

Journal of The Arab Society for Medical Research 2021, 16:173–176

Migraine is a chronic neurological condition that places a huge burden on patients and the society. Frequent headaches affect patients' quality of life and interfere with their daily activities. Evidence suggests that migraine with aura can be associated with increased risk of having a stroke and other neurological complications; therefore, patients with migraine presenting with atypical symptoms present a complex medical challenge that would need further assessment in a hospital to exclude neurological conditions such as stroke or transient ischemic attack. We describe a case of a man who was evaluated at South Tees University Hospital, UK, and known to have chronic migraine with aura for 10 years. He presented to his general practitioner with new transient neurological symptoms and a different type of headache. This case reflects the level of diagnostic complexity and symptom overlap in patients presenting with atypical migraine, transient ischemic attack, and stroke.

Keywords:

atypical migraine, MRI, transient ischemic attack

J Arab Soc Med Res 16:173–176

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1687-4293

Introduction

Migraine is a genetically determined neurovascular disorder characterized by chronic or episodic headache with or without an aura. Migraine is the second most disabling condition worldwide effecting patient's social life, employment, health care resource use, and quality of life [1].

It can present at any age but more commonly between 25 and 55 years of age, with a worldwide prevalence of one in seven and a lifetime prevalence of 33% in women and 13% in men [2].

The main features of a migraine are unilateral throbbing headache lasting for 4–72 h associated with nausea, and photophobia; it can be preceded or associated with aura, which is characterized by reversible neurological symptoms, usually visual disturbances, but can also present with sensory, language, or motor symptoms, which is only present in 15–30% of patients with migraine. The diagnosis of migraine is based on history and clinical examination; laboratory tests and imaging are not usually necessary for diagnosis [3,4].

The management of migraine involves lifestyle changes by advising patients to identify and avoid trigger factors and to avoid stress, avoid lack of sleep and dehydration, maintain regular meals, exercise, and have a healthy weight, which can help in mitigating the symptoms [2].

Acute attacks are managed with analgesics such as paracetamol, NSAIDs, aspirin, and triptans, in

addition to antiemetics, which may also be used if appropriate.

Furthermore, preventative treatments should be offered to patients when appropriate [2].

Migraine can be associated with a range of complications such as medication overuse headache, status migrainosus, persistent aura without infarction, migrainosus infarction, and an increased risk of ischemic stroke [2].

Migraine and particularly migraine with aura is associated with an increased risk of ischemic stroke, hemorrhagic stroke, and cardiovascular disease [5].

Evidence suggests that migraine with aura is associated with endothelial dysfunction and circulating coagulation factors that may increase the risk of thrombosis and ischemic stroke. However, the precise pathophysiological pathways remain unclear. Other factors such as changes in cerebrovascular reactivity and cerebral ischemic threshold in patients with migraine with aura have also been linked with ischemic stroke [5].

Stroke and transient ischemic attack (TIA) present with acute-onset neurological deficit of vascular

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origin mainly occurring after the age of 50 years. TIA is suspected if the neurological deficit resolves completely by 24 h [6].

Despite the difference between migraine and stroke in age of onset, sex preponderance, outcome, and treatment, evidence suggests that migraine can be a risk factor for stroke. Therefore, differentiating between TIA, initial stroke, and migraine can be challenging, which is complicated by the large burden on society imposed by these conditions [5].

Case study

Mr A, a 49-year-old man with a background history of chronic migraine with aura, attended his GP appointment. He had no other significant past medical history and was not on any regular medications. His dad died owing to a stroke at the age of 66 years.

He presented with an episode of gradual-onset unsteady gait 3 days ago followed by double vision the following day; this was preceded by gradual-onset tingling sensation on the right side of the face, which spread to his left arm and legs.

All symptoms lasted around 2 h each time and then resolved spontaneously. Mr A reported having a mild frontal headache in the last 3 days, which was different from his usual migraine.

