

Letter to the Editor

CEREBROVASCULAR DISEASE AND EXECUTIVE DYSFUNCTION IN GERIATRIC DEPRESSION

To the Editor:

In their article recently published in the Journal, Mast and colleagues (1) suggest that executive dysfunctions modulated the relationship between cerebrovascular risk factors and depressive symptoms in a population of 77 elderly patients admitted to a geriatric rehabilitation hospital.

We would like to contribute to this topic with our own personal data referring to a similar population of 209 elderly patients admitted to a Rehabilitation and Aged Care Unit from March 20001 to March 2004. Patients were selected among those who consecutively underwent a neuropsychological examination because they were suspected of having a cognitive impairment, were aged 65 years or older, and had a computed tomography (CT) of the brain. Depressive symptoms were assessed with the 15-item Geriatric Depression Scale (2). The presence and severity of cortical, white matter, and deep subcortical lesions and of leukoaraiosis were assessed on CT film with a standardized visual rating scale, which has been previously validated and used in elderly patients (3,4). With this method, the patients were quantitatively divided into two groups (50th percentile) according to the severity of subcortical cerebrovascular disease (sCVD): One hundred four patients had none or mild, and 105 had moderate or severe sCVD.

Table 1 shows that patients in the group with higher sCVD were older, more depressed, and more deteriorated both in

Table 1. Characteristics of 209 Elderly Patients Admitted to a Rehabilitation and Aged Care Unit According to Severity of Subcortical Cerebrovascular Disease (sCVD)

Characteristic	Total (N = 209)	None or Mild sCVD (N = 104)	Moderate or Severe sCVD (N = 105)	p
Age, y	79.6 ± 6.3	78.6 ± 6.7	80.6 ± 5.7	.021
Gender (% female)	80.4	76.9	83.8	.140
Education, y	6.0 ± 3.1	5.9 ± 3.0	6.1 ± 3.2	.559
Geriatric Depression Scale score (0–15)	6.8 ± 3.6	6.3 ± 3.7	7.3 ± 3.4	.044
Mini-Mental State Examination score (0–30)	22.6 ± 3.5	23.6 ± 3.2	21.6 ± 3.6	.000
Memory span FW	4.4 ± 0.7	4.4 ± 0.7	4.3 ± 0.7	.381
Memory span BW	2.3 ± 0.8	2.4 ± 0.9	2.3 ± 0.7	.728
Semantic verbal fluency (SVF) (z score)	-1.2 ± 0.8	-1.0 ± 0.9	-1.4 ± 0.8	.001
% Perseverative errors in SVF	29.9 ± 42.8	23.7 ± 25.7	36.0 ± 54.0	.041
Attention sustained (z score)	-1.6 ± 1.0	-1.4 ± 1.0	-1.7 ± 1.0	.040
Babcock Test (z score)	-1.4 ± 1.3	-1.4 ± 1.4	-1.5 ± 1.2	.576

Notes: Descriptive statistics are presented as mean values and standard deviation or percentages, according to the nature of the variable. The comparisons of the two groups have been evaluated through the General Linear Model (GLM); homoschedasticity was first checked by the Levene's test, and the Welch test was used when the null hypothesis of homoschedasticity was rejected. The association between categorical variables and the groups was evaluated by the chi-square test or the exact test, when the former was not applicable.

FW = forward; BW = backward.

global cognitive (as evaluated with the Mini-Mental State Examination) and in executive functions (lower performances on semantic verbal fluency and higher percentage of perseverative errors). Furthermore, they had significantly lower performances in comparison to the other group on the test measuring sustained attention.

Our data support the hypothesis that sCVD is etiologically involved in the relationship between depressive symptoms and executive dysfunctions in elderly persons. This is particularly relevant to the model proposed by Mast and colleagues because they did not use neuroimaging data, as acknowledged in the limitations of their study. Indeed, neuroimaging is necessary to confirm the vascular etiology, because presence of cardiovascular risk factors does not automatically mean presence of cerebrovascular disease. Although T2-weighted magnetic resonance imaging is the most sensitive instrument to detect sCVD in the brain, the use of a CT-based rating scale has been repeatedly shown to be reliable and specific (3,4); furthermore the scale offers the advantage to be low cost and easy to do even in low-technology settings (such as rehabilitation units). We suggest that a systematic rating of the subcortical vascular lesions on CT brain will become a routine procedure in the study of the relationship between sCVD, depression, and executive dysfunctions.

Elena Lucchi,¹ Giuseppe Bellelli,¹ Francesca Magnifico,¹ Fabio Guerini,¹ and Marco Trabucchi²

¹Rehabilitation and Aged Care Unit, Ancelle della Carità Hospital, Cremona, and Geriatric Research Group, Brescia, Italy, and ²University Tor Vergata, Rome, and Geriatric Research Group, Brescia, Italy.

Address correspondence to Giuseppe Bellelli, MD, Ancelle della Carità, Hospital and Geriatric Research Group, Rehabilitation and Aged Care Unit, via Aselli 14, via Romanino 1, Cremona, Brescia, Lombardia 26100, Italy. E-mail: giuseppebellelli@libero.it

REFERENCES

- Mast BT, Yochim B, Macneill SE, Lichtenberg PA. Risk factors for geriatric depression: the importance of executive functioning within the vascular depression hypothesis. *J Gerontol Biol Sci Med Sci.* 2004; 59A:1290–1294.
- Yesavage JA, Brink TL, Rose TL, et al. Development and validation of a geriatric depression screening scale: a preliminary report. *J Psychiatr Res.* 1982–83;17:37–49.
- Geroldi C, Galluzzi S, Testa C, Zanetti O, Frisoni GB. Validation study of a CT-based weighted rating scale for subcortical ischemic vascular disease in patients with mild cognitive deterioration. *Eur Neurol.* 2003;49:193–209.
- Guerini F, Frisoni GB, Bellwald C, Rossi R, Bellelli G, Trabucchi M. Subcortical vascular lesions predict functional recovery following rehabilitation in patients with L-Dopa refractory parkinsonism. *J Am Geriatr Soc.* 2004;52:252–256.