This study shows a strong effect of lower limb position on observer ratings of the ankle jerk in a sample of young healthy adults. This supports the notion that the position of the lower limb adopted to assess the ankle jerk may explain some of the differences in the prevalence of absent ankle jerk reported in several studies. The findings also agree with anecdotal reports³ that the sensitivity of the ankle jerk is higher when the hip is abducted than when the hip is adducted, but the kneeling position is the most sensitive of the three lower limb positions compared.

When screening for polyneuropathy, the kneeling position may be preferable to the other positions as it will reduce the number of false positives. However, the kneeling position will be unsuitable in settings where the patient is too ill or has impaired consciousness.⁴

O S A OLUWOLE
T O ODEBODE
M O KOMOLAFE

College of Medicine, University of Ibadan, Nigeria

O S A OLUWOLE
Division of International Health, IHCAR,
Department of Public Health Sciences,
Karolinska Institute, SE-171 76,
Stockholm, Sweden

H LINK

Division of Neurology, Huddinge University Hospital,
Karolinska Institute

Correspondence to: Dr O S A Oluwole
osaoluwole@hotmail.com

- 1 Ko H, Ditunno J, Graziani V, *et al.* The pattern of reflex recovery during spinal shock. *Spinal Cord* 1999;37:402-9.
- 2 Spillane JA. *Bickerstaff's Neurological examination in clinical practice*. 6th ed. Oxford: Blackwell Science, 1996.
- 3 DeMyer W. *Technique of the neurologic examination: a programmed text*. New York: McGraw-Hill, 1994:220-30.
- 4 O'Keefe S, Smith T, Valacia R, *et al.* A comparison of two techniques for ankle jerk assessment in elderly subjects. *Lancet* 1994;344:1619-20.
- 5 O'Brien M. Ankle jerk assessment. *Lancet* 1995;345:331.
- 6 Impallomeni M, Kenny R, Flynn M, *et al.* The elderly and their ankle jerks. *Lancet* 1984;i:670-2.

Randomised controlled trial of occupational therapy at home: results at 1 year

In the United Kingdom, about 25% of patients with stroke are not admitted to hospital. Unfortunately many of these patients remain in the community with little or no coordinated rehabilitation. We have recently published the results of a single blind randomised controlled trial of occupational therapy for patients with stroke remaining in the community.¹ We showed significant ben-

efits across a range of outcomes at 6 months after stroke; extended activities of daily living (EADL), personal ADL, gross motor function, handicap, and carer strain. Correspondence² suggested that these results were consistent with other similar smaller trials. In this report we present results at 1 year after stroke.

We identified patients from a community stroke register who had had a recent stroke (<1 month) and had not been admitted to hospital.¹ The stroke register covered a geographical area of Nottinghamshire and southern Derbyshire and incorporated 73 general practitioner practices, covering a population of 500 000 patients. Patients were included if they fulfilled the World Health Organisation (WHO) definition of stroke and had not been admitted to hospital. Patients were excluded if they lived in a nursing or residential home, could not speak or understand English before their stroke, or had a history of dementia. Patients were randomly allocated to up to 5 months of occupational therapy treatment at home (n=94) or to no intervention (n=91). The groups were well matched for baseline demographic characteristics.¹ The aim of occupational therapy was to encourage independence in personal and extended ADL. The number of visits given by the research occupational therapist to the intervention group ranged from 1 to 15, with a mean of six visits. Outcome measures were completed at 6 and 12 months after stroke. Outcome measures used at 1 year included the Barthel index, EADL scale, and the general health questionnaire (GHQ 28) for both patient and carer. All assessments were conducted in the patient's home by a blinded independent assessor.

Sixteen patients could not be assessed at 1 year: 10 had died during follow up (five in the occupational therapy group) and six withdrew from the study (four in the occupational therapy group). As the number of withdrawals from the study was small and evenly distributed between the groups, the analysis was conducted on the 147 patients who completed assessments. Demographic data at 1 year are illustrated in the table.

The primary outcome measure of the trial was the Nottingham EADL.³ Analysis of the EADL at 1 year after stroke, using the Mann-Whitney *U* test, showed that the group receiving occupational therapy were significantly less disabled (table).

Although it is important to ascertain whether an intervention is effective at certain time points, the above analysis does not take into account variation over time or that outcome measures at different points in time were from the same patients. We therefore applied an analysis of serial measurements.

The area under the curve (AUC) was calculated as a summary measure⁴ for outcome assessments in both groups. There was a significant difference between the groups in favour of the treatment group on the AUC EADL scale (Mann-Whitney *p*=0.001, 95% confidence interval (95% CI) 7 to 28) and the AUC Barthel index (Mann-Whitney *p*=0.01, 95% CI 0 to 9). There were no significant differences in the AUC for the GHQ for either the patient (Mann-Whitney *p*=0.48, 95% CI -39 to 21) or the carer (Mann-Whitney *p*=0.66, 95% CI -44 to 29).

