Face of the giant panda sign in Wilson disease

S Chakraborty,1 MB BS, MD (Radiodiagnosis); S Mondal,2 MB BS, DMRD; D Sinha,2 MB BS; A Nag,2 MB BS

1 Department of Radiology and Imaging, Institute of Post Graduate Medical Education and Research, Kolkata, India
2 Department of General Medicine, Institute of Post Graduate Medical Education and Research, Kolkata, India

Corresponding author: S Mondal (drmsumanstro@gmail.com)

Wilson disease usually presents with neurological or hepatic manifestations. Magnetic resonance imaging (MRI) of the brain is most informative in diagnosing this disease, especially in patients with neurological features. High T2 signal intensity in the corpus striatum is the most commonly encountered MRI finding. The ‘face of the giant panda’ sign, seen on axial T2-weighted MRI, results from abnormal signal intensities in the midbrain. Though uncommon, the sign is regarded as the pathognomonic MRI sign of Wilson disease.

S Afr J Rad 2013;17(3):104. DOI:10.7196/SAJR.855

Discussion

MRI of the brain is not only a useful diagnostic modality in WD but can also be used to assess disease severity and response to treatment. MRI changes are seen in virtually all neurologically symptomatic patients.[1] When patients have predominant hepatic involvement, T1 hyperintensity is noted in the globus pallidus, putamen and mesencephalon. In neurologically symptomatic patients, T2 hyperintensity is noted in the putamina, caudate nuclei, thalami, midbrain and pons. Atrophy of the cerebral and brainstem may be seen in long-standing cases.[2] The ‘face of the giant panda’ sign, seen on axial T2-weighted images of the midbrain, is regarded as characteristic of WD.[3] The sign was originally described by Hitoshi et al.; it is produced as a result of high signal intensity in the tegmentum with preserved normal signal intensity in the red nuclei (eyes of the panda) and lateral portion of the pars reticulata of the substantia nigra (ears of the panda), and hypointensity of the superior colliculi (chin of the panda).[3]

The exact pathogenesis of the superior colliculi hypointensity is not known. It has been postulated that the paramagnetic effect of heavy metal deposition (e.g. iron, copper) may be responsible for this finding.[4] In WD, iron deposition is more significant than copper for producing T2 hypointensity. The ‘face of the giant panda’ sign is not commonly encountered. In a study of 100 patients, it was present in 12%.[5] However, the sign is pathognomonic of WD, being the only MRI feature that distinguishes WD from other early onset extrapyramidal disorders.[3]