



Letter to Editor

## Para-choreo-ballism due to pinealoma in an elderly lady

Amit Shankar Singh<sup>1</sup>, Jeenendra Prakash Singhvi<sup>1</sup>, Jaslovleen Kaur<sup>2</sup>

<sup>1</sup>Department of Neurology, Fortis Hospital, Mohali, Punjab, India, <sup>2</sup>Department of Neurology, National Neuroscience Institute, Singapore, Asia.

Dear Editor,

A 52-year-old lady presented with chronic headache along with abnormal lower limb movements since past 2 months. Headache was continuous, mild-to-moderate, holocranial, and aggravated by bending forward not relieved by medications. Abnormal movements of the lower limbs, as shown in [Video 1], were mostly present when patient was awake and lying on bed. These abnormal movements were mostly proximal, affecting bilateral hip joint, but some slow movements were also seen at ankle joints. On bending knee joints, rocking movements at hip joint can be noticed, but flinging type of movements was not present. Therefore, these movements can be categorized as choreo-ballistic movements. She also has difficulty in standing and walking due to these abnormal movements and these movements usually subside while sleeping. The patient was hypertensive and was taking tablet amlodipine 5 mg daily. There was no history of any other chronic disease or any psychiatric medication intake in past. Family history for any movement disorder was not present.

On neurological examination, cognitive functions were slightly deranged, along with restriction of vertical gaze, which was more for up gaze than down gaze. The patient also had convergence-retraction nystagmoid jerks on attempting down gaze. Bilateral papilledema was present on fundus examination. Choreo-ballistic movements in the lower limbs were present as described above, but motor weakness or sensory deficits were not present. As these movements were only in the lower limbs; therefore, they can be termed as “Para-choreo-ballism.” Rest of the neurological examination was normal.

With history of headache, bilateral papilledema, choreo-ballistic movements in the lower limbs (para-choreo-ballism), and vertical gaze restriction, possibilities of intracranial – infection, space-occupying lesions, inflammatory, autoimmune, or para-neoplastic etiology were considered,

along with metabolic disorders associated with glucose, sodium, calcium, magnesium, copper, ammonia, thyroid, or parathyroid hormones. Clinical localization in or around ganglia-thalamo-cortical structures (for choreo-ballism), along with mid-brain (for vertical gaze restriction and convergence-retraction nystagmoid jerks), was considered with any of the above possible etiology. On investigation, metabolic parameters were within range. Magnetic resonance imaging brain showed large oval pineal gland mass posterior to third ventricle compressing quadrigeminal plate of mid-brain and third ventricle causing upstream bilateral lateral ventricular dilatation [Figure 1a and b]. Lumbar puncture and cerebrospinal fluid analysis were not done in view of large intracranial mass.

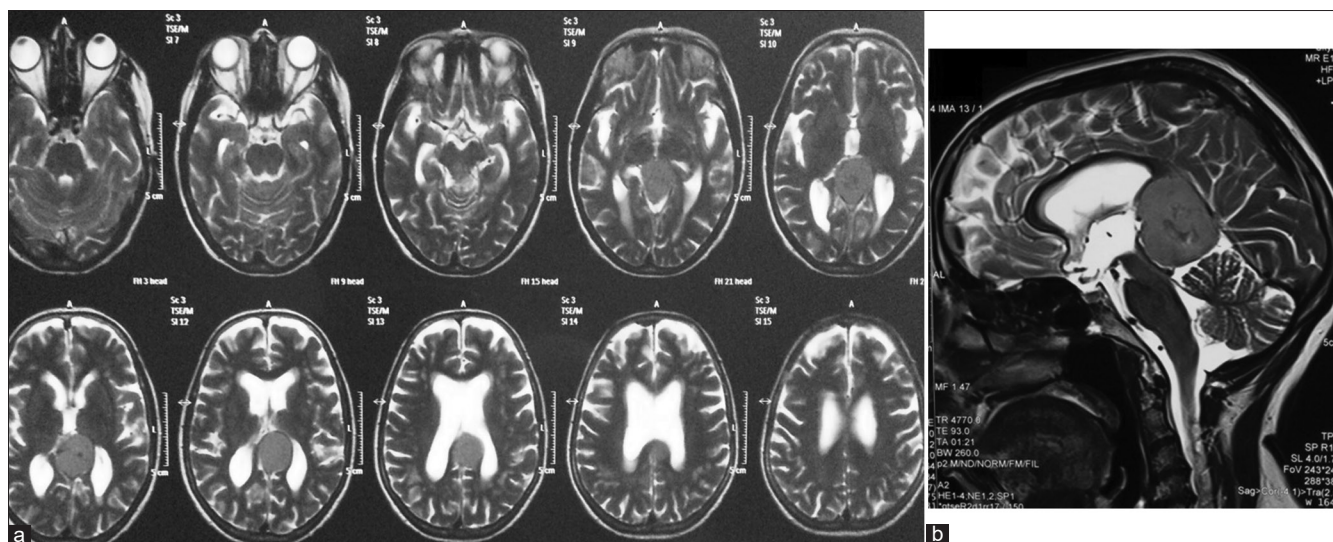
Paraballism (ballism only involving lower limbs) has been earlier described due to various etiologies.<sup>[1]</sup> Both intracranial or systemic disorders such as brain infarction, intracranial hemorrhage, intracranial calcification, intracranial metastasis, multiple sclerosis, Guillain–Barré syndromes, hypo- or hyperglycemia, infections/parainfections, ventriculoperitoneal shunting, oral contraceptive pills, gabapentin, phenytoin, and thyrotoxicosis have been reported as cause for para-choreo-ballism.<sup>[2-13]</sup> In this case, possibly due to large pinealoma, there was ganglia-thalamo-cortical or subthalamic compression causing “disinhibition” of globus pallidus, leading to choreo-ballistic movements.<sup>[14,15]</sup> Furthermore, vertical gaze restriction and convergence-retraction nystagmoid jerks were components of Parinaud syndrome, commonly seen due to pineal mass compressing mid-brain vertical gaze centers and supranuclear inhibitory fibers supplying extraocular muscles, respectively. The exact reason, why choreo-ballistic movements were limited to lower limbs is uncertain, but possible specific dis-inhibition of lower limbs pathways by pineal mass may be the reason for this differential involvement of lower limbs.

