the presence of prochlorperazine and an unspecified benzodiazepine in her urine; a packet of buccal prochlorperazine (Buccastem) from which 12 tablets (36 mg) had been removed was later found in her car but the source of the benzodiazepine was not identified. The abnormal eye movements resolved after twelve hours; she regained consciousness over 36 hours, declined psychiatric assistance and discharged herself from the ward.

In an unconscious patient the presence of ocular bobbing should raise the possibility of structural pathology in or around the pons. As these cases illustrate, however, other forms of spontaneous vertical eye movement disorder may be due to toxic or metabolic encephalopathies and ideally consideration should be given to such causes before embarking upon invasive investigation. Self-poisoning is by far the commonest cause of coma in patients presenting to casualty departments, but can often only be diagnosed on the basis of circumstantial evidence and subsequent toxicological screening.

Both of these patients were exposed to the unusual combination of phenothiazines and benzodiazepines. The pharmacological basis of the eye movements is not clear. It is possible that they represent a form fruste of oculogyric crisis produced by phenothiazines and modified by benzodiazepines. Typical phenothiazine-related oculogyric crises cause sustained upwards deviation of the eyes (often with a lateral component) associated with obsessional thoughts and a feeling of unease.[5] One of the present patients developed these typical episodes on regaining consciousness. Whilst unconscious, both patients had episodes of unsustained rapid conjugate upwards deviation of the eyes, interspersed by slower drifts back to the primary position. Benzodiazepines have complex actions[6] on the brainstem circuits which may be responsible for the generation and maintenance of vertical gaze both under normal circumstances and during oculogyric crises,[1 5] and have been used to treat the latter.[7] If the reverse ocular bobbing is indeed a modified form of oculogyric crisis one would expect it to be abolished by intravenous anticholinergic drugs, which almost always abolish typical oculogyric crises. This was not attempted during the episodes of reverse ocular bobbing here but, if validated in future cases, might form the basis of a simple bedside test for combined phenothiazine and benzodiazepine poisoning.

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1 Leigh RJ, Zee DS. *The neurology of eye movements*, 2nd ed. Davis: Philadelphia, 1991.
2 Drake ME, Erwin CW, Massey EW. Ocular bobbing in metabolic encephalopathy: clinical, pathologic, and electrophysiologic study. *Neurology* 1982;**32**:1029–31.
3 Hata S, Bernstein E, Davis LE. Atypical ocular bobbing in acute organophosphate poisoning. *Arch Neurol* 1986;**43**:185–6.
4 Titer EM, Laureno R. Inverse/reverse ocular bobbing. *Ann Neurol* 1988;**23**:103–4.
5 Leigh RJ, Foley JM, Remler BF, Civil RH. Oculogyric crisis: a syndrome of thought disorder and ocular deviation. *Ann Neurol* 1987;**22**:13–7.
6 Blair SM, Gavin M. Modifications of the vestibulo-ocular reflex induced by diazepam. *Arch Otolaryngol* 1979;**105**:698–701.
7 Korczyn AD, Goldberg GJ. Intravenous diazepam in drug-induced dystonic reactions. *Br J Psych* 1972;**121**:75–7.

MATTERS ARISING

Treatment of lower urinary tract dysfunction in patients with multiple sclerosis

In this paper[1] we concluded that simple treatments could improve the bladder symptoms in multiple sclerosis, but before embarking on therapy it is important to detect incomplete bladder emptying which can exacerbate detrusor hyperreflexia. The paper was the result of discussions by a group of urologists and neurologists convened in March 1991 by the European Study Group of SUDIMS (Sexual and Urological Disorders in Multiple Sclerosis).

Although a consensus was reached then on which therapies are effective and desirable, there was no agreement about what pretreatment investigations were necessary or who should arrange them. At a second SUDIMS meeting in Copenhagen in May 1992 the subject of minimal investigations was again discussed. Again the views of the neurologists and urologists remained essentially irreconcilable but there was agreement on those investigations a neurologist might reasonably arrange for a patient with MS and bladder symptoms. These are: 1) exclude urinary tract infection; 2) detect incomplete bladder emptying.

