Primitive reflex evaluation in the clinical assessment of extrapyramidal syndromes

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The aim of the present study was to evaluate the role of primitive reflexes (PRs) as additional alert sign in routine clinical practice in patients with extrapyramidal syndrome. We considered glabellar, snout, palommental and grasp reflexes in patients with mild stage of Lewy body dementia (LBD), corticobasal degeneration, progressive supranuclear palsy or Parkinson disease (PD). We also enrolled mild Alzheimer disease (AD) patients, and healthy subjects, as controls. LBD patients showed the highest prevalence of PRs compared with the other groups. The odd ratio of the risk of LBD in PRs ≥ 2 was 27.9 (95% CI 2.9–269.0) compared with control group, 14.6 (95% CI 2.7–79.6) compared with mild AD, and 19.7 (95% CI 3.7–104.3) compared with PD. These data suggest that the occurrence of combination of PRs might be an useful additional warning sign of possible diffuse Lewy body pathology more than other causes of extrapyramidal syndrome.

Introduction

In clinical daily practice, the role of primitive reflexes (PRs), such as glabellar, palommental, snout and grasping, as signs of cortical dysfunction is still debated [1]. However, it has been reported that a combination of several PRs, rather than the assessment of a single one, indicates the presence of cognitive decline in patients with cerebrovascular disease, and correlates with the severity of Alzheimer disease (AD) and vascular dementia [2,3].

Previous studies have focused the attention on the relevance of PRs in a broader spectrum of extrapyramidal disorders, but their combination has never been evaluated [4].

The aim of the present study was to evaluate the role of PRs combination in patients with mild stages of Lewy body dementia (LBD), corticobasal degeneration (CBD), progressive supranuclear palsy (PSP), and Parkinson disease (PD). Moreover, a group of mild AD patients, and a group of age-matched control subjects were also enrolled for comparisons.

Methods

Patients were recruited from a large sample of subjects assessed at the Movement Disorder Centre and the Centre for Aging Brain and Neurodegenerative Disorders, University of Brescia, Italy.

Patients fulfilled international consensus criteria for PD [5], PSP [6], CBD [7], and LBD [8]. Moreover, a group of mild AD patients [9], and a group of age-matched control subjects were also enrolled for comparisons.

All subjects performed neurological and neuropsychological evaluation and laboratory examinations.

For primitive reflex evaluation, a basic position was described and the subject was given instructions as to what was expected to him/her. The subject was not informed about the nature of the expected response, but about the nature of the stimulus, to prevent startle reactions, which might influence the required response. Glabellar, snout, palommental and grasp reflexes were evaluated [10]. Every reflex was measured at least three times, with about 2 s between each elicitation, except for the glabellar tap which was applied one time per second.

Motor impairment was evaluated by motor subscale of Unified Parkinson Disease Rating Scale and Hoehn-Yahr Scale. Global cognitive function assessment was carried out according to a standarized battery, including Mini-Mental State Examination. Instrumental Activities of Daily Living and Basic Activities of Daily Living were evaluated as well.

Demographic characteristics among groups were compared by the chi-squared test or one-way ANOVA and Bonferroni post-hoc analysis. Odd ratios (ORs) and 95% confidence intervals (CI) were also calculated. Results were expressed as mean ± SD. The level of significance was taken at $P < 0.05$. 

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Results

A total of 124 patients with extrapyramidal syndrome participated in the study (33 LBD, 13 CBD, 21 PSP and 57 PD). Seventy mild AD and 26 age-matched healthy subjects were enrolled as controls. Demographic and clinical characteristics of patients and controls are reported in Table 1. No significant differences in age, age at onset or gender were found among groups.

The presence of glabellar, snout, palmomental and grasp reflexes were assessed in each patient, and percentage in each group was also reported in Table 1. Compared with control subjects, mild LBD patients showed increased prevalence of glabellar reflex (chi-squared test, $P < 0.002$), snout reflex ($P < 0.005$), and grasp reflex ($P < 0.05$), while PSP had significant increase in presence of grasp reflex ($P < 0.02$). No significant difference in presence of PRs between controls and PD, CBD or mild AD was found.

Then, we considered the presence of the number of PRs in each patient, and the sum was calculated. As shown in Fig. 1, PRs ≥ 2 were present in 83.9% of LBD patients. Conversely, the other groups had lower percentage of PR ≥ 2, as the 38.5% of controls, 46% of mild AD, 40.3% of PD, 46% of CBD, and 61% of PSP.

The OR of the risk of LBD in PRs ≥ 2 was 27.9 (95% CI 2.9–269.0) compared with healthy controls, it was 14.6 (95% CI 2.7–79.6) compared with mild AD, 19.7 (95% CI 3.7–104.3) compared with PD, and 14.6 (95% CI 1.57–136.4) compared with CBD. Any difference between LBD and PSP was found.

Conclusions

The prevalence and the clinical usefulness of PRs in neurodegenerative disorders had been discussed by many authors [1–4,10]. The present findings suggest that PRs evaluation might be an useful adjunctive tool in clinical routine examination in patients with mild extrapyramidal syndrome, and the assessment of the combination of PRs instead of single one should be considered.

We found that LBD patients in the early disease stage had an increased number of PRs compared with controls. Moreover, patients with PRs ≥ 2 had an higher risk to develop LBD compared with controls, mild AD, CBD and PD. We did not find any difference between LBD and PSP, likely due to the small size of PSP sample.

This work confirms and further extends previous study on this issue, claiming that the presence of more PRs could be the expression of a diffuse neurodegenerative disease because of a widespread Lewy body pathology more than other causes of extrapyramidal syndrome. Larger studies are needed to confirm this hypothesis.

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References


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