MOVEMENT DISORDERS

Imaging differentiates progressive supranuclear palsy from Parkinson disease

The magnetic resonance parkinsonism index (MRPI) can accurately differentiate between patients with progressive supranuclear palsy (PSP) and those with possible or probable Parkinson disease (PD), according to research published in *Movement Disorders*.

“...MRPI was the better measure at discriminating between patients with PSP and patients likely to have PD...”

In a study conducted by Aldo Quattrone at the University Magna Graecia, Catanzaro, Italy and his colleagues, patients with PSP, and patients with possible or probable PD underwent MRI. By calculating midbrain–pons ratios and the MRPI for each participant, the team showed that the MRPI was the better measure at discriminating between patients with PSP and patients likely to have PD.

PSP and PD can manifest with similar symptoms, such as bradykinesia. As a result, clinicians can find differentiation between these two conditions challenging. Characteristic patterns of brain atrophy occur in PSP, and this finding indicates that MRI could aid the diagnosis of this disorder.

The midbrain–pons ratio has been shown to be significantly smaller in patients with

PSP than in patients with PD. Moreover, Quattrone and colleagues have shown that the MRPI—a measure that takes the width of the middle and superior cerebellar peduncles into account as well as the pons and midbrain areas—can discriminate between patients with PSP and patients with clinically definite PD. However, “no studies have evaluated the usefulness of MRPI in distinguishing patients with PSP from patients with possible or probable PD, in which misdiagnosis may not be uncommon,” explains Quattrone.

The researchers found that the diagnostic accuracy of the midbrain–pons ratio was low when this measure was used to differentiate between patients with PSP and those with probable PD (92.9% sensitivity, 85.3% specificity, 68.8% accuracy) or possible PD (88.1% sensitivity, 88.3% specificity, 88.2% accuracy). The accuracy of the MRPI to differentiate between patients with PSP and patients with probable PD was higher than that of the midbrain–pons ratio (100% sensitivity; 99.4% specificity; 99.5% accuracy). A similar phenomenon was observed when the ability of the MRPI to differentiate between patients with PSP and those with possible PD was calculated (100% sensitivity; 99.2% specificity; 99.4% accuracy).

The authors showed that in patients with PSP, a correlation existed between MRPI

Atrophy of the midbrain (a) (yellow outline), and superior cerebellar peduncles (c) (yellow line) in a patient with PSP. The pons (red outline) and middle cerebellar peduncles (b) (yellow lines) show no atrophy. Image courtesy of Prof. Aldo Quattrone.

scores and disease duration. A similar correlation was not evident in patients with PD. This finding might reflect the fact that the MRPI evaluates brain structures that undergo atrophy in patients with PSP but which are consistently spared in patients with PD.

“Future research should investigate the application of MRPI in the diagnosis of PSP in the early phase of the disease,” suggests Quattrone.

Nick Jones

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