Mild head injury

Impact of early intervention on outcome following mild head injury in adults

A M Salazar

Written information is valuable to injured patients

In this issue, the paper "Impact of early intervention upon outcome following mild head injury in adults" by Ponsford and colleagues (pp 330–2)¹ describes a valuable study addressing an important current issue in public health. The authors have made a strong case for the early use of a relatively inexpensive written information booklet in the management of patients with mild head injury. These findings thus reinforce the notion that many elements of emergency room counselling, albeit important, are likely to be forgotten by a patient under stress and particularly in the context of a recent concussion. Clinicians too often underappreciate the therapeutic value of information to an otherwise intelligent patient in such circumstances.

As expected from prior studies, the purely cognitive and neurological signs and symptoms related to mild head injury are largely recovering by three months after the injury, although stress related symptoms often persist in a subset of

patients.² The differential recovery in stress related symptoms between treatment groups in this study is further testimony to the importance of these symptoms to quality of life, as well as to their amenability to proper early management.

Although the study was not strictly randomised, patients were alternately assigned to the two treatment groups from consecutive emergency room admissions, and the authors have otherwise shown comparability of the two groups. The differential dropout between treatment groups is unfortunate but not unexpected. Otherwise recovering patients might have been expected to be reluctant to subject themselves to repeated neuropsychological testing. A simple telephonic follow up might have provided critical information on stress symptoms for such patients and should be included in any future confirmatory studies.

Future studies should also examine the essential elements of written materials given to patients. How much detail is

enough? How much detail is excessive? Separately, how much of a role, if any, does early (and relatively expensive) neuropsychological evaluation have in treatment? The authors acknowledge the impracticality of such testing on a routine basis, but can a simpler (perhaps computerised) battery targeted at mild head injury provide the same benefit and identify patients requiring more attention? Finally, if we acknowledge that pathological brain abnormalities related to the trauma are the basis of the morbidity associated with mild traumatic brain injury, is there also a role for the use of simple, non-toxic neuroprotective agents in such patients? In any case, based on the current findings, written information booklets in one form or other should become part of standard treatment for any such future studies of mild traumatic brain injury.

J Neurol Neurosurg Psychiatry 2002;**73**:239

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Multiple sclerosis

Multiple sclerosis in Malta in 1999

N Koch-Henriksen

Examination of the low incidence of multiple sclerosis in Malta

The paper by Dean *et al*¹ (this issue pp 256–60) is not just one of countless papers on the prevalence of multiple sclerosis that have been published over the last 70 years. For several reasons it deserves special attention.

The numerous studies on this topic have been of varying importance and quality, and have been driven largely by the hope that the geographical pattern of disease occurrence might reveal the cause of multiple sclerosis. The pay off of these efforts, in terms of strong or definite clues to the aetiology, has been disappointing, and during the last two decades the focus on multiple sclerosis epidemiology has weakened and given

place to studies on immunology, genetics, and treatment.

Appropriate epidemiological studies may, however, still be of help in several areas—for example, is infection a possible contributory cause of multiple sclerosis?¹ And what are the respective roles of environmental and genetic factors in the geographical variation in the prevalence of the disease?² Investigations in areas with unusually high or low frequencies of multiple sclerosis may help solve these problems.

The paper by Dean *et al* is a good example of this. The observation of the rarity of multiple sclerosis among Maltese immigrants to London by Dean *et al* in 1976³ led to the original 1978 survey of

the disease in Malta,⁴ which indicated that the prevalence was far below that in mainland Italy, Sicily, Sardinia, and other places around the Mediterranean.

As shown in the new paper by Dean *et al* in this issue, the Maltese population is still a clear and interesting exception to the surrounding Mediterranean populations in terms of risk of multiple sclerosis, as the prevalence rate is only 16.6/100 000 when all cases of clinically probable disease are included, and 13.2/100 000 when the analysis is confined to clinically definite cases. Moreover, the incidence rate has remained low, at just 2/100 000 per year.

