IMAGEM EM NEUROLOGIA/IMAGE IN NEUROLOGY

Atypical Parkinsonism with Eye-of-the-Tiger Sign

Parkinsonismo Atípico com o Sinal dos Olhos-de-Tigre

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The eye-of-the-tiger sign is the neuroradiologic hallmark of neurodegeneration with brain iron accumulation (NBIA) type I, a clinically heterogenous genetic condition caused by mutations in pantothenate kinase 2 (*PANK2*) gene, characterized by extrapyramidal manifestations (dystonia, chorea, bradykinesia, tremor, rigidity, gait abnormalities) as well as other features including cognitive impairment, corticospinal tract involvement and optic atrophy.[1]

We report the case of a 72-year-old woman with a 4-year history of slowness of movement, symmetric upper limb resting tremor and gait impairment with postural instability. Dopaminergic therapy had been started 6 months after symptom onset, without benefit. Her gait progressively worsened, with frequent falls, and she became wheelchair-bound 3 years after disease onset. More recently, she developed apathy, loss of interest in her nursing home activities, mild urinary incontinence, and dysphagia. Family history was positive for tremor in the patient's mother.

Neurologic examination showed hypomimia, eyebrow furrowing, eyelid retraction, severely reduced eye blinking, ocular fixation instability with frequent square-wave jerks, saccadic pulses and moderate hypometria of vertical more than horizontal saccades. Speech was mildly hypophonic without dysarthria. A relatively symmetrical upper and lower extremity rigidity and bradykinesia were observed as well as tremor of the chin and tongue, mild intermittent thumb flexion/extension resting tremor, mild symmetrical upper limb postural tremor and mild intentional tremor on finger-to-nose testing. A dystonic posturing of the left foot was evident. Gait was hypokinetic and unstable, only possible with assistance. The pull test was markedly positive as the patient tended to fall backwards. There were no upper motor neuron signs. The levodopa challenge test was

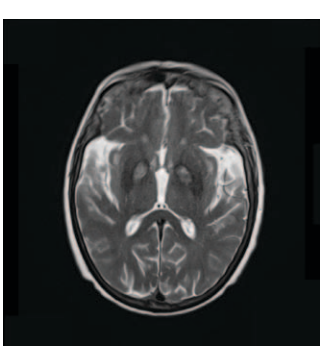

Figure 1a. Axial T2-weighted revealing diffuse hypointensity with an anteromedial area of high signal intensity of the globus pallidus, (the eye-of-the-tiger sign sign)

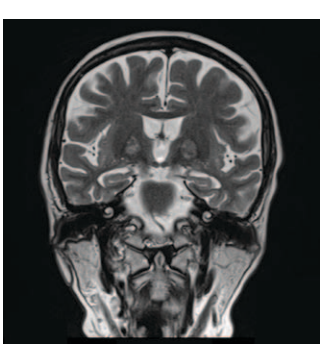

Figure 1b. Coronal T2-weighted revealing diffuse hypointensity with an anteromedial area of high signal intensity of the globus pallidus, (the eye-of-the-tiger sign sign)

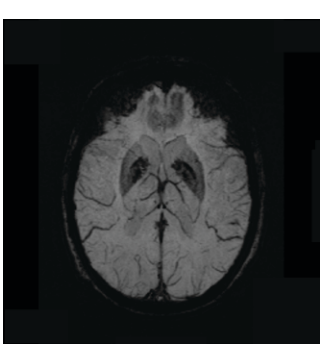

Figure 1c. SWI showing accumulated iron in the affected regions

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negative with a Movement Disorders Society-Unified Parkinson's Disease Rating Scale (MDS-UPDRS) motor score of 70 off-medication and 63 one hour after 200 mg of levodopa. On brief cognitive assessment, she presented slowed processing, reduced verbal fluency and executive dysfunction (Montreal Cognitive Assessment=11/30; Frontal Assessment Battery=7/18).

T2-weighted brain magnetic resonance imaging (MRI) sequences revealed diffuse hypointensity with an anteromedial area of high signal intensity of the globus pallidus, i.e., the eye-of-the-tiger sign (**Fig. 1a, b**). Moreover, T2*-weighted and SWI sequences showed accumulated iron in the affected regions (**Fig. 1c**). 123I-2β-carbomethoxy-3β-(4-iodophenyl)-N-(3-fluoropropyl) nortropane (FP-CIT) dopamine transporter SPECT (DaTSCAN) revealed bilaterally, relatively symmetrical, decreased dopamine transporter availability in the putamen (**Fig. 2**). Genetic testing for NBIA including *PANK2*, *FTL* and *C19ORF12* was negative.

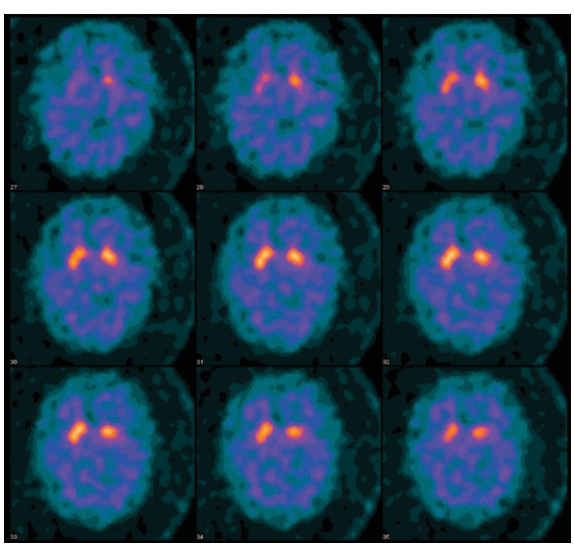

FigurE 2. DaTSCAN revealing bilaterally, relatively symmetrical, decreased dopamine transporter availability in the putamen.

This case qualifies as suggestive of progressive supranuclear palsy (PSP)[2] given the presence of symmetrical parkinsonism, repeated unprovoked falls within 3 years, and a frontal cognitive presentation, in a patient older than 40 years with gradual symptom progression. Moreover, [123I]FP-CIT SPECT showed a relatively symmetrical decrease in radiotracer uptake. On the other hand, the diagnosis of NBIA was less likely: NBIA disorders usually present early in life; DaTSCAN is typically normal[3]; and no related pathogenic mutations were found. This case demonstrates that true eye-of-the-tiger sign can be found in PSP, challenging the "pathognomonic feature" of this radiological finding in NBIA.[4,5] Further studies are needed to confirm this association and elucidate the anatomical and pathological reasons for its appearance on MRI of PSP patients. ■

Contributorship Statement / Declaração de Contribuição

RM: Conception, writing and final approval.
IC: Conception, writing and final approval.
JL: Conception, critical review and final approval.
FM: Conception, critical review and final approval.

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