Anticholinergic medication alone is unlikely to correct symptoms of urgency and frequency in the presence of either of these two disorders. The neurologist should arrange and follow up these investigations if possible. Urological advice should be sought if the patient does not get better or suffers recurrent urinary tract infections.

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1 Fowler CJ, van Kerrebroeck Ph EV, Nordenbo A, Van Poppel H. Treatment of lower urinary tract dysfunction in patients with multiple sclerosis. *J Neurol Neurosurg Psychiatry* 1992;**55**:986–9.

The use of multiple anti-dystrophin antibodies in Duchenne and Becker muscular dystrophy

A recent paper by Muntoni *et al*[1] describes the use of multiple anti-dystrophin antibodies in Duchenne and Becker muscular dystrophy. I was particularly interested in the discordance in staining between the various antibodies in the very mild or preclinical Becker phenotypes. Presumably this is explained by small in-frame deletions that affect antigenic regions of dystrophin identified by one antibody and not the other. Although Western blot analysis was carried out, and said to confirm the immunofluorescence results, no data are shown.

The question I would like to put to the authors is whether dystrophin (presumably of slightly reduced mulecular weight) from such asymptomatic or mildly affected Becker patients could be distinguished from normal dystrophin on Western blot analysis using an anti-dystrophin antibody that gives normal immunocytochemistry pattern. If this were the case, then it would obviate the need to use multiple antibodies to avoid underdiagnosing the mild or asymptomatic Becker phenotypes.

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1 Muntoni F, Mateddu A, Ganchetti C, *et al.* Dystrophin analysis using a panel of anti-dystrophin antibodies in Duchenne and Becker muscular dystrophy. *J Neurol Neurosurg Psychiatry* 1993;**56**:26–31.

Muntoni et al reply:

Dr Kyriakide's observation gives me the opportunity to clarify my view on this important matter. The underlying question asked is: is there a single, preferred technique for detecting dystrophin abnormalities and are there occasions when other techniques should be considered instead?

Although our study[1] was not specifically designed to address this particular point, I have reached my conclusion on the basis of the following observations:

A) Western blot *qualitative and quantitative* abnormalities: these were observed in the great majority of the patients we have analysed (90%), including the ones with very mild or preclinical Becker muscular dystrophy (BMD) phenotypes. In particular, two preclinical BMD patients showed a slightly reduced molecular weight protein of slightly lower abundance on Western blot analysis. Immunocytochemical analysis with multiple anti-dystrophin antibodies was judged to be abnormal before the know–ledge of the immunoblot result.

B) Western blot *quantitative* abnormality: this was observed in patient BMD 17,[1] a boy still asymptomatic at the age of 10. There was also discordance in staining between the various anti-dystrophin antibodies.

It thus appears that while most BMD patients have an abnormal molecular weight dystrophin on Western blot, a few (in the very mild end of the spectrum of dystrophinopathies) will only have a reduced amount of a normal molecular weight protein. We have been able to pick up immunocytochemical abnormalities in these patients, but as concluded in our paper, a normal result with immunocytochemistry should not stop one from doing a Western blot, if a dystrophinopathy is still suspected. On the other hand, precise quantitation of dystrophin present on a Western blot can be rather difficult, especially in cases where it is close to normal. Few laboratories around the world routinely carry out dystrophin quantitation corrected for the myosin content of the muscle sample.[2]

Western blot analysis is a technically demanding, expensive and time consuming technique (taking a minimum of two and a half days). Its use cannot therefore be easily justified for individual samples. On the other hand, immunocytochemical analysis with a panel of anti-dystrophin antibodies can be done on individual samples in a couple of hours by a technician with routine histochemical skills.

