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Personal Neglect Following Unilateral Right And Left Brain Damage

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Abstract

Patients showing unilateral neglect fail to respond, report or orient to stimuli located in the contralesional (usually the left) side of the environment, of own body or of mental representations. Several studies have investigated different forms of neglect for stimuli located in the extra personal or reaching space confirming that this syndrome is more frequent and persistent following right than left brain damage. However, relatively little attention has been paid to the personal domain of this syndrome and the cognitive mechanisms underlying personal neglect (PN) are not well known. PN was assessed on a sample of 101 right- and 96 left-brain damaged (RBD and LBD, respectively) patients by means of two classical tests: the Comb & Razor Test and the Fluff Test. Patients were asked to perform the Fluff Test also with their eyes opened. PN was more frequent amongst RBD (42.57%) than LBD patients (35.41%); however, the difference was not significant. Considering RBD patients, each test identified a different percentage of PN (Comb and Razor=26.73%; Fluff test with eyes closed=35.64%; Fluff Test with eyes opened=22.77%). The difference between the two versions of the Fluff test was significant. On the other hand, in the LBD group, all the three tests assessed similar percentages of PN (i.e. Comb and Razor test=21.88%; Fluff Test with eyes closed=20.83%; Fluff Test with eye opened=20.83%) with no significant differences. Our findings suggest that PN following lesions of the left hemisphere may be more frequent than previously reported, and that PN following right hemisphere damage may be linked to impairment of different underlining mechanisms.

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Keywords: neglect, personal neglect, stroke, Fluff test, Comb and Razor test.

1. Introduction

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Unilateral Spatial Neglect (USN) is most often described as an attentional deficit where sensory stimuli presented on the side opposite a brain lesion fail to be reported (Heilman, Watson & Valenstein, 1985). However, USN is a heterogeneous and complex syndrome and several studies have shown how different domains can be selectively compromised (e.g., Bisiach & Luzzatti, 1978; Beschin & Robertson, 1997; Coslett, 1997; Guariglia, Padovani, Pantano & Pizzamiglio, 1993). Nevertheless, most of the literature has been directed towards the extrapersonal space and little attention has been paid to the personal space.

Personal neglect (PN) described in 1913, for the first time in neuropsychological literature, by Hermann Zingerle. In general, PN can be clinically defined as a lack of exploration of the body (usually the left side) contralateral to the damaged hemisphere (usually the right hemisphere). This means that in daily living activities patients with PN tend to ignore stimuli presented on the side of their body that is opposite to the brain damaged side, fail to use and recognize contralesional paretic limbs as their own and show a failure in the use of these arts, though a clinical examination may not be showing any motor deficit (Guariglia & Antonucci, 1992).

The investigation and the clinical evaluation of PN is no easy task. There is a limited availability of tests capable to assess the personal domain in USN. One of the first systematic assessments of PN proposed by Zoccolotti and Judica (1991) where patients were asked to perform daily activities, such as putting on a pair of spectacles or using a comb and a razor (or powder), and their performance was evaluated on a rating scale. This type of evaluation furtherly refined by Beschin and Robertson (1997) with a test called "Comb and Razor/Compact Test" and subsequently by McIntosh, Brodie, Beschin and Robertson (2000). However, these tasks focus only on the patient's face, and accordingly no information concerning the whole body is provided. The Fluff test, focused on body area, involves blindfolding patients and asking them to remove previously attached targets from their clothes with their ipsilesional hand (Cocchini Beschin & Jehkonen, 2001). Some studies (e.g. Beschin, Cocchini, Della Sala & Logie, 1997; Beschin, Basso & Della Sala, 2000) suggested that performing the Fluff test with eyes closed or open may tackle slightly different aspects of attention for body area, the first more linked to the body representation and the second with perceptual domain.

In general, PN has often been observed following right brain lesions (Beis et al., 2004) and, apart from few exceptions (e.g., Peru & Pinna, 1997; Marangolo Piccardi, & Rinaldi, 2003), it has been rarely systematically investigated after lesion of the left hemisphere. According to Stone at al. (1991) the left hemisphere can be involved in spatial representation of the body area but recovery mechanisms may make difficult to define the occurrence of neglect after left hemisphere damage.

The aim of this study is to evaluate PN by means of available tests in a relatively large sample of right- and left-brain damaged (RBD and LBD, respectively) patients.

2. Materials and methods

A total of 197 patients with sub-acute right and left hemisphere stroke (101 right and 96 left-brain-damaged RBD and LBD patients, respectively) were admitted to the study. The average onset from the brain lesion was 121,19 days (SD = 129,84) for RBD and 131,25 (SD = 165,83) for LBD patients (See Table 1). The majority of the patients showed that front-parietal-temporal areas subsequent to an ischemic insult.

Table 1. Demographical and clinical features of the clinical sample

Group	*Age Mean (SD)*	*Years of education Mean (SD)*	*Sex M/F*	*Days post-stroke Mean (SD)*	*Paresis (+/-)*	
					Right	*Left*
RBD	64,93 (12,57)	7,41 (3,52)	61/40	121,19 (129,84)	-	97/4
LBD	58,90 (15,98)	8,53 (4,39)	55/42	131,25 (165,83)	78/19	-

+/-: present and absent, respectively.

Patients were asked to perform the Comb and Razor Test and two versions of the Fluff test. In the Comb and