

3. Population of patients

We agree that part of our differences may relate to the different populations of patients studied. We used surgical findings as the "gold standard" of diagnosis; the surgeons were blind to the DSEP findings and they were not asked to pay attention to any particular root. Aminoff and Goodin used variable "gold standards" and their patients must have been less severely affected as only 8/19 came to surgery. In a further eight verification of the myelogram was by discography, now a largely abandoned procedure.⁶ In some the myelogram described a bulging as opposed to a prolapsed disc, a common finding in asymptomatic patients.⁷ In three more cases the EMG was the only abnormal finding and was performed on the symptomatic side only;⁸ one does not know whether the hard sign of fibrillation in muscles of a root distribution was seen or whether soft signs were relied on such as polyphasic potentials and a reduced interference pattern. One could therefore make a reasonable case against several of Aminoff and Goodin's patients having radiculopathy and this may explain some of their negative findings.

4. Operative findings and DSEP

The criticism that 12 roots were "incorrectly" identified raises interesting issues. For the reasons given above we accept the abnormalities in these roots as a true reflection of root dysfunction. Usually the "incorrect" root was an abnormality found in addition to the "correct" root. No comment from the surgeon does not mean that he identified the root in question as normal. The surgeon's brief comments should not be overinterpreted at this stage; it will take a study of more than our 20 and Aminoff and Goodin's 19 patients to sort out these discrepancies. We discussed in the text a number of explanations of unexpected DSEP abnormalities in roots. One cannot assume that the injury causing pain also causes delayed DSEPs simultaneously, we know from peripheral nerve decompression that pain is relieved immediately but conduction delays take time to resolve. It is possible that an abnormally conducting root which did not appear compressed at surgery may have been bowed and repeatedly stretched during active movement sufficiently to cause a conduction defect.

Anatomical variations must also be considered.⁹ Pre-fixed and post-fixed roots are possible; sometimes L5 and S1 are unevenly divided with the majority or even all the fibres passing through one intervertebral foramen.

In persisting with our conclusions that the DSEP is a very accurate method for detecting abnormalities in root function we are encouraged that other workers have reached similar conclusions.¹⁰⁻¹² There is ample evidence to justify further evaluation of the technique in larger numbers of patients and we are currently preparing our experience in 100 cases, most of whom were treated conservatively.

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References

- 1 Katifi HA, Sedgwick EM. Evaluation of the dermatomal somatosensory evoked potential in the diagnosis of lumbo-sacral root compression. *J Neurol Neurosurg Psychiatry* 1987;50:1204-9.
- 2 Katifi HA, Sedgwick EM. Somatosensory evoked potentials from posterior tibial nerve and lumbo-sacral dermatomes. *Electroencephalogr Clin Neurophysiol* 1986;65:249-59.
- 3 Aminoff MJ, Goodin DS, Parry GJ, Barbaro NM, Weinstein PR, Rosenblum ML. Electrophysiologic evaluation of lumbosacral radiculopathies: Electromyography, late responses, and somatosensory evoked potentials. *Neurology* 1985;35:1514-8.
- 4 Aminoff MJ, Goodin DS, Parry GJ, Barbaro NM, Weinstein PR, Rosenblum ML. Dermatomal somatosensory evoked potentials in unilateral lumbosacral radiculopathy. *Ann Neurol* 1985;17:171-76.
- 5 American Electroencephalographic Society. Guidelines for Clinical Evoked Potential Studies. *J Clin Neurophysiol* 1984;1:3-53.
- 6 Clifford JR, Shapiro R. Lumbar discography: an outdated procedure. *J Neurosurg* 1986;63:686.
- 7 Kieffer SA, Sherry RG, Wellenstein DE, King RB. Bulging lumbar intervertebral disk: myelographic differentiation from herniated disk with nerve root compression. *AJR* 1982;138:709-16.
- 8 Neidre A, MacNab I. Anomalies of the lumbosacral nerve roots. *Spine* 1983;8:294-99.
- 9 Young A, Getty J, Jackson A, Kirwan E, Sullivan M, Parry CW. Variations in the pattern of muscle innervation by the L5 and S1 nerve roots. *Spine* 1983;8:616-24.
- 10 Dvovch V, Scarff T, Bunch WH, Smith D, Boscardin J, Lebarge H, Ibrahim I. Dermatomal somatosensory evoked potentials: Their use in lumbar radiculopathy. *Spine* 1984;9:291-93.
- 11 Scarff TB, Dallmann DE, Bunch WH. Dermatomal somatosensory evoked potentials in the diagnosis of lumbar root entrapment. *Surgical Forum* 1981;32:489-91.
- 12 Machida M, Asai T, Sato K, Toriyama S, Yamada T. New approach for diagnosis in herniated lumbosacral disc. Dermatomal somatosensory evoked potentials (DSEPs). *Spine* 1986;11:380-4.

Notices

Alumni Association for the National Hospital, Queen Square and the Institute of Neurology (London).

A meeting, open to anyone who has studied at the National Hospital for Nervous Diseases or the Institute of Neurology will be held during the American Academy of Neurology Meeting in Cincinnati, Ohio, on 19 April 1988, 7.00 a.m. Information may be obtained from Dr John C Steiner, Admiral's Walk Building, 1095 Nimitzview Drive, Cincinnati, Ohio 45230.

The 18th International Epilepsy Congress.

This will be held in New Delhi, India, 17-22 October 1989. Information may be obtained from Professor M C Maheshwari, Secretary-General, 18th International Epilepsy Congress-89, Department of Neurology, Neurosciences Centre, All India Institute of Medical Sciences, New Delhi-110029, India.

The Volvo Awards for Low Back Pain Research 1989

The Volvo Company has sponsored three prizes of US \$8,000 each. Awards will be made competitively for papers in the following: (1) Clinical studies, (2) Bioengineering studies, (3) Studies in other basic science areas.

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