Another important piece of information that can be derived from immunocytochemical analysis relates to detecting the location of genomic or transcription abnormalities.

A panel of anti-dystrophin antibodies might not only detect the presence of small in-frame deletions (as Dr Kyriakides points out) but may also suggest the presence of point mutations affecting the epitopes recognised by an individual antibody. Such information can then be used to narrow down the search for the precise gene defect by other molecular biology techniques.

In conclusion, I believe that the most rational and cost effective diagnostic approach to the study of dystrophinopathies is to perform immunocytochemical analysis with a panel of anti-dystrophin antibodies as a first option. As we have demonstrated,[1] this strategy allows the detection of minor abnormalities that cannot be found using only one antibody. If this analysis is normal, but a dystrophinopathy still suspected, a subsequent Western blot analysis (with a careful quantitation and correction for the myosin content) then becomes appropriate. The use of multiple antibodies will make the need for this more accurate but time-consuming technique less necessary.

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1 Muntoni F, Mateddu A, Cianchetti C, *et al.* Dystrophin analysis using a panel of anti-dystrophin antibodies in Duchenne and Becker muscular dystrophy. *J Neurol Neurosurg Psychiatry* 1993;**56**:26–31.
2 Nicholson LVB, Johnson MA, Gardner-Medwin D, Blrattachaya S, Harris JB. Heterogeneity of dystrophin expression in patients with Duchenne and Becker muscular dystrophy. *Acta Neuropathol (Berl)* 1990;**80**:239–50.

BOOK REVIEWS

All titles reviewed here are available from the BMJ Bookshop, PO Box 295, London WC1H 9TE. Prices include postage in the United Kingdom and for members of the British Forces Overseas, but overseas customers should add £2 per item for postage and packing. Payment can be made by cheque in sterling drawn on a United Kingdom bank, or by credit card (Mastercard, Visa or American Express) stating card number, expiratory date, and your full name.

Modern Perxpectives of Child Neurology. Edited by Y FUKUYAMA, S KAMOSHITA, C OHTSUKA and Y SUZUKI (Pp 360; Price: Not Indicated). 1991. ISBN Not Indicated. Publisher: The Japanese Society of Child Neurology c/o Dept of Pediatrics, Tokyo Women's Medical College, 8–1 Kawadacho, Shinjuku-ku, Tokyo 162, Japan.

This volume is the published proceedings of the Fifth International Child Neurology and the Third Asian and Oceanian Congress of Child Neurology held in Tokyo in November 1990. Topics covered include metabolic encephalopathies, neurological infections, complications of immunisation, febrile convulsions, intractable epilepsy and child neurology in tropical countries.

The papers vary greatly in their quality. Some are single case reports of unusual conditions, others are authoritative and up to date reviews of important topics in child neurology. An example is the paper by Jean Aicardi on Febrile Convulsions. Other papers describe large series of children with neurological disorders unfamiliar to child neurologists in Western countries. A prominent example is the paper by Udani on the presentation of CNS tuberculosis in children who have had BCG vaccination.

The section on metabolic encephalopathies include both clinical details of children with mitochondrial disorders and Reye-like syndromes but also discussion of possible pathogenesis. Aiyathurai's discussion of the significance of giant mitochondria and peroxisomal proliferation in Reye-like encephalopathies provides insight as to the metabolic derangements in these conditions. There are excellent clinical and biochemical reviews of MELAS and Leigh's encephalopathy.

There is no subject index in the volume which is essential when such diverse neurological topics are covered. This book will be of interest to the child neurologist because of its diverse subject matter but selective sampling of its contents is advised. Perhaps for future volumes a more selective approach to the material to be included is indicated. This may allow inclusion of discussions that follow the presentations, which are perhaps the most interesting aspect of specialist meetings.

