Matters arising

Sera of 20 patients without neurological disorders were screened for borrelia infection and used as normal control cases. In two of GBS cases (15%) antibodies of IgG class were detected in the serum (at titres of 1:128 and 1:256 respectively), but not in the CSF. In the same sera sampled two months later antibodies to borrelia were no more detectable. The clinical course of the disease in the two positive cases did not differ from other negative GBS patients and they recovered in 6–8 months. Only one of the normal control cases showed antibodies to borrelia at the titre of 1:16, which is not considered as significant of infection.^{9,10}

At least half of the patients with GBS suffer a few weeks before the onset of the disease an infective illness which can trigger an immune-mediated reaction involving the peripheral nervous system.¹¹ Viral infections of the respiratory or gastrointestinal tract, surgical procedures, vaccinations, non-viral agents like *Mycoplasma pneumoniae* or *Campylobacter jejuni* or gram-negative bacteria infections have been described as antecedent diseases.¹² The presence of antibodies in the serum but not in the CSF of typical cases of GBS, together with their disappearance in the following months, suggests that in a few cases a borrelia infection can be the antecedent illness precipitating the immune-mediate disorder of acute inflammatory demyelinating polyneuropathy. Borreliosis should be added in the numerous preceding infections of GBS.

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References

- 1 Winer JB, Hughes RAC, Anderson MJ, Jones DM, Kangro H, Watkins RPF. A prospective study of acute idiopathic neuropathy. II. Antecedent events. *J Neurol Neurosurg Psychiatry* 1988;51:613–8.
- 2 Reik L, Steere AC, Bartenhagen NH, Shope RE, Malawista SE. Neurologic abnormalities of Lyme disease. *Medicine* (Baltimore) 1979;58:281–94.
- 3 Finkel M. Lyme disease and its neurologic complications. *Arch Neurol* 1988;45:99–104.
- 4 Pachner AR, Steere AC. The triad of neurologic manifestations of Lyme disease: meningitis, cranial neuritis and radiculoneuritis. *Neurology* 1985;35:47–53.
- 5 Sterman AB, Nelson S, Barclay P. Demyelinating neuropathy accompanying Lyme disease. *Neurology* 1982;32:1302–5.
- 6 Ryberg B, Hindfelt B, Nilson B, Olsson JE. Antineural antibodies in Guillain-Barré syndrome and lymphocytic meningoradiculitis (Bannwarth's syndrome). *Arch Neurol* 1984;41:1277–81.
- 7 Asbury AF. Diagnostic considerations in Guillain-Barré syndrome. *Ann Neurol* 1981;9(suppl.):1–5.
- 8 Trevisan G, Crovato F, Marcuccio C, Fumarola D, Scarpa C. Lyme disease in Italy. *Zbl Bakt Mikrobiol Hyg* 1986;263:459–63.
- 9 Muhleman MF, Wright DJM, Black C.

Serology of Lyme disease. *Lancet* 1986;i:553–4.

- 10 Bateman DE, Lawton NF, White JE, Greenwood RJ, Wright DJM. The neurological complications of Borrelia burgdorferi in the New Forest area of Hampshire. *J Neurol Neurosurg Psychiatry* 1988;51:699–703.
- 11 Kaplan JE, Schonberger LB, Hurwitz ES et al. Guillain Barré syndrome in the United States 1978–1981: additional observations from the national surveillance system. *Neurology* 1983;33:633–7.
- 12 Arnason BGW. Acute inflammatory demyelinating polyradiculoneuropathies. In: Dyck PJ, Thomas PK, Lambert EH, Bunge R, eds. *Peripheral Neuropathy*. Philadelphia, Saunders. 1984:2050–100.

Winer and Hughes reply:

We were interested to read the report of Mancardi and his colleagues on the serological identification of borrelia infection on the basis of a transiently raised IgG titre among two out of 13 patients with the Guillain-Barré syndrome. In our own study of one hundred patients with acute idiopathic neuropathy we were able to identify a specific antecedent infection in 31% serologically. A further 24% could recall symptoms of unexplained gastrointestinal or respiratory infection in the month preceding the neuropathy. None of these 24 patients had arthralgia or skin rash. Three had more than 5 white cells/ μ l in the CSF.

A case controlled study of borrelia serology using both IgM and IgG assays of serum and CSF would be of interest. Controls with such a study should include patients with inflammatory conditions which might cause a non-specific rise in total serum IgG.

Book reviews

Neuromuscular Disease, 2nd ed. By M Swash, MS Schwartz. (Pp 456; £99.00.) London: Springer, 1988.

The first edition of this book was widely acclaimed and it achieved a secure place as a "bench book" for those involved in the management of children and adults with disorders of the neuromuscular apparatus. The second and revised edition (with 202 illustrations) is a larger and more comprehensive account of these disorders, particularly the peripheral neuropathies and metabolic muscle disease. It is a welcome addition to the literature on peripheral neuropathology, the photomicrographs of muscle biopsy material particularly being measurably superior to those in the first

edition (although the authors have retained a few illustrations of *longitudinal* cryostat sections which are pictorially unpleasing, technically unsatisfactory and correspondingly difficult to interpret). However, the question of balance arises when considering the chapters dealing with peripheral neuropathies. There is a profusion of (good) photo- and electronmicrographs of myopathology but only a few illustrations of the commoner peripheral nerve disorders, genetically determined and acquired. Presumably this is a reflection of the special interest of the senior author but it does make for a rather large "bare area" in the middle of an otherwise well-arranged and presented volume. Illustrations of cyclical demyelination/remyelination and axonal degeneration in teased fibre preparations and of some of the more dramatic peripheral neuropathic changes would have been welcome, for examples

"tornaculous" neuropathy and "glue sniffer's" neuropathy. Contrariwise, one wonders why the authors felt it necessary to include references to SMON, lathyrism and syringomyelia in a consideration of predominantly or exclusively lower motor neuron dysfunction. Some of the references in the chapters on peripheral neuropathy appear to be rather antediluvian.

The chapter dealing with disorders of neuromuscular transmission is an admirable summary of an area in which breathtaking progress has been made since the publication of the first edition. Any criticism here inevitably seems carping but the lighting of the patient in Fig 12.2a is poor and a CT scan of the chest might have been more impressive than the lateral chest radiograph illustrated in Fig 12.2b.

It is a pleasure to welcome this new edition of an old friend to the neuromuscular literary

fold. It is recommended to all those working in the area although the price may well be a deterrent for some pockets (presumably it has been inflated by the number of illustrations). Dr Swash and Dr Schwartz are to be congratulated for omitting to make any mention of that well-known, non-existent entity ME!

P HUDGSON

Recent Advances in Epilepsy. Edited by TA Pedley, BS Meldrum. (Pp 266; £45.00.) Edinburgh: Churchill Livingstone, 1988.

This is the fourth edition in a series which began in 1983. The format is the same as that of successful previous editions, presenting high quality review articles that span animal experimental and clinical fields of epilepsy with well known authors working on both sides of the Atlantic.

Experimental areas explored in this edition include mechanisms of seizure initiation and spread, the kindling model of epilepsy and amino-acid abnormalities in epilepsy. The majority of the book is clinically orientated with chapters on the role of the EEG, teratogenicity of drugs and the management of pregnancy in women with epilepsy. The field of new antiepileptic drugs is covered and the position of corpus callosotomy in the treatment of intractable epilepsy is reviewed. Two concluding chapters deal with the problems of the medicolegal consequences of epilepsy and epileptic automatism. A novel and interesting chapter is included on parasitosis of the central nervous system and epilepsy.

