IS IMAGING OVER-USED IN DIAGNOSING MOVEMENT DISORDERS? - NO

David J. Brooks, UK

Imaging can be used in two main ways to help understanding and support the diagnosis of movement disorders: magnetic resonance imaging and transcranial sonography can now detect midbrain and basal ganglia structural changes characteristic of different degenerative parkinsonian syndromes in symptomatic patients and at-risk cases. Changes in fibre connectivity are revealed in genetic dystonias. Radiotracer imaging and BOLD fMRI can detect the neurotransmitter and connectivity changes that characterise different movement disorders. In particular, the presence of an intact dopaminergic function effectively excludes a diagnosis of Parkinson's disease. Conversely, striatal dopamine deficiency provides a rationale for a trial of dopaminergic medication in parkinsonian cases.

While there is no doubt imaging provides a powerful tool, to date, utility trials demonstrating its cost effectiveness in the long term management of parkinsonian and involuntary movement disorder patients are lacking. Similarly, quality of life trials showing a benefit of imaging have not been informative. However, baseline dopamine transporter (DAT) imaging correlates well with pathological findings in cases of suspected Lewy body disease and there is good evidence that it increases diagnostic confidence and rationalises management approaches in grey cases of possible PD. The diagnostic specificity can rise from 50 to 100%. Subjects without evidence of dopamine deficiency (SWEDDS) on DAT imaging have a good prognosis and, if they are already receiving inappropriate dopamine replacement therapy this can be safely withdrawn.

One factor that is frequently ignored is the educational value of imaging to the patient. One can use DAT imaging to explain to a PD patient why they need dopamine replacement medication or to a 'benign' tremulous patient why they do not. Dystonic cases can be shown the changes instructural connectivity causing their syndromes. Even where such imaging does not influence outcome it results in an informed patient with confidence in their management. Additionally, it is now possible to detect inflammatory responses to neurodegenerations and see how these, along with cell function, respond to potential neuroprotective and restorative therapies.

So in summary, Ladies and Gentlemen, I respectively urge you to reject the motion that '*imaging is over-used in diagnosing movement disorders'* and agree with me that it provides a vital supportive and educational role.