MA CLARKE

The Molecular and Genetic Basis of Neurological Disease. By R N ROSENBERG, S B PRUSINER, S DIMAURO, R L BARCHI, AND L M KUNKEL. (Pp 1023, Illustrated; Price: £175.00). 1992. Oxford: Butterworth-Heinemann. ISBN 0-7506-9069-0

This formidable text has five eminent editors and over 100 contributors to 66 chapters and aims to present the metabolic and/or molecular basis of neurological disorders to clinicians who care for patients with hereditary neurological disorders, and to the important band of neuroscientists who investigate them.

The first chapter explains the rationale and methods of DNA investigations and serves as a good basis for understanding strategies for gene identification and mutation analysis. A wide variety of other topics include membrane excitability disorders, neuro-oncology, disorders of muscle and mitochondria. However, some chapters are more suitable for paediatricians than for neurologists. For example, the two conditions described under "Chromosomes" are Down's syndrome and Fragile-X syndrome, and there are 30 chapters on inborn errors of metabolism.

A useful result of genetic studies is the discovery of new proteins and the subsequent elucidation of their normal function. Dystrophin is one such example clearly described here. Another exciting outcome of genetic analysis is the correlation of clinical findings with gene mutations, as exemplified by the glycogen storage diseases, where different genes code different subunits of enzymes, and where there are many different mutations of the same gene. There are also unusual pathogenetic mechanisms such as the size of a (CTG) repeat in myotonic dystrophy or the altered conformation of a gene product with prion protein disease or p53 mutations. Such oddities should serve to stimulate as well as educate.

However, the policy of describing those diseases with a known molecular or metabolic basis leads to a somewhat distorted view of neurology, so that rare diseases are given disproportionate space compared to common but poorly understood diseases. Nevertheless, this textbook represents a major and successful undertaking, although a subsequent edition should include chromosomal causes of cerebral malformations, more discussion of the neurodegenerative disorders of old age, and accounts of all the genes listed in Harding's and Rosenberg's neurologic gene map.

SARAH BUNDEY

Recent Advances in Clinical Psychiatry /8. (Series: Recent Advances). Edited by KENNETH GRANVILLE-GROSSMAN. (Pp 216 Illustrated; Price: £29.95 (Hardback)). 1993. Edinburgh, Churchill Livingstone. ISBN 0-443-04696-4.

Virtually every psychiatrist will be familiar with this series which presents reviews on topics in psychiatry, essentially a digest of recent literature. Chapters are helpfully concluded with important points for clinical practice, and at the end of the book there are reviews of some key papers published in 1990/1991.

Like most multi-author textbooks, the presentation is uneven. Some chapters contain undigested literature and, beyond some time saving on reading original papers, present little advantage to the reader. The chapter on Parkinson's Disease is excellent; (it critically evaluates the literature), as is the chapter on Liaison Psychiatry of Old Age, with helpful suggestions on the use of rating scales by non-psychiatrists to evaluate mental disorder in the elderly. Every doctor should read the chapters on Chronic Pain and Somatoform Disorders as the emotional component of pain is so often misunderstood and inadequately integrated into the treatment process with poor outcome for patient and doctor.

This book is, therefore, a must for psychiatric trainees preparing for Membership or more senior psychiatrists who wish to keep abreast of new developments. Doctors with an eclectic view in other specialties may well find it pertinent to their clinical needs.

MARTIN G LIVINGSTON

Neuropathies Peripheriques: Polyneuropathies and mononeuropathies multiples (in French). By PIERRE BOUCHE and JEAN-MICHEL VALLAT. (Pp 899, Illustrated; Price: Not Indicated) 1992. Maisonneuve Editions Medicales, 386 Route de Paris Sainte-Ruffine, BP 39–57162 Moulins-les-Metz Cedex. ISBN 2–7040–0683–0.
This book contains contributions from sixty authors. However, the fears expressed in the preface ...'on connaît les risques de la pluridisciplinarité aussi bien dans la divergence d'opinions que dans la dispersion de