

Migraine with aura, a significant and independent risk factor for ischemic stroke

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SUMMARY

Migraine is the most common type of headache in young adults mainly in women. It has been reported by some observational studies as an independent risk factor for ischemic stroke. We report the case of a migrainous patient who presented an ischemic stroke following a prolonged episode of visual aura. His only other risk factor was smoking.

Keywords: Migraine; Visual aura; Migraine; Ischemic stroke

INTRODUCTION

A 66-year-old right-handed man, a physician, presented at the end of the day with a flickering scotoma of the right eye, followed about ten minutes later by pulsating left hemicranial headaches without nausea or vomiting. The visual disturbances persisted until the next day. He therefore performed on his own request, a brain magnetic resonance imaging (MRI) which revealed an ischemic stroke in the left posterior cerebral artery (**Fig. 1**). He arranges to be hospitalized in the neurology ward. The patient had been suffering from migraine with visual aura for over 15 years, treated with Aspegic 1g in case of crisis. He is an active smoker with 10 pack-years. He denied another cardiovascular risk factors. The patient had a BMI of 27 kg/m², blood pressure of 128/80 mm Hg, pulse of 63/min, and blood glucose of 0.94 g/L. Neurologically, he had good consciousness and alertness, no motor or sensory deficits. He had only a right homonymous hemianopsia. Laboratory tests were normal. Echo-doppler of supra-aortic vessels and the 48-hour ECG holter were all normal. The diagnosis of migraine infarction was retained. He received Aspegic 160 mg/day, Amytryptiline 15 mg/day and Paracetamol 1 g/8h in case of headache. He had a good outcome.

RESULTS AND DISCUSSION

Chronic, recurrent headaches, particularly migraines, have become one of the leading causes of disabilities globally [1]. Migraine is the most common type of headache in young adults, with an estimated prevalence of 4% before puberty and as high as 25% in women by their mid to late 30s [2]. Some observational studies have shown an increase in the risk of stroke among people with a history of migraine, but others have failed to find this association [2].

Ischemic stroke in a migraine sufferer may be categorised as cerebral infarction of other cause coexisting with migraine, cerebral infarction of other cause presenting with symptoms resembling migraine with aura (MA) or cerebral infarction occurring during the course of a typical migraine with aura attack. Only the last fulfils criteria for migrainous infarction. Migrainous infarction mostly occurs in the posterior circulation and in younger women [3]. In 2004, Etminan et al. performed a systematic review and meta-analysis of observational studies from 14 studies, including 11 case-control studies and 3 cohorts, looking for the risk of ischaemic stroke in people with migraine. This study suggested that the risk of stroke is increased in people with migraine and was consistent in people who had MA (RR 2.27) and migraine without aura (RR 1.83), as well as in those taking oral contraceptives (RR

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Fig. 1. Diffusion-weighted MRI of brain showed hyperintense lesion of the left occipital lobe corresponding to a left posterior cerebral artery infarct.

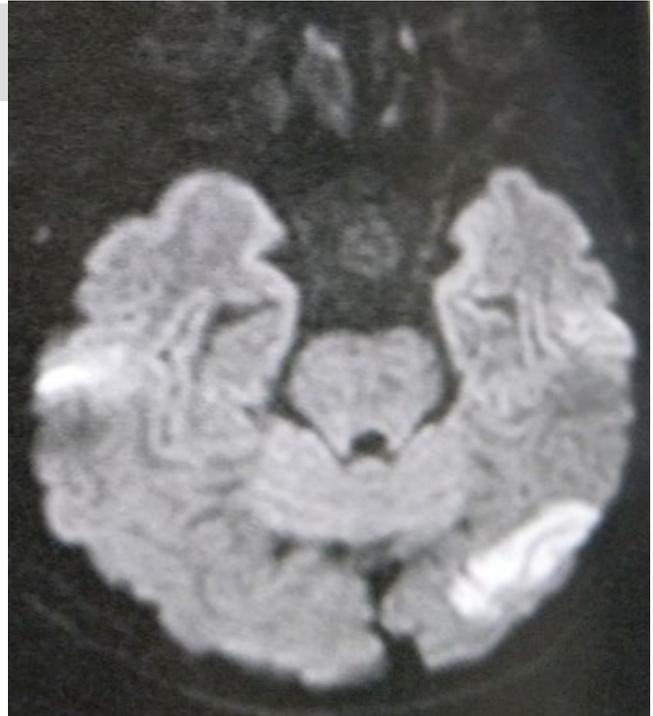
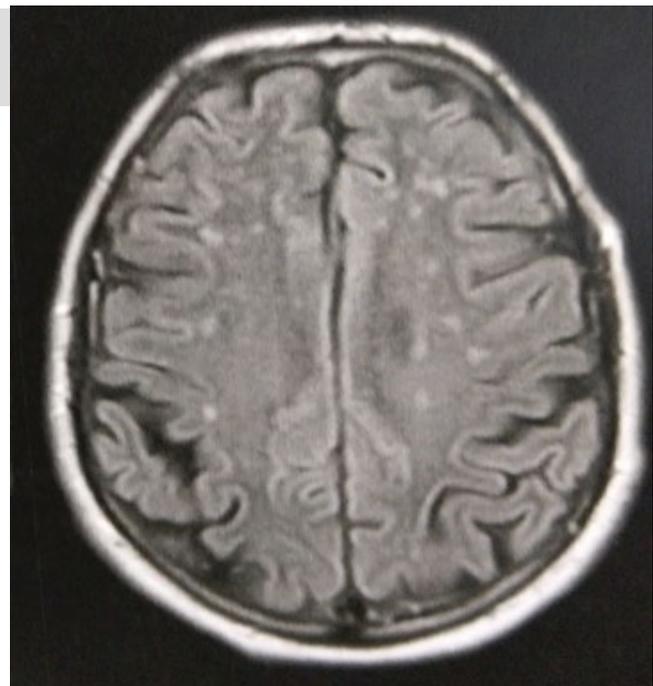


