

[¹²³I]Ioflupane SPECT in the assessment of Parkinson's disease in a patient with retinitis pigmentosa

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Abstract

Retinitis pigmentosa is a form of retinal dystrophy characterized by pigment deposition resulting in loss of peripheral vision, tunnel vision, night blindness and in some cases full blindness. Parkinson's disease is a progressive extrapyramidal neurological disorder characterized by rigidity, bradykinesia and tremor at rest due to loss of substantia nigra's dopaminergic cell; this loss can be evaluated with [¹²³I]Ioflupane single-photon emission computed tomography (SPECT). There are growing evidences underlying a possible correlation between these two conditions; in this report we describe a patient affected by retinitis pigmentosa with a positive [¹²³I]Ioflupane scan underlying a possible connection with Parkinson's disease.

KEY words: retinitis pigmentosa; datscan; [¹²³I]Ioflupane; Parkinson's disease

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A 32 years old right-handed patient affected by retinitis pigmentosa (RP) since birth, which progressively led to complete blindness at the age of 12, developed upper limbs tremors with involuntary movements, especially on the right side; thus a possible diagnosis of the extrapyramidal syndrome was suggested. He, therefore, performed a [¹²³I]Ioflupane single photon emission computed tomography (SPECT) scan (Datscan) on an Infinia Hawkeye tomograph (GE; Milwaukee, Wis; zoom 1.1, matrix 128 × 128, angle step 3°, 40 seconds for step) without any drugs taken at the moment of the examination, performed 3 hours after injection of 125 Mbq of [¹²³I]Ioflupane. Marked symmetric bilateral reduced uptake of radiotracer on both basal ganglia especially on putamens, confirmed by semiquantitative analysis, was reported (Fig. 1 and Fig. 2). The diagnosis of the extrapyramidal syndrome was then confirmed.

RP is a form of retinal dystrophy characterized by degeneration of rod and cone photoreceptors, that can lead to complete blindness. Parkinson's disease (PD) is a neurodegenerative disease characterized by tremor, bradykinesia, rigidity, and postural instability due to loss of substantia nigra's dopaminergic cell, caused by intracellular alpha-synuclein deposition. Recently, these two

conditions are starting to link together and research for possible correlations are spreading, although nowadays there are no confirmed causes or risk factor that can lead to the development of both entities. Generally talking, it is known that retinal diseases are more frequent in patients affected by PD and potential genetic associations between these disorders have been discovered in the past. Similarly, patient with age-related macular degeneration can be affected by PD more frequently and imaging with Datscan have been reported to be helpful in the diagnosis. As the name suggests, RP is pigmentary retinopathy and this class of retinal disorders can also be present in patients affected by PD and other neurodegenerative diseases. It has also been reported that patients affected by PD can have a wide variety of visual dysfunctions and a possible cause of the development of RP in these patients could be derived from dopaminergic degeneration both in substantia nigra and retina cells. In conclusion, there are several studies that correlate retinal disease (such as RP) and PD, even if the precise etiology or risk factors of this correlation are still not clear. Possible explanations have been searched in terms of inflammation, infections, and genetics, nowadays without a shared consensus. To the best of our knowledge, this is the first case of a Datscan performed on a patient affected by both RP and PD.

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Conflict of interest

All the authors declare that they have no conflict of interest.