This study indicated that patients who received occupational therapy had a greater level of independence in activities of daily living over a period of 1 year than patients who did not. Differences between the groups in terms of extended ADL were still apparent at 1 year.

The persistence of the beneficial effect of domiciliary occupational therapy adds further support to its clinical usefulness. There are grounds for establishing community occupational therapy services for patients with stroke, but further evaluation is required to confirm the generalisability of these findings and examine their economic implications.

This study was supported by the Stroke Association (UK).

M F WALKER
K HAWKINS

Division of Stroke Medicine, Clinical Sciences
Building, Nottingham City Hospital, Hucknall Road,
Nottingham NG5 1PB, UK

J R F GLADMAN
Ageing and Disability Research Unit, B Floor,
Queens Medical Centre, Nottingham, UK

N B LINCOLN
School of Psychology, Nottingham University,
Nottingham, UK

- 1 Walker MF, Gladman JRF, Lincoln NB, *et al.* Occupational therapy for stroke patients not admitted to hospital: a randomised controlled trial. *Lancet* 1999;354:278-80.
- 2 Langhorne P, Legg L, on behalf of the Outpatient Therapy Trialists. Therapy for stroke patients living at home [letter]. *Lancet* 1999;354:1730-1.
- 3 Nouri FM, Lincoln NB. An extended activities of daily living scale for stroke patients. *Clin Rehabil* 1987;1:301-05.
- 4 Matthews JNS, Altman DG, Campbell MJ, *et al.* Analysis of serial measurements in medical research. *BMJ* 1990;300:230-5.

CORRESPONDENCE

Relation between Glasgow outcome score extended (GOSE) and the EQ-5D health status questionnaire after head injury

In this *Journal* Wilson *et al* investigated aspects of the validity of the Glasgow outcome score (GOS) and the extended form (GOSE), particularly the relation between the GOS and subjective reports of health status.¹ A potentially useful relation between the GOSE, measured using a standard interview at 1 month after head injury,² and health status assessed using the Euroqol EQ-5D is now reported. The GOS is the most widely used method to describe overall outcome after head injury.³ The EQ-5D questionnaire is a validated tool that measures health status in

Comparison between the groups on demographic characteristics and outcome measures 1 year after stroke

	Occupational therapy n=73	No intervention n=74	
Demographic characteristics at 1 year:			
Mean (SD) age	73.3 (7.8)	74.7 (8)	
Sex (M/F)	41/32	31/43	
Side of hemiparesis			
Left	37	35	
Right	28	33	
Other	8	6	
Lives alone	21	29	
Outcome measure at 1 year	Median (IQR) scores	Median (IQR) scores	<i>p</i> Value
Barthel index	19 (16-20)	18 (15-20)	0.16
EADL	13 (13-18)	11 (4-17)	0.04
GHQ 28 Patient	20 (15-30)	18 (13-31)	0.62
GHQ 28 Carer	22 (11-28)	21 (14-25)	0.91

five quality of life dimensions,⁴ with the most appropriate of three statements in each of these selected by the respondent. These responses are coded to give a single score. A visual analogue score of current health state is also recorded.

Local research ethics committee approval was granted to measure the GOSE on, and to administer the EQ-5D questionnaire to, patients attending the emergency departments of four hospitals in Manchester (United Kingdom). All patients aged over 18 presenting with a head injury of any initial severity (Glasgow coma score 3-15) within 6 hours of injury were eligible for enrolment. Patients with extracranial injuries or preinjury morbidity were not excluded. Follow up occurred at 1 month. The GOSE was measured by telephone interview and the EQ-5D by postal survey. One hundred and twenty one patients were recruited (76 men), of whom 100 (83%) had outcome assigned by GOSE, and 67 (55%) returned the EQ-5D questionnaire. Four of the second group omitted the visual analogue score assessment. The EQ-5D questionnaire only was assessed in nine patients (7%). Fifty eight patients underwent outcome assignment by both methods, and these results form the basis of subsequent statistical analysis.

A predominance of apparently minor head injury (initial Glasgow coma score (GCS) 14-15) was found in the study respondents (56/58 (97%)). The proportion of those 56 patients with more minor injuries who had less than a good recovery (GOSE<7) at one month was 23%. The two patients with GCS less than 14 experienced a good recovery.

A significant correlation between the EQ-5D score and GOSE was found (Spearman's r 0.427 p =0.001). The correlation between the visual analogue score reading and GOSE was also significant (Spearman's r 0.38 p =0.005). All 18 patients who replied "no problem" in each health state category of the EQ-5D questionnaire had a good recovery as measured by GOSE (>6) (Pearson's χ^2 7.54 p =0.006).