Fig. 2. T2-weighted FLAIR MRI of brain showing punctiform hypersignals in the centrum semiovale and corona radiata.



8.72) [2]. Among the subtypes of auras, the visual aura is that which has been most reported by studies as associated with ischemic stroke. Indeed, the survey “Ischemic stroke subtypes and migraine with visual aura in the Atherosclerosis Risk in Communities (ARIC) study” also made the high link between MA and high risk of ischemic stroke [4]. The exact mechanisms for migraine-induced stroke have been hypothesized equally heavily. One possible mechanism is progressive hypoperfusion and reduction in cerebral blood flow that occurs during migraine. The mechanism by which this hypoperfusion occurs is called “spreading depression” which is a marked reduction in potential generating activity within neuronal membranes

in the gray matter that advances across the cortex at a rate similar to the one seen with the progression of symptoms in migraines. Another possible mechanism of cerebrovascular hypoperfusion is vasospasm. Several case reports have established this link [1]. The association between migraines and strokes is further supported by increased concentration and activation of several intravascular procoagulant factors in migraineurs. It seems that migraine with visual aura may promote vasospasm, activate platelet aggregation, and increased concentration of procoagulant factors [4]. White matter lesions are a common finding in patients with migraines. These lesions are visible as hyperintense lesions on T2-weighted and fluid-attenuated inversion

recovery images (**Fig. 2**). Some authors suggest that white matter abnormalities are due to ischaemic insults [3]. Smoking is another risk factor that increases the likelihood of migraineurs experiencing strokes at some point in their life, particularly in the elderly. The prevalence of smoking is 33% higher in migraineurs, with a positive relationship between migraine attacks and the number of cigarettes smoked [5]. Although currently there is no recommended guideline for primary prevention of ischaemic stroke in migraineurs, if clinically indicated, it would be appropriate to select medications that reduce both migraine attacks and vascular risks in migraineurs. Antihypertensive agents including beta blockers, angiotensin II receptor blockers and ACE inhibitors have shown a better effect than placebo in reducing frequency, severity and disability of migraine. Statin and statin with vitamin D have been reported to be efficacious for migraine prophylaxis in case reports [3].

CONCLUSION

Based on previous observational studies, it is clear that migraine, especially migraine with aura, is an independent risk factor for cardiovascular disease, including ischemic stroke. Focal neurological signs associated with migraine episodes, regardless of type, require brain imaging to avoid complications that can be treated early and effectively.

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CONFITS OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

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| <ol style="list-style-type: none"> 1. Hassan M, Belavadi R, Gudigopuram SVR, et al. Migraine and stroke: In search of shared pathways, mechanisms, and risk factors. <i>Cureus</i>. 2021;13(12):e20202. 2. Etminan M, Takkouche B, Isorna FC, et al. Risk of ischaemic stroke in people with migraine: Systematic review and meta-analysis of observational studies. <i>BMJ</i>. 2005;330(7482):63. 3. Zhang Y, Parikh A, Qian S. Stroke and vascular. <i>Stroke Vasc Neurol</i>. 2017;2(3):160-167. | <ol style="list-style-type: none"> 4. Androulakis XM, Kodumuri N, Giamberardino LD, et al. Ischemic stroke subtypes and migraine with visual aura in the ARIC study. <i>Neurology</i>. 2016;87(24):2527-2532. 5. López-Mesonero L, Márquez S, Parra P, et al. Smoking as a precipitating factor for migraine: A survey in medical students. <i>J Headache Pain</i>. 2009;10(2):101-103. |
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