MUFSON, E. J., BOTHWELL, M., HERSH, L. B., *et al* (1989*a*) Nerve growth factor receptor immunoreactive profiles in the normal, aged human basal forebrain: colocalization with cholinergic neurons. *Journal of Comparative Neurology*, **285**, 196–217.

——, —— & KORDOWER, J. H. (1989*b*) Loss of nerve growth factor receptor-containing neurons in Alzheimer's disease: a quantitative analysis across subregions of the basal forebrain. *Experimental Neurology*, **105**, 221–232.

PEARSON, R. C. A., SOFRONIEW, M. V., CUELLO, A. C., *et al* (1983) Persistence of cholinergic neurons in the basal nucleus in a brain with senile dementia of Alzheimer's type demonstrated by immunohistochemical staining for choline acetyltransferase. *Brain Research*, **289**, 375–379.

VOGELS, O. J. M., BROERE, C. A. J., TER LAAK, H. J., *et al* (1990) Cell loss and shrinkage in the nucleus basalis Meynert complex in Alzheimer's disease. *Neurobiology of Aging*, **11**, 3–13.

*PAOLO LIBERINI
PIERFRANCO SPANO
Division of Pharmacology and Experimental Therapeutics
Brescia University School of Medicine
25124 Brescia, Italy

A. CLAUDIO CUELLO
Department of Pharmacology and Therapeutics
McGill University,
Montreal, PQ,
Canada H3G 1Y6

**Correspondence: Department of Biomedical Sciences and Biotechnologies, Division of Pharmacology and Experimental Therapeutics, Brescia University School of Medicine, Via Valsabbina, 19, 25124 Brescia, Italy*

AUTHOR'S REPLY: What Edwards and co-authors do not seem to realise is that they have taken our point correctly. We are not at all convinced that the mere presence of cortical Lewy bodies in demented patients is sufficient evidence to propose a discrete β-amyloid dementia rather than a variant. We are delighted to hear that the authors have undertaken quantitative immunohistochemical studies using monoclonal antibody to β-amyloid protein. We have done that too and came to similar conclusions which we though were not worth reporting, because of the small number of cases in our study.

Liberini *et al* suggest an intriguing mechanism which may underlie the reported association between Lewy body pathology, cell loss or cell shrinkage in the basal nucleus of Meynert, and frontal lobe atrophy. This possible mechanism may offer an interesting therapeutic perspective.

McKeith *et al* (*Journal*, August 1993, **163**, 262–263) argue that the patients in our prospectively examined sample were biased so that they could not possibly satisfy their operational criteria. This is hard to believe as, for example, extrapyramidal disturbance, hallucinations (usually visual) or fluctuation due to temporary confusional state can occur in a large proportion of patients satisfying the NINCDS-ADRDA (McKhann *et al*, 1984) criteria (Förstl *et al*, 1992, 1993). The McKhann and McKeith criteria are not mutually exclusive. Therefore it would have been possible and of advantage if our patients with Lewy bodies had shown an increased rate of hallucinations, fluctuations, and so on. They did not. All eight were demented as required by the NINCDS-ADRDA criteria, five showed rigidity with cogwheeling and two had other 'psychiatric' disturbances. This is in good agreement with Lewy's original findings, who felt that

> "the psyche is seldom spared in the course of illness (of Parkinson's disease; transl. note). The mental symptoms may have different characteristics . . . but all belong to the group of senile dementia. In the early cases anomalies of affect prevail, partly of a euphoric, partly of a depressive nature; they are often associated with hallucinations and paranoid ideas derived from them. In the later years, the disturbance of memorizing and of memory predominate and lead to the most severe stages of dementia in a small number of patients" (Lewy, 1923; see Förstl & Levy, 1991).

We would be considerably concerned if traditional classification systems be abandoned (Almeida *et al*, 1992) in order to accommodate patients with dementia, paraphrenia or delusional depression and those with Lewy bodies in one group (together with 'preclinical' cases of odd cortical Lewy bodies), patients with dementia, paraphrenia and delusional depression without Lewy bodies in a second group, and 'other diseases' in a third.

Hughes *et al* (1992) have recently reported the neuropathological findings of 100 patients with clinically diagnosed Parkinson's disease. Similar to our series, all of their patients who had Lewy bodies in the brainstem also had Lewy bodies in the cortex. We would be interested to hear about these patients' cognitive status. It would certainly strengthen the Lewy body's role in psychiatry if some of those patients were demented, depressed or at least paraphrenic.

Should a significantly larger number of patients with cortical Lewy bodies be cognitively impaired, hallucinating, fluctuating, and so on, than Parkinson patients without cortical Lewy bodies, we will succumb to the ideas from Newcastle.

ALMEIDA, O., HOWERD, F. & LEVY, R. (1992) Should the diagnosis of late paraphrenia be abandoned? *Psychological Medicine*, **22**, 11–14.

FÖRSTL, H. & LEVY, R. (1991) F.H. Lewy on Lewy bodies, parkinsonism and dementia. *International Journal of Geriatric Psychiatry*, **6**, 757–766.

https://doi.org/10.1192/S0007125000182492 Published online by Cambridge University Press

——, BURNS, A., LEVY, R., *et al* (1992) Neurologic signs in Alzheimer's disease: results of a prospective longitudinal study. *Archives of Neurology*, **49**, 1038–1042.

——, BESTHORN, C., GEIGER-KABISCH, C., *et al* (1993) Psychotic features and the course of Alzheimer's disease: relationship to cognitive, electroencephalographic and computerized tomography findings. *Acta Psychiatrica Scandinavica*, **87**, 395–399.

HUGHES, A. J., DANIEL, S. E., KILFORD, L., *et al* (1992) Accuracy of clinical diagnosis of idiopathic Parkinson's disease: a clinico-pathological study of 100 cases. *Journal of Neurology, Neurosurgery and Psychiatry*, **55**, 181–184.

MCKHANN, G., DRACHMAN, D., FOLSTEIN, M., *et al* (1984) Clinical diagnosis of Alzheimer's disease: report of the NINCDS-ADRDA work group under the auspices of the Department of Health and Human Services Task Force on Alzheimer's Disease. *Neurology*, **34**, 939–944.

HANS FÖRSTL

Central Institute of Mental Health
J5, 68159 Mannheim, Germany

Psychiatric morbidity in the relatives of schizophrenic probands

SIR: We were puzzled by some of the figures presented by Varma & Sharma (*Journal*, May 1993, **162,** 672–678) in their paper. In the methods section, having started with the first-degree relatives of 162 patients and 106 controls (a maximum of 324 and 212 parents respectively), 11 parents of the schizophrenic group and four parents of the control group were excluded because of inadequate data. Despite these exclusions, data presented on the smaller samples still included 324 parents of schizophrenics and 212 parents of controls, the maximum possible number. We would be grateful for clarification from the authors as this would help us to evaluate the potentially interesting results presented on this large dataset.

CATHERINE WALSH
MICHAEL GILL

Institute of Psychiatry
De Crespigny Park
Denmark Hill
London SE5 8AF

AUTHOR'S REPLY: In response to Walsh & Gill I would like to clarify that we had deliberately excluded 11 parents of the schizophrenic group and four parents of the control group for uniformity sake. This was done because they were step-parents and their number was too small for any significant analysis. In our study biological parents were taken into consideration. This is the reason for the 324 and 212 parents being present in our analysis.

SHASHJIT LAL VARMA

Universiti Sains Malaysia
15990 Kota Bharu
Kelantan

Lithium toxicity at therapeutic serum levels

SIR: Bell *et al* (*Journal*, May 1993, **162,** 689–692) have suggested monitoring of red blood cell (RBC) and plasma lithium levels in patients who develop lithium toxicity. However, they have neither given the RBC lithium levels nor demonstrated the necessity for monitoring them concurrently with the serum levels. The following case elucidates the importance of this investigation.

Case report. S, a 45-year-old woman with recurrent bipolar affective disorder of eight years' duration, has been on prophylactic lithium (900 mg/day with a serum lithium level of 1.05 mmol/l at the last follow-up three months ago) for five years. She was admitted with a history of withdrawal (eight days), occasional vomiting (four days) and stupor (24 hours). On examination, her vital parameters were normal and she was not dehydrated. She was in altered sensorium, not responding to verbal commands and incontinent. Her metabolic parameters including serum electrolytes were normal. An x-ray of the skull, a cranial computerised tomography scan, and lumbar cerebrospinal fluid studies were also normal. Her serum lithium level at admission was 0.5 mmol/l, 12 hours after the last lithium dose (450 mg). Lithium was discontinued on admission. The serum lithium level as well as the clinical status were the same the next day.

Her RBC lithium level was 1.0 mmol/l against a corresponding plasma level of 0.5 mmol/l. Two days later the patient's sensorium had improved. She was no longer incontinent, obeyed simple commands, and indicated her needs verbally. Her RBC lithium level was 0.8 mmol/l against a plasma level of 0.2 mmol/l. Twelve days after stopping lithium the patient was completely orientated and was ambulant with no neurological deficits. Her RBC lithium level was 0.3 mmol/l and her plasma level was below 0.2 mmol/l. She was discharged one week later with no drugs. She has remained symptom-free for the past 15 months of follow-up.

For this patient, the serum lithium level alone was misleading – being at the lower end of therapeutic range and hence not toxic. However, monitoring RBC lithium levels revealed high intracellular concentrations. After stopping lithium the plasma levels decreased rapidly, whereas the RBC lithium levels showed a slower fall. The clinical status of this patient improved with the fall in RBC lithium levels. This case highlights the importance of RBC lithium level monitoring in addition to serum level and strengthens the case for the suggestion of Bell *et al*.

B. N. GANGADHAR
M. N. SUBHASH
C. UMAPATHY
N. JANAKIRAMAIAH

National Institute of Mental Health
and Neurosciences,
Bangalore 560 029
India

https://doi.org/10.1192/S0007125000182492 Published online by Cambridge University Press