The follow up rate for the GOSE, assessed by telephone interview, was superior to the EQ-5D postal survey. A few patients, however, responded only by post. In an unselected group of patients with predominantly minor head injuries it seems that EQ-5D health status score can be used to infer a good recovery after head injury if no problems are identified in the five domains of health status.

WILL TOWNEND
Accident and Emergency Department,
Hope Hospital, Salford M6 8HD, UK
willtown@globalnet.co.uk

1 Wilson JTL, Pettigrew LEL, Teasdale GM. Emotional and cognitive consequences of head injury in relation to the Glasgow outcome scale. *J Neurol Neurosurg Psychiatry* 2000; 69:204-9.

2 Wilson JTL, Pettigrew LEL, Teasdale GM. Structured Interviews for the Glasgow outcome scale and extended Glasgow outcome scale: guidelines for their use. *J Neurotrauma* 1998;8:573-85.

3 Jennett B, Bond M. Assessment of outcome after severe brain damage. A practical scale. *Lancet* 1975;i:480-4.

4 Brazier J, Jones N, Kind P. Testing the validity of the EuroQoL, and comparing it with the SF-36 health survey questionnaire. *Qual Life Res* 1993;2:169-80.

BOOK REVIEWS

An Atlas of Peripheral Nerve Pathology.

By ROSALIND KING. (Pp 217, £125). Published by Arnold, London, 1999. ISBN 0-340-586664.

Whether it is because peripheral nerve has a limited repertoire of responses to pathological insults or whether it is because advances in other areas of neuropathology have sidelined interest, for many years peripheral nerve disease has been the Cinderella of that specialty. Indeed there have been very few monographs on this subject since Roy Weller first published his *Pathology of Peripheral Nerve* in 1977. Now, with an increase in knowledge of peripheral nerve disease, and advances in electron microscopy and the genetics of inherited neuropathies, the publication of this *Atlas of Peripheral Nerve Pathology* is timely.

Broadly the book is divided into two sections. In the first the author takes us through the normal light and ultrastructural appearance of peripheral nerve. There then follow chapters on biopsy techniques and importantly a section devoted to artefact. After chapters on morphometry and abnormal structure of peripheral nerve the reader is led into the second section which is devoted to pathological changes. In summary, there are sections on the pathology of the axon, myelin sheath, Schwann cell, interstitium, and vasa nervorum.

This is a handsome well illustrated book with good quality and well annotated photomicrographs, many in colour. The electron micrographs are clear and crisp. The text is well referenced and indexed. This book is primarily an atlas so it would be unfair to criticise deficiencies in the text. However a discussion on the indications for nerve biopsy with some suggested guidelines would have been useful and I think some mention should have been made of the procedure's potential complications.

This book has obvious appeal to clinicians with an interest in disease of the peripheral

nerves and to neuropathologists, but the generalist in both specialties will find it useful. For such a heavily illustrated book it is reasonably priced at £125.

DAVID J DICK

Infectious diseases of the nervous system.

Edited by LARRY E DAVIS and PETER G E KENNEDY. (Pp 544, £65.00.) Published by Butterworth Heinemann, Oxford, 2000. ISBN 0-7506-4213-0

Infections of the nervous system often present to and are managed by neurologists, rather than infectious disease physicians. A number of books on these infections have been published recently, but mainly written by infectious disease physicians, who often have a different perspective to neurological disease than neurologists. This book, edited by two neurologists and written mainly by neurologists, aims to fill this gap for practising neurologists and internists.

This book is not an exhaustive text on infections of the nervous system, but the editors have chosen infections in which they think there have been recent developments. Thus, there are chapters on prions, viruses (herpes simplex, varicella zoster, cytomegalovirus, Japanese B, HIV, and rabies), bacteria (*Borrelia*, syphilis, tuberculosis) and parasites (trypanosomiasis, malaria, *Ehrlichia* species). There are other chapters on postinfectious encephalomyelitis, vaccines against bacterial meningitis, and recurrent aseptic meningitis.

Most of the chapters are written well, structured, and with up to date and extensive references. There are some excellent clinical descriptions (for example, herpes encephalitis, prion disease, trypanosomiasis) with good neuroradiological illustrations. I found the chapters on postinfectious encephalomyelitis (although they required more illustrative images to demonstrate the range) and recurrent aseptic meningitis particularly useful. The chapter on trypanosomiasis is one of the best reviews I have read on the subject, although the length may not be justified in a book of this nature. The chapter on tuberculosis meningitis is scanty for the increasing importance of this infection. The lack of neurological details, discussion about the differential diagnosis, and management of sequelae in some chapters is disappointing, as the neurologists are often consulted about these issues.

I think that this book will be useful to neurologists with a specific interest in infectious diseases (particularly tropical diseases), but will not replace one of the more standard texts on nervous system infections.

CRJC NEWTON