Matters arising

Generalised dystonia, whispering dysphonia and Wilson's disease in members of the same family

Sir: We were interested in the recent report by Parker of generalised dystonia, whispering dysphonia and Wilson's disease occurring in members of the same family.[1] We have also seen a family where torsion dystonia and focal dystonia occurred in association with a rare metabolic disorder.

IW is now 28 years of age and suffers from typical torsion dystonia. Following a normal birth and delivery his early milestones were reported as being normal. At the age of 10 yr he developed inward turning of his left foot whilst walking, which subsequently progressed throughout his teens to generalised dystonia. Since the age of 20 yr his illness has been arrested and although moderately disabled, he is of normal intelligence. He has no other neurological deficit, fundoscopy is normal and there is no hepatosplenomegaly. Liver function tests, copper studies, examination of bone marrow histiocytes, CT brain scan and nerve conduction studies were normal. Although previously resistant to a variety of treatments he has experienced moderate benefit whilst taking benzhexol 27 mg daily.

IW has a younger brother who is normal and a sister who has been noticed to hold her head in an odd position, but no firm diagnosis has been reached. Another sister, following a normal birth and neo-natal period, presented at the age of 15 months with developmental delay and infantile spasms with a prominent startle response. A cherry red spot was found on fundoscopy. Her condition deteriorated with worsening epilepsy, enlarging head and neurological deterioration until she died in 1968 at the age of 2½ yr with a diagnosis of Tay-Sachs disease. Brain biopsy and post mortem examination were not performed.

The mother of IW has just come under our care at the age of 51 yr, with a 9 month history of pain in the neck, at first associated with a side-to-side tremor of the head. She subsequently developed a tendency of the head to be pulled back and to the right and has features typical of spasmodic torticollis. One year after the onset she has not developed dystonia elsewhere. There is an extensive family who are known to be well but a maternal cousin has been examined by us and also suffers from torsion dystonia. There is a history of consanguinity, in that the maternal grandparents of IW were first cousins.

Leucocyte lysosomal enzyme studies have been carried out on available members of the family. Alpha-neuraminidase, beta-galactosidase and beta-hexosaminidase A were all normal. However, IW his parents and one sibling all have low total hexosaminidase levels in plasma, 7·9 to 10·7 nmol/min ml (control 15·8) with a high percentage A component, 76 to 89% (control 68%). These findings are consistent with heterozygosity for GM2 gangliosidosis 0 variant and suggest that the diagnosis of the sibling who died in infancy was, in fact, Sandhoff disease. Lysosomal enzyme activities in the cousin with torsion dystonia were normal.

The occurrence of adult onset of focal dystonia in the parents of a patient with generalised torsion dystonia, although rare, is well recognised.[2] In our family the clinical picture was compatible with so-called idiopathic torsion dystonia. The relevance of low hexosaminidase levels and a family history of Sandhoff disease is uncertain. Hexosaminidase deficiency is subject to considerable phenotypic variation and although dystonia may occur, it has not been reported as a presenting feature.[3] Furthermore IW, and his mother were only carriers of the disorder and a maternal cousin who was subsequently identified as suffering from dystonia had normal hexosaminidase levels. The occurrence of dystonia and Sandhoff disease in the same family may, therefore, be due to chance association of two rare diseases, possibly related to the history of consanguinity.

ROBERT ELWES
MICHAEL SAUNDERS
Dept of Neurology, Middlesbrough General Hospital, Middlesbrough, Cleveland, TS5 5AZ, UK

References

[1] Parker N. Hereditary whispering dysphonia. *J Neurol Neurosurg Psychiatry* 1985;**48**:218–24.
[2] Marsden CD. The focal dystonias. *Seminars in Neurology* 1982;**24**:324–33.
[3] Johnson WG. The clinical spectrum of hexosaminidase deficiency disease. *Neurology (NY)* 1981;**31**:1453–6.

Patients with Parkinson's disease can employ a predictive motor strategy

Sir: Day *et al*[1] report that patients with Parkinson's disease can employ a predictive motor strategy. While other reports support this concept, an examination of their data suggests a different conclusion.

In their first experiment, patients and controls first tracked a pattern which they did not know was predictable and then one which they knew to be predictable. Tracking lag was used as a more direct measure of predictive movement than tracking error. However, the authors point out that these data were confounded by subjects' overcompensation for unanticipated changes in target direction, resulting in lag times below visual reaction time even when target movement was not known to be predictable. In some cases lag times took on negative values. These data are difficult to interpret and may not reflect predictive movement.

The key to finding was that both patients and controls improved their tracking lag times in a comparable fashion when the target path was known to be predictable. Unfortunately, the statistical analysis of these data relied on multiple *t* test comparisons. An ANOVA followed by *post hoc* comparisons is more appropriate. A simpler alternative would be to compare subjects' degree of improvement, operationalised as the difference between lag scores when the target is not and is known to be predictable. When this is calculated for each patient based on the data presented in table 1, a *t* test reveals that the controls showed significantly greater improvement ($t = 2{\cdot}28$, $p < 0{\cdot}01$). This would suggest that controls are better able to take advantage of the predictability of target movement. This is comparable to the findings of other investigators.[2–4]

Parkinsonians are capable of some degree of predictive movement, but quantitatively less than healthy people. Under some circumstances they may be able to accomplish predictive movements normally. Bloxham *et al*[5] showed that patients could generate a single "preprogrammed" predictive movement, in their case a circle, as well as controls. However, external cues are needed for patients to shift from one unit of movement to another, as is demanded by the sawtooth paths used by Flowers[2] and Stern *et al*.[3,4] In the present study, experience with a pattern allowed patients to improve their tracking performance, but not to the same degree as controls.

YAAKOV STERN
Neurological Institute, Columbia University College of Physicians and Surgeons, 710 West 168th Street, New York, NY 10032, USA

References

[1] Day BL, Dick JPR, Marsden CD. Patients with