

## NOTE

# ANTERIOR CORPUS CALLOSUM ATROPHY AND VERBAL FLUENCY IN MULTIPLE SCLEROSIS

C. Pozzilli<sup>1</sup>, S. Bastianello<sup>1</sup>, A. Padovani<sup>1</sup>, D. Passafiume<sup>2</sup>, E. Millefiorini<sup>1</sup>, L. Bozzao<sup>1</sup> and C. Fieschi<sup>1</sup>

(<sup>1</sup>Department of Neurological Science, University of Rome "La Sapienza"; <sup>2</sup> Department of Environmental Science, University of L'Aquila)

## INTRODUCTION

MRI of Corpus Callosum (CC) atrophy may be an useful predictor of cognitive impairment in patients with Multiple Sclerosis (MS) (Huber et al., 1987), particularly of those functions as mental processing speed and rapid problem solving that depend on precisely timed interhemispheric communication (Rao et al., 1989). Since other MRI measures (i.e. periventricular burden, total weighted lesion score) proved also to be sensitive indicators of cognitive dysfunction in MS (Medaer et al., 1987; Franklin et al., 1988; Callanan et al., 1989; Rao et al., 1989; Anzola et al., 1990) it remains to be established whether CC atrophy itself is related to cognitive dysfunction or it is simply an other marker of the extent of total cerebral involvement.

Significant differences in callosal configuration were recently found in relation to gender and cerebral dominance (DeLacoste-Ultrasmsing and Hollway, 1982; Witelson, 1989) supporting the notion that anatomical callosal variations are not random but may have functional consequences. Smaller size in a portion of the CC may indicate less callosal fibers and decreased interhemispheric callosal transfer between homologous cortical structures. There is some previous suggestion that the anterior portion of the CC may be involved in higher cognitive operations, whereas the posterior callosum plays an important role in the sensory motor interhemispheric integration (Risse et al., 1989).

The aim of the present study was twofold: (1) to examine whether the relationship between CC atrophy and cognitive dysfunction is independent of the effect of cerebral lesions; (2) to explore the hypothesis that the anterior and posterior CC atrophy have a different influence on cognitive performance.

## MATERIAL AND METHOD

### *Patients*

This study was based on 18 right-handed females, who satisfied criteria for clinically or laboratory definite MS (Poser et al., 1983). Left handers were excluded in order to reduce callosal configuration variability. Patients were rated with regard to disease duration and physical disability (Kurtzke Expanded Disability Status Scale) (Kurtzke, 1983). All patients had a relapsing-remitting form of MS and they were in clinical remission at the time of the study.

### *Neuropsychological Assessment*

Neuropsychological tests of general and specific cognitive function were administered (Lezak, 1987). The examiners (DP and AP) had no prior knowledge of the results of patients' MRI scans. The severity of global cognitive impairment was rated by using the Mini-Mental State Examination.