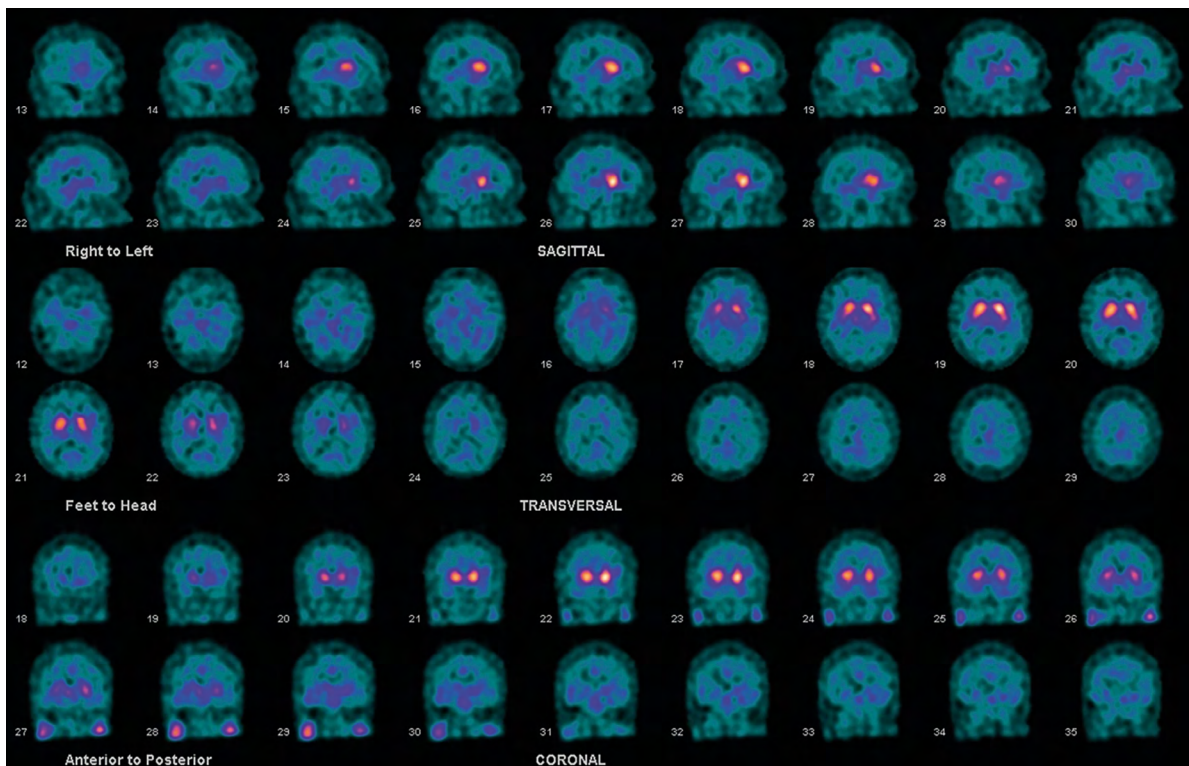


Figure 1. [¹²³I]loflupane single photon emission computed tomography (SPECT) scan (Datscan) demonstrating bilaterally reduced uptake of radiotracer on both basal ganglia

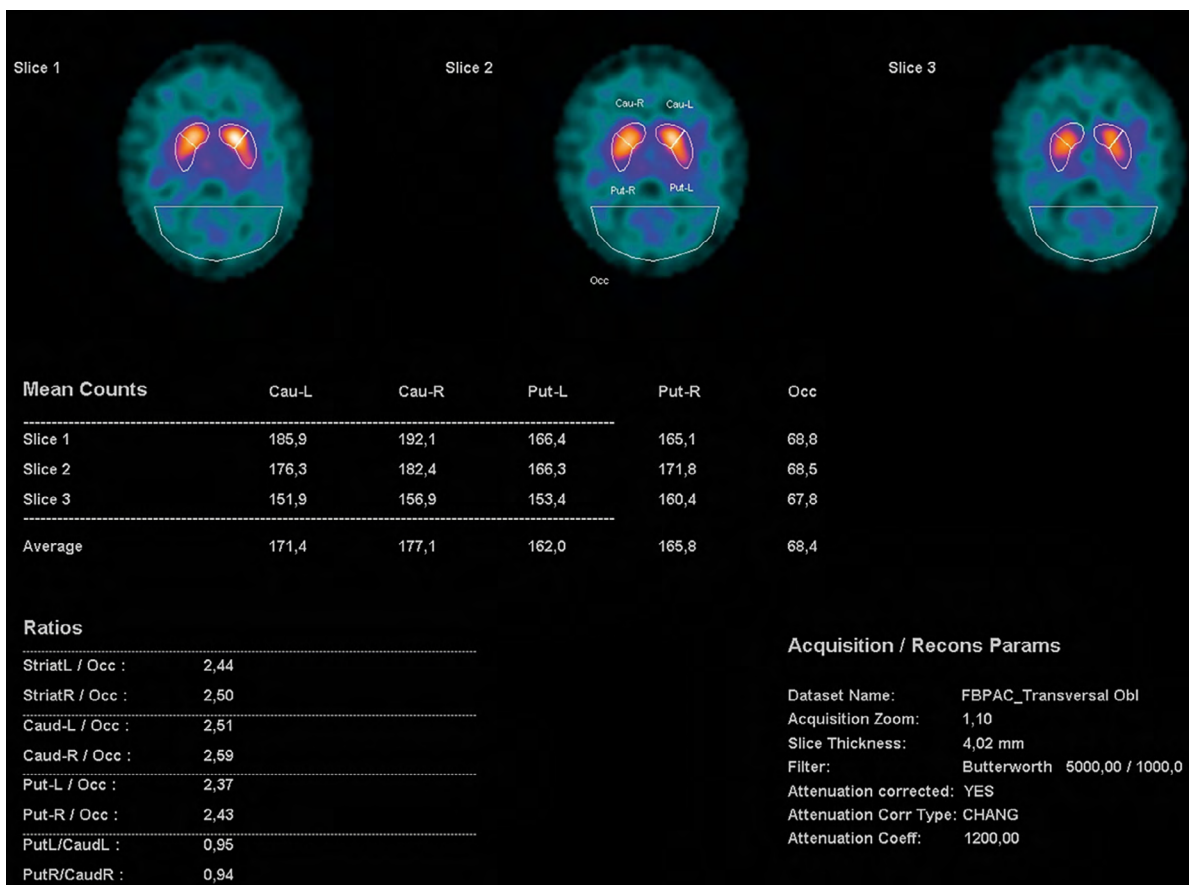


Figure 2. Semiquantitative analysis of the same Datscan confirming bilaterally reduced uptake of radiotracer on both basal ganglia, especially on putamens