On the day, the patient was referred to the accident and emergency department for an assessment. Clinical examinations including vital signs were within normal range. Blood pressure reading was 118/88 mmHg. The examination of fundi and a full neurological examination were unremarkable. A 12-lead ECG finding showed a sinus rhythm with a normal rate. He was referred to the local university hospital for an urgent assessment by the stroke team. Blood tests including fasting blood glucose, urea, sodium, potassium, estimated glomerular filtration rate, liver function tests, total cholesterol, and erythrocyte sedimentation rate were arranged (Table 1). Neuroradiological imaging of the brain was also arranged. All the blood test results were within normal range. Subsequently, an MRI scan of the brain and MR angiogram of the brain were also arranged within 3 days of the onset of symptoms, and the results were unremarkable. MR angiogram did not show any significant vascular abnormality. Diffusion-weighted imaging sequences did not show any high signal intensity, which indicated the absence of

Table 1 Laboratory results for the case study

Parameters	Reference range	Case study
Fasting blood glucose	4.0–5.9 mmol/l	5 mmol/l
Urea	2.5–7.8 mmol/l	3.5 mmol/l
K	3.5–5.3 mEq/l	3.6 mEq/l
Na	133–146 mEq/l	135 mEq/l
eGFR	More than 60 ml/min/1.73 m	90 ml/min/1.73 m
Alkaline phosphatase	30–130 IU/ml	60 IU/ml
Bilirubin (total)	0–21 µmol/l	10 µmol/l
ALT	0–55 IU/l	16 IU/l
Cholesterol	Less than 5 mmol/l	3.2 mmol/l
ESR 1st h	Less than 10 mm/h	5 mm/h

ALT, alanine aminotransferase; eGFR, estimated glomerular filtration rate; ESR, erythrocyte sedimentation rate; K, potassium; Na, sodium.

restricted diffusion. Fluid-attenuated inversion recovery sequence did not reveal significant changes either, as shown in Fig. 1.

The patient was not found to have any significant vascular risk factors such as diabetes, hypertension, and smoking. The patient had a long history of migraine for more than 15 years. It was infrequent but became more frequent with stress and sleep deprivation. He described his typical episode of migraine as an aura in the form of visual symptoms described as flashing lights in the periphery of his visual field lasting 10 min followed by right-side unilateral headache for 4–8 h. The patient reported that he did not experience other neurological symptoms in the past.

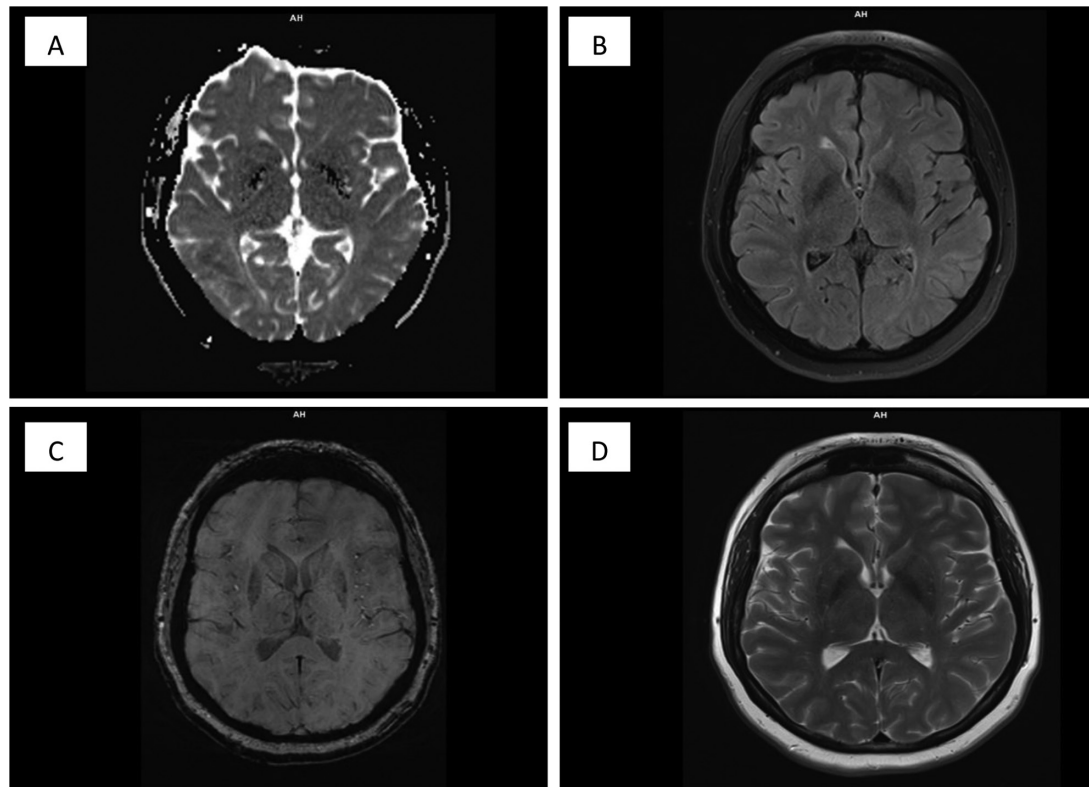
Based on the gradual onset and progressive nature of the neurological symptoms as elicited by the clinical history, absence of vascular risk factors, normal blood test results, and neurological imaging the neurovascular team concluded that the diagnosis was migraine with an atypical presentation.