When a prevalence survey is repeated years after a primary survey, the prevalence invariably increases, because of better case ascertainment and possibly greater life expectancy of the patients. This is also true for the new Malta multiple sclerosis survey, but Dean has shown that the small rise in prevalence since 1978 can be attributed entirely to a shift of the population age distribution and to a better life expectancy. The study is comprehensive and there are several indicators of a persistently high ascertainment probability—for example, the average age at prevalence ascertainment was more than 43 years, and the prevalence among

immigrants to Malta was much higher than among native Maltese and comparable to the prevalence in other parts of Europe.

As Dean *et al* point out, a low genetic susceptibility to multiple sclerosis is the most likely explanation for the low prevalence rate in Malta. This view is supported by the low risk among Maltese emigrants to London and the high prevalence among immigrants to Malta from places with a high risk of the disease. However, as migration studies indicate that environmental influences on the risk of multiple sclerosis act before adolescence, and as the age at migration of these groups is unknown, it is possible that

environmental factors may also be involved in the low prevalence in Malta. A repeated study of the HLA profile of Maltese patients compared with the general population could clarify this important question.

J Neurol Neurosurg Psychiatry 2002;**73**:239–240

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Parkinson's disease

The effects of deep brain stimulation and levodopa on postural sway in subjects with Parkinson's disease

D J Burn

Deep brain stimulation reduces postural instability in Parkinson's disease

Postural instability, leading to falls, is a common feature of neurodegenerative parkinsonian syndromes, often associated with injury and hospital admission. In a recent prospective study of falls in 109 patients with Parkinson's disease, 68% fell during a one year follow up period.¹ Postural instability in Parkinson's disease is notoriously refractory to levodopa treatment, implicating the involvement of non-dopaminergic pathways. A previous report of the use of continuous bilateral high frequency stimulation of the subthalamic nucleus in Parkinson's disease suggested that marked improvement in motor disability was accompanied by significant improvement in axial symptoms, and that a synergistic effect was obtained when stimulation was used in conjunction with levodopa treatment.²

The paper by Rocchi *et al* (this issue, pp 267–74)³ quantifies postural sway in six subjects with Parkinson's disease, all of whom had undergone deep brain stimulation (three of the subthalamic nucleus and three of the globus pallidus, pars interna) compared with 11 elderly control subjects. The subjects with Parkinson's disease were tested in four different conditions: off both levodopa and deep brain stimulation, on deep brain stimulation, on levodopa, and on both deep brain stimulation and levodopa. This design, coupled with the use of static posturography, allowed the authors to dissect out the

effects of each treatment upon a variety of sway parameters, compared with the untreated "baseline" condition. Rocchi and colleagues found that the subjects with Parkinson's disease who were off both treatments had abnormal sway in stance. Moreover, the use of levodopa actually increased postural sway abnormalities, particularly in the mediolateral direction. The authors reasonably suggest that levodopa might exert this effect by reducing postural tone without a concomitant improvement in postural control. As the risk of falling has been correlated with a large lateral sway during stance in the elderly, this implies that treatment with levodopa might actually increase the chances of falling, at least in advanced Parkinson's disease.

When deep brain stimulation was activated, postural sway lessened and in several instances returned to normal, while the combined effect of deep brain stimulation and levodopa resulted in a postural sway that was the average of the effect of each treatment individually. The dramatic benefit from deep brain stimulation suggests that this treatment can modulate non-dopaminergic pathways, as previously proposed by Bejjani and colleagues.² Deep brain stimulation might help integrate information from the proprioceptive system, perhaps by

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influencing activity in brain stem structures such as the pedunculopontine nucleus, an important cholinergic sensory relay station to the thalamus.⁴

The results of this study must be interpreted with some caution, however. The patient group was surgically heterogeneous, while the small numbers precluded subgroup analysis to determine which, if any, of the two targets was superior in improving in sway parameters. Furthermore, the study was cross sectional, with assessments only carried out once at six months postsurgery. Preliminary evidence indicates that patients with long term deep brain stimulation of the subthalamic nucleus also develop problems with postural instability as well as freezing.⁵ Nevertheless, Rocchi and colleagues' elegant study provides a basis for larger prospective studies to clarify these issues. Their work also indicates that posturography can provide a safe and sensitive means of assessing therapeutic interventions for a challenging problem in Parkinson's disease.

J Neurol Neurosurg Psychiatry 2002;**73**:240

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