Inevitably, it is possible to criticise some of the chapters as being available in a very similar form in other publications. In those volumes particular interest often arises in comparing European practice in the management of epilepsy with that of the USA. Perhaps this is most clearly reflected in the opening sentence of the chapter on the management of seizures during pregnancy. This would suggest that the major concerns in the author's mind are the "medical legal consequences of caring for women with epilepsy", a concern that might not be uppermost in the minds of most European clinicians approaching this problem. Professor Porter's chapter very fully covers the problems of evaluation of new antiepileptic drugs. The chapter does not, however, address the current controversy surrounding the use of cross-over or parallel group designs and nor does it discuss the current problems being presented to investigators in

this area by major disagreements that exist between regulatory authorities on each side of the Atlantic on the necessity or otherwise of actively controlled monotherapy studies at an early stage in the assessment of new antiepileptic drugs.

As always, the main value of this volume is that it brings together authoritative review articles within a single volume. There is no doubt that anyone with an interest in epilepsy or responsible for the care of patients with epilepsy will find something of interest within this book and, like its predecessors, it will remain an important review and reference source for some time to come.

DW CHADWICK

Novel Infectious Agents and the Central Nervous System. CIBA Foundation Symposium 135. Edited by G Bock, Joan Marsh. (Pp 276; £30.50.) Chichester: John Wiley & Sons, 1988.

This book consists of a series of high quality articles based on a Ciba Foundation Symposium which was concerned with key questions on the pathogenesis of the transmissible spongiform encephalopathies. It is largely concerned with scrapie but also includes Creutzfeldt-Jakob disease, kuru, Gerstmann-Straussler disease, mink encephalopathy and chronic wasting disease. Almost all of the articles are concerned with the possible nature of the scrapie agent and the pathogenesis of these diseases. The remarkable nature of the so-called unconventional virus diseases includes the long incubation periods, the agent's resistance to a variety of procedures which inactivate conventional viruses, the absence of immune responses and the unknown nature of the infectious agent itself. A major advance in this field was made in 1981 with the discovery of scrapie-associated fibrils which are now known to occur in most if not all cases of unconventional virus disease. The suggestion then emerged on the basis of further studies that these diseases were due to a novel infectious agent termed prion which was postulated to be a self-replicating protein. It is now clear that a glycoprotein called PrP is the major constituent of scrapie-associated fibrils. This protein is present in normal as well as scrapie-infected brains although the form associated with infected tissues has different physical characteristics which may be due to biochemical modification.

This field is a controversial one and this is

reflected by the various articles and to an even greater extent by the very rigorous and lively discussions which follow them. Almost all of the subject matter concerns scrapie and it should be remembered that experimental scrapie in mouse and hamster has provided most of our understanding of the neuropathogenesis of these infections. All of the contributions contain some experimental details although some have more general remit and there are a number of excellent introductory paragraphs even in the highly technical contributions. There are chapters on the clinical neurology of Creutzfeldt-Jakob disease, and the neuropathology of unconventional virus infections and these are followed by an excellent chapter by Kimberlin and Walker on the pathogenesis of experimental scrapie. This is followed by a number of chapters which discuss the various theories of scrapie pathogenesis. It comes over very clearly that no one knows what constitutes the scrapie agent. The main possibilities are that the scrapie agent is a virus with unconventional properties, a "virino" in which the infectious form of the agent is a hybrid between a scrapie-specific nucleic acid and a protective host protein, or that the agent is a modified host protein. The various chapters discuss the pros and cons of these theories with varying degrees of enthusiasm. There are a number of highly technical chapters which the clinical neurologist without a background in this field will find hard going. Of particular interest to neurologists, however, will be the chapters on the pathogenesis of amyloid formation in Alzheimer's disease, Down's syndrome and scrapie.

I personally found this volume extremely stimulating and I particularly enjoyed the detailed and lively discussions following each chapter which themselves included much information, both published and unpublished, and there is a separate reference list following the discussions. Anyone familiar with the sometimes heated exchanges at scientific meetings between the various groups working in this field will not be surprised at the rigour of the discussions in this volume and this adds greatly to the book's success. There are very clear and succinct introductory and concluding pages by F Brown and one is left with little doubt that the key questions in this field, most notably the final demonstration as to whether the scrapie agent is indeed a nucleic acid or a self-replicating protein, or both should not be too far off in the future.

In summary, this volume gives the state of the art in the scrapie field and, although very technical in places, will be of considerable