Cerebellar dysmetria treated using a wrist band

Karim M Mahawish

The cerebellum is arguably one of the most fascinating structures of the nervous system. In addition to its well-known role in the coordination, precision and timing of movement, non-motor symptoms may arise with cerebellar dysfunction, including cognitive deficits and language deficits.1

Neuroplasticity following cerebellar stroke is effective in most patients; these are the subgroup of stroke patients most likely to ultimately resume functional independence.2 There are no specific treatment options for limb dysmetria. This case highlights a surprising improvement in symptoms in one such patient when a wrist band was applied. A mechanism for the observed phenomenon is discussed.

Case report

A 60-year-old man presented with sudden onset ataxia and diplopia. He did not have any history of note and consumed tobacco. Neurological examination demonstrated abnormal ocular movement with direction changing nystagmus, dysarthria, truncal and right-sided dysmetria. MRI imaging of the brain demonstrated bilateral cerebellar infarcts, more marked on the right (Figure 1) and further areas of acute ischaemia in the left occipital and left thalamic regions. Computed tomography angiography demonstrated atherosclerotic occlusion of the right vertebral artery. He was commenced on antiplatelets and a statin and at the time of discharge five weeks later was independently mobile with a stroller, though still required supervision on steps. At a follow-up appointment six months later, he had ongoing significant asynergia and dysmetria in the right arm (Video 1). There did not appear to be functional overlay to the tremor. Interestingly, he noted that when tight material was wrapped around his arm the symptoms would improve. An improvised wrist band was placed in clinic and this led to a significant improvement in his symptoms (Video 2).

Discussion

The cerebellum is involved in comparing intended movement with actual movement as relayed by muscle afferents. Though the precise mechanism for the observed phenomenon is unclear, it is possible that the tight wrist band improved proprioceptive input to the cerebellum mediated through stretch of type Ia/Ib afferents present in muscles and tendons, conveyed along the cuneocerebellar tract to the cerebellum. This may have facilitated better sensori-motor integration within the cerebellum leading to improved movement.
Competing interests:
Nil.

Author information:
Karim M Mahawish, Consultant Physician, Older Persons Rehabilitation Unit, Rotorua Hospital, Bay of Plenty.

Corresponding author:
Dr Karim M Mahawish, Consultant Physician, Older Persons Rehabilitation Unit, Rotorua Hospital, Arawa St, Rotorua, Bay of Plenty. kmahawish@doctors.org.uk

URL:

REFERENCES: