course of Parkinson's disease.⁶ In favour of this viewpoint is the finding that MPTP

exposed parkinsonian patients had severe loss of dopaminergic neurons and developed dyskinesias rapidly after starting levodopa therapy.⁷ Caveats about this conclusion must be placed, relative to the fact that both patients had prominently akinetic disturbances, and thus prevalent tremorogenic parkinsonisms might have different courses with different occurrences of complications during levodopa treatment.

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Reversible hydromyelia in a synchronised swimmer with recurrent thoracic girdle pains

Synchronised swimming is considered a low injury competitive aquatic sport for all ages, although stress related symptoms such as knee or shoulder pain are common.¹ We report a case of recurrent thoracic girdle pains in a professional instructor of this sport due to reversible hydromyelia.

The patient was a 40 year old woman with 15 years experience as an instructor of synchronised swimming. She was in good health up to 15 December 1996 when she developed insidious left thoracic pains 2 days after an underwater exhibition performance that was longer and more strenuous than usual. The pains spontaneously disappeared over the next 10 days. On 6 February 1997, she again experienced similar thoracic girdle pains 2 days after prolonged lessons and a week later came to our hospital. The pain was dull and increased intermittently, in particular when she turned over in bed at night. On examination she was alert, afebrile, and normotensive. Neurological examination disclosed no abnormalities in her cranial nerve, motor, sensory, and autonomic functions. There was no nuchal rigidity. Routine laboratory findings for blood, urine and CSF were

Thoracic MRI showing areas of abnormal signal intensity in the central portion of the spinal cord at the T4-5 level. (A) sagittal, T2 weighted; (B) sagittal, T1 weighted; and (C) axial, T1 weighted. (D) T1 weighted cervical MRI showing a Chiari malformation type I.

all normal. Bleeding and whole blood clotting times were normal. Tests for oligoclonal bands and myelin basic proteins of CSF were negative. Thoracic cord MRI detected areas of abnormal signal intensity (high in the T2 weighted and low in the T1 weighted images with no enhancement by Gd-DTPA) in the central portion of the spinal cord at the T4-5 level (figure A, B, C). The intensities were linear-elliptic in the sagittal plane, and small and round in the axial plane, indicative of hydromyelia (central canal dilatation). Myelography and MRI of the cervical and lumbar cord and of the brain showed no abnormalities except for a Chiari malformation type I (figure D). Only a recommendation not to strain or hold her breath was given, and the pains resolved spontaneously over the next 10 days. Two months later follow up MRI of the thoracic cord showed the absence of the initial abnormal finding.

Synchronised swimming requires flexibility, kinesthetic awareness, and aerobic conditioning. Few acute injuries occur in the participation of this sport, but overuse injuries such as knee pain associated with the eggbeater kick and shoulder pain associated with sculling are becoming more common.¹ Therefore the thoracic pain in our patient might have been wrongly diagnosed as having a musculoskeletal origin.

The combination of breath holding and the performance of compulsory figures, such as those that involve hyperextension of the spine, can markedly raise intrathoracic and intracranial pressures during prolonged underwater performances, and may cause dangerous

hydromyelia (central canal dilatation) due to changes in the CSF dynamics, especially in those who have a Chiari malformation.² We have no idea why this hydromyelia developed at the upper thoracic level.

We conclude that synchronised swimming rules should not encourage prolonged underwater performances and unnatural compulsory figures, and that prior checks for risk factors such as a Chiari malformation should be made.

The lumbar puncture, myelography and follow up MRI were done at the Department of Neurology, the National Institute of Neuroscience Kohnodai Hospital, Ichikawa, Chiba. We thank Dr Takeshi Sato and his colleagues for their expert help.

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Barium carbonate intoxication: an electrophysiological study

Barium carbonate is an uncommon poisoning agent in India. This whitish coloured powder is available over the shelf from the