Discussion

Overall, 80% of all strokes are ischemic in nature owing to reduced blood flow to the brain, whereas 12% of strokes are hemorrhagic in origin [7].

The current guidelines suggest that patients known to have migraine who present with normal neurological examination do not need routine MRI. However, MRI is recommended in patients presenting with atypical headache, focal neurological symptoms, or seizures [5].

Figure 1



MRI scan of the brain with different sequences. (a–d) A normal cerebral parenchyma.

Migraine aura without headache is a diagnosis to be considered in patients with episodes of recurrent transient neurological symptoms in the absence of headache; however, this diagnosis should only be made when seizure disorders and TIA are excluded [8].

Assessing patients presenting with neurological symptoms with a background history of chronic migraine can be challenging in a primary care setting, taking a detailed history and a thorough neurological examination is essential. In the presence of atypical symptoms, patients are referred to secondary care for further assessment particularly if presenting with symptoms mimicking stroke or TIA.

Acute onset of focal neurological symptoms in stroke and TIA compared with the gradual onset of similar symptoms in atypical migraine can be a major differentiating point to distinguish stroke or TIA from atypical migraine.

After the assessment in secondary care, clinicians formulate an expert opinion based on clinical history and examination, brain imaging mainly an MRI, in addition to blood tests including inflammatory markers to exclude other conditions [5].

Clinical history has a large role in diagnosing atypical migraine as the gradual-onset slowly progressive nature of the neurological symptom suggests migraine rather than a vascular event, which usually has a sudden onset. Vascular risk factors, family history of vascular events, blood tests, and brain imaging results should all be considered when making this diagnosis [5].

Once patients are diagnosed with atypical migraine, they are further educated about their illness, including headache triggers, and patients are advised to make lifestyle changes and avoid triggers. Additionally, prophylactic treatments are discussed if appropriate and patients are advised when to seek help in case of future episodes [5].

This case highlights the importance of considering TIA and stroke in patients who have a background history of migraine with aura and present with new neurological symptoms. An expert opinion is crucial to rule out a neurovascular event and prevent unnecessary long-term use of medications when patients with atypical migraine are incorrectly diagnosed with TIA. Some evidence suggests that frequent attacks of migraine may be associated with increased risk of stroke. Future studies are needed to investigate the effect of preventative

treatment on the risk of vascular events, especially in patients with multiple vascular risk factors [5].

Further research studies would also be useful to shed some light on the link between migraine severity, aura status, and different genotypes in patients with migraine and their link to increased risk of stroke to help identify patients who are at higher risk and improve their clinical care [5].

Acknowledgements

Authors contribution: Dr Marwa Khattabi wrote the article and submitted the manuscript. Dr Abdulbaset Benatia participated by providing the clinical case details, providing general supervision, and revising the final manuscript.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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