\*Corresponding author: Amit Shankar Singh, Department of Neurology, Fortis Hospital, Mohali, Punjab, India. [amitkgmumedicine@gmail.com](mailto:amitkgmumedicine@gmail.com)

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**Figure 1:** (a and b) Axial and sagittal magnetic resonance imaging brain T-2 images showing large oval pineal gland mass posterior to third ventricle compressing quadrigeminal plate and third ventricle causing upstream bilateral lateral ventricular dilatation.



**Video 1:** A 52-year-old lady with bilateral lower limb choreo-ballistic movements with vertical gaze restriction.

In view of large pineal mass, the patient was advised immediate neurosurgical intervention, to relieve compression, but patient and her relatives refused for surgery. Further, the patient lost to follow-up.

To conclude, hyperkinetic movement disorders can occur due to primary or secondary causes. Secondary causes due to structural lesions in brain may interrupt specific pathways leading to varied movement disorders as in this case.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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#### Conflicts of interest

There are no conflicts of interest.

#### REFERENCES

- Krauss JK, Mohadjer M, Nobbe F, Mundinger F. Bilateral ballismus in children. *Childs Nerv Syst* 1991;7:342-6.
- Nicolai A, Lazzarino LG. Paraballism associated with anterior opercular syndrome: A case report. *Clin Neurol Neurosurg* 1994;96:145-7.
- Lodder J, Baard WC. Paraballism caused by bilateral hemorrhagic infarction in basal ganglia. *Neurology* 1981;31:484-6.
- Inbody S, Jankovic J. Hyperkinetic mutism: bilateral ballism and basal ganglia calcification. *Neurology* 1986;36:825-7.
- Laing RW, Howell SJ. Acute bilateral ballism in a patient with intravascular dissemination of gastric carcinoma. *Neuropathol Appl Neurobiol* 1992;18:201-5.
- Masucci EF, Saini N, Kurtzke JF. Bilateral ballism in multiple sclerosis. *Neurology* 1989; 39: 1641-2.
- Susuke T, Shingo O. Paroxysmal bilateral ballism induced by hypoglycemia. *Clin Neurol* 2006;46:276-80.
- Gomez AN, Diaz-Novas J, Bidot CJ. Bilateral ballism following streptococcal infection, associated with psychiatric disorder and purpura. *Case Rep* 2011;2011:bcr0520114261.
- Driesen JM, Walters FC. Bilateral ballism induced by oral contraceptives. *J Neurol* 1986;233:379.
- Opida CL, Korthals JK, Somasundaram M. Bilateral ballismus in phenytoin intoxication. *Ann Neurol* 1978;3:186.
- Erol C, Osben S, Ozer F, Cetin S, Tiras R. Bilateral ballism induced by gabapentin in idiopathic Parkinson's disease. *Neurol Neurosurg* 2009;111:597.
- Odaka M, Yuki N, Hirata K. Bilateral ballism in a patient overlapping Fisher's and Guillain-Barré syndromes. *J Neurol*

- Neurosurg Psychiatry 1999;67:206-8.
13. Walker FO, Hunt VP. Ballism: An association with ventriculoperitoneal shunting. *Neurology* 1990;40:1004.
  14. Ristic A, Svetel M, Dragasevich N, Zarković M, Koprivsek K, Kostić VS. Bilateral chorea-ballism associated with hyperthyroidism. *Mov Disord* 2004;19:982-3.
  15. Hoogstraten MC, Lakke JP, Zwarts MJ. Bilateral ballism: A rare syndrome. *J Neurol* 1986;233:25-9.

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