Immediate effects of mirror therapy on spatial neglect

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Keywords: Mirror therapy; Spatial neglect; Stroke

Objectives.– A few studies have suggested an effect of mirror therapy on hemiparesis after stroke (CVA) [1]. Recent work has also suggested a long-term effect on spatial neglect [2]. Our objective was to evaluate the immediate effect of a single session of mirror therapy on manifestations of spatial neglect.

Patients and methods.– We included eight subjects (30-75 years) with spatial neglect (according to Negligence Evaluation Battery) secondary to a unilateral stroke of the right hemisphere. Mirror therapy sessions lasted for 30 minutes and used the classic mirror therapy device [1] with a cache on the right upper limb. Control therapy used the same device and reproduced the visual anchor to the left space for the same duration. However, the image of the right arm was represented after PA.

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Results.– For the left target the patient needed more time than the control group to respond, regardless of the modality or the congruency. Nevertheless, the conflict cost was similar to the control group. For the right target, the patient presented an extensive conflict effect for auditory target and a paradoxical (reversed) conflict effect for visual target. fMRI data showed that, for the auditory target, incongruent compared to congruent trials elicited activations over a bilateral fronto-parietal network in the control group. A comparable result was obtained for the patient except for the right inferior parietal activation (BA40). Instead, we observed a right superior parietal activation (BA7). No activation was found for incongruent trials compared to congruent for the visual target whatever the group.

Discussion.– Unlike clinical visuo-motor tests, our spatial visuo-auditory conflict task revealed a left visual and auditory attentional deficit in the patient. fMRI activations suggest that he may have partially recovered from his hemineglect due to cortical plasticity after his stroke; this matched with the occurrence of a right conflict cost for auditory but not visual target.

Study of pop-out effect in neglect patients

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Keywords: Hemineglect; Computer test; Cancellation test; Salience; Parietal lesion

Background.– Hemineglect is a syndrome characterized by disturbances of space exploration to the left hemifield with behavior of deviation to the right. Due to the diversity of its manifestations and brain lesion responsible for symptoms, pathophysiology, diagnostