Basilar artery thrombosis due to head banging: hazard of a religious ritual

Chandrasekharan Rajasekharan,¹ Sanu Watson Renjith,² Adlene Manuel Teena,² Rajasekharan Parvathy³

¹Department of Internal Medicine, Medical College Hospital, Thiruvananthapuram, Kerala, India

²Department of Internal Medicine, Govt. Medical College Hospital, Thiruvananthapuram, Kerala, India

³Department of Internal Medicine, M.O.S.C. Medical College, Kolenchery, Thiruvananthapuram, Kerala, India

Correspondence to

Professor Chandrasekharan Rajasekharan, drcrajasekharan@yahoo.com

DESCRIPTION

A 35-year-old woman, apparently normal, who had participated in traditional Devithullal (a religious dance form involving violent head banging for hours at a time) on the evening of the following day developed vomiting, urinary incontinence, altered sensorium and quadriplegia. All blood investigations including thrombophilia workup were normal. CT scanning of the brain was normal. MRI diffusion-weighted image showed the

characteristic bilateral ventral pontine hyper intensities (figure 1A) and the apparent diffusion coefficient (ADC) map images showed bilateral ventral pontine hypointensities diagnostic of acute infarction (figure 1B). MR angiogram revealed basilar artery thrombosis (figure 2A,B).

'Head banging' denotes vigorous, rhythmical, rapid flexion and extension of the neck in time to music.¹ It can cause vertebrobasilar ischaemia because the vertebral arteries are fixed in the

Figure 1 (A) The diffusion-weighted image on the left show the characteristic bilateral ventral hyperintensities in the pontomesencephalic junction diagnostic of acute infarction (white arrows). (B) Showing bilateral ventral hypointensities in the pontomesencephalic junction in ADC maps (white arrows) suggesting acute infarction.

Figure 2 (A) The cerebral MR Angiogram shows total lack of blood flow distal to the mid basilar artery suggesting basilar artery occlusion (white arrow). (B) The cerebral MR angiogram 3D volume reconstruction technique frontal view showing total lack of blood flow distal to the midbasilar artery suggesting basilar artery occlusion (white arrows).

To cite: Rajasekharan C, Renjith SW, Teena AM, *et al.* *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009840

transverse foramina rendering them susceptible to occlusion or shearing from extremes of neck motion. Rotation occurs first at the atlantoaxial joint before any rotation occurs in the cervical spine leading to stretching and compression of the vertebral artery. An intimal tear can occur with the formation of an intraluminal clot which may result in embolisation in the posterior circulation. It is likely that this was the mechanism of ischaemic stroke in our patient. However, the outcome was a locked-in state. Intense head banging leading to basilar artery thrombosis has been reported.² The patient was treated with anticerebral oedema measures antiplatelet agents with physiotherapy. She is showing partial improvement in motor function in subsequent follow-up.

Learning points

- ▶ The neurological complications described with intense head banging include subdural haematoma vertebral artery aneurysm, carotid artery dissection, whiplash injury, odontoid fracture and vertebral artery dissection with vertebrobasilar ischaemia or infarction.¹
- ▶ The temporal relationship between intense head banging during heavy metal music and the posterior circulation stroke is striking¹ and a high index of suspicion of vascular injury in young persons is required.³
- ▶ In a retrospective study of patients under the age of 45 with ischaemic stroke the commonest likely predisposing factor was trauma.³

Contributors All the authors had equal role in writing editing and formatting the manuscript. RP was responsible for editing and formatting the images, reviewing the literature and collecting references.

Competing interests CR is a primary clinician under whom the patient was admitted investigated and treated. SWR is the Assistant Professor in charge of the case. AMT is the resident in charge of the case. RP is the third professional MBBS student.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Jackson MA, Hughes RC, Ward SP, McInnes EG. 'Head banging' and carotid dissection. *Br Med J (Clin Res Ed)* 1983;287:1262.
- 2 Patton D, McIntosh A. Head and neck injury risks in heavy metal: head bangers stuck between rock and a hard bass. *BMJ* 2008;337:a2825.
- 3 Hilton-Jones D, Warlow CP. Non-penetrating arterial trauma and cerebral infarction in the young. *Lancet* 1985;1:1435–8.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow