metabo-

tites and receptors in the striatum and medial frontal cortex. These changes have been related to cognitive disorders and depression in patients with both these disor-

ders.

Cholinergic system

Repeatedly reported shrinkage and depletion of cholinergic neurons in the magnocellular part of the basal nucleus of Meynert are accompanied by decreased choline acetyltransferase activity in the neocortex by 86% to 91%.

In Parkinson's disease, cell loss averages 30% to 40% without correlation with age or duration of illness, and is much higher in demented parkinsonian patients in which it approaches the values in Alzheimer's disease (50% to 70%) than in non-demented patients (0% to 40%) who show neuronal losses only slightly higher than in normal aged controls. Even more severe depletion of the basal nucleus of Meynert with 75% to 80% loss or large cholinergic neurons has been found in Lewy body dementia which correlates well with recent biochemical data. The heterogeneity of degeneration of cholinergic neurons in the basal forebrain and the variability in nucleus basalis cell depletion and loss of cholinergic markers in the neocortex and hippocampus is suggestive of cortical Lewy body or Alzheimer type pathology, suggest a primary degenerative process of the cholinergic forebrain system in Parkinson's disease, while secondary retrograde degeneration proposed for Alzheimer's disease has been confirmed by defective retrograde transport of nerve growth factor to the basal nucleus in the brains of patients with Alzheimer's disease.

In conclusion, there are still some conflicting data on the biochemical and pathological basis of behavioural changes in dementia disorders, the elucidation of which will be a major task for modern neuroscience.

K A JELLINGER

Ludwig Boltzmann Institute of Clinical Neurology, Lainz Hospital, Wolkersdorferstrasse 1, A-1130 Vienna, Austria

1 Eisi MM. The basis for behavioural distur-


4 Yates CM, Simpson J, Gordon A, Maloney AFJ, Allison Y, Ritchie IM, Urquhart A. Characterisation of cholinergic enzymes in pre-senile and senile Alzheimer-type demen-


5 Adolphson R, Goffries C-G, Roos BE, Wiberg B. Changes in the brain cate-
