



BACKGROUND

Migraine aura (MA) has been attributed to cortical spreading depression which is a short-lasting depolarization wave that moves across the cortex at a rate of 3–5 mm/min.¹ Functional studies of aura describe the phenomenon as unilateral, or much more pronounced on the symptomatic side.² Crossed aphasia refers to language deficits induced by unilateral right hemisphere injuries in right-handed people who had no previous history of brain damage.³ We report 2 right handed patients who developed crossed motor aphasia during evolution of their MA with a clinically evident right hemispheric origin of their aura symptoms

CASE REPORT

Case 1:

A 34- year old right handed lady with past medical history significant only for MA presented with holocephalic throbbing headache associated with nausea, vomiting, photophobia and phonophobia. She also developed left hemifacial and left upper limb numbness and tingling (localizing the lesion to the right cerebral hemisphere). She was diagnosed with migraine with aura based on ICHD-2.

CASE REPORT CONTINUED

These symptoms were stereotypical of her migraine attacks. She developed word finding difficulties followed by motor aphasia for both her native as well as acquired languages one hour into her migraine headaches. Emergent MRI brain without contrast (wo), MRA neck with and without contrast and MRA head wo was unremarkable. Trans-thoracic echo showed patent foramen ovale with atrial septal aneurysm. Patient was treated for migraine with IV methyl prednisone 125mg every 6 hours, IV prochlorperazine 5mg every 8 hours and IV magnesium sulfate 1 gram every 12 hours with complete resolution of her headache the next day. The motor aphasia began to resolve within 30 minutes of onset initially to her native language then to her acquired language with complete resolution within 6 hours of symptom onset.

Case 2:

A 24 year old right handed gentleman with past history significant only for MA developed holocephalic throbbing headache with nausea, vomiting, photophobia, phonophobia.

He was diagnosed with MA based on the ICHD-2 criteria. 3 minutes into his attack he felt ‘confused’ and could not find his way out from the bathroom (suggesting a right parietal lesion). He had been working in the same office and building for the past 3 years. About 2 minutes into his ‘migraine attacks’ he developed word finding difficulty with expressive aphasia lasting for 3 minutes. He underwent an emergent CT of brain wo, carotid ultrasound and echo which were unremarkable. His headache significantly improved with IV ketorolac 30mg and he did not want further treatment

DISCUSSION

The main pathology behind migraine aura is cortical spreading depression which is wave of slow depolarization which starts unilaterally from the visual cortex and spreads forward slowly to involve different parts of the brain with corresponding symptoms. There are three possible explanations for the above observed clinical findings:

1. Transcallosal spread: An alternative explanation for crossed aphasia aura is the possibility that the phenomenon underlying the aura travels between the two cerebral hemispheres although functional studies have failed to show it.

2. Neurogenic handedness:⁴

Behavioural dominant handedness might not necessarily correspond to the neurogenic handedness which corresponds to site of the command center.⁴ Thus a behaviourally right handed patient as the one described in case 1 might be neurogenically left handed in that command center and the language center might be in the right hemisphere and thus explaining the aphasia and left sided symptoms

CONCLUSION

Whether it is the difference in behavioral handedness and neurogenic handedness or a transcallosal spreading depression, further functional imaging studies are warranted to explain the above clinical findings.

REFERENCES

- 1.Sanchez del Rio M. Functional neuroimaging of headaches. *Lancet Neurol* 2004;3:645–51.
- 2.Cutrer FM. Perfusion-weighted imaging defect during spontaneous migrainous aura. *Ann Neurol* 1998;43:25–31.
- 3.Ildfield RC. The assessment and analysis of handedness: Edinburgh inventory. *Neuropsychologia* 71;9:97–113
- 4.Derakhshan I. Crossed-uncrossed difference (CUD) in a new light: anatomy of the negative CUD in Poffenberger's paradigm. *Acta Neurol Scand.* 2006;113:203-208.