INTRODUCTION

Slowness of information processing (SIP) is a common neurological deficit that occurs after traumatic brain injury (TBI) (Ross, Pérez-Pérez & Puente, 2004; Mathias & Whetton, 2007; Feng et al., 2008). It can hinder performance in many daily life activities (Chauvel et al., 2003). Recent studies have suggested a relation between performance in conventional neuropsychological speed tests and the magnitude of the diffuse axonal injury prototypical in TBI (Rios-Lago et al., 2008). However, little is known about whether slowing should be considered a generalizer or specific deficit affecting (inter)personal, perceptual or central stages of information processing (discrimination, decisional process, visual search, or interference control, among others). Despite the influence of SIP in different stages of processing and the pattern of recovery after TBI, it is fundamental to improve current neuropsychological models of information processing. It may help to improve neuropsychological assessment and rehabilitation protocols of these deficits.

The aim of the present study was twofold: (a) to determine whether SIP affects different stages of information processing, presenting significant phases of TBI, or whether it constitutes a generalized deficit, and (b) to examine the presence of spontaneous changes in SIP between acute and subacute phases of TBI.

MATERIAL AND METHODS

Twenty-one TBI patients and 25 matched healthy controls participated in the study (see table 1, for descriptive statistics). Screened patients were tested with the same tasks, approximately four months after the first session (TBI retest, table 1).

RT and 9% of correct responses were measured. ANOVA analyses on RT and 9% of correct responses were made to compare both groups performance in RT tasks.

Additional ANOVA analyses were performed to disentangle the effects of SIP in different stages of processing (see table 3). Finally, ANOVA analyses on RT and 9% of correct responses were used to compare performance of TBI patients in acute and subacute phases.

RESULTS

The 5x2 mixed ANOVA on RTs revealed a main effect of Group (F(1,44)=16.1; p<0.001), being patients slower than controls (F(2,77)=12.3; p<0.001). There was no significant interaction effect between Group and Task or Group and Task Interaction reached significance (p>0.05).

The 2x2 ANOVA on 10% correct responses revealed a main effect of task (F(2,77)=12.3; p<0.001). Neither the main Group effect nor the Task x Group Interaction reached significance (p>0.05).

The 2x2 ANOVA on RT (Figure 3) revealed main effects of Phase, Task and their interaction (p<0.04). Post hoc analyses of the interaction was due to higher RT in acute vs. subacute phases in the CTR-Search task (p=0.024) with no differences in the remaining tasks.

The 2x2 ANOVA on 0% correct responses showed a main effect of Task (F(3,45)=5.4; p=0.003). Neither the main Group effect nor the Phase x Group Interaction reached significance (p>0.05).

STAGES OF PROCESSING

Differences between groups in the Motor stage (measured as RT in IT tasks) were significant (p<0.001), being patients slower than controls.

ANOVA analyses (tables 3 and 4) performed to disentangle speed of each group in different stages of processing revealed significant differences only in Perceptual stage (p<0.01) and Decisional processes (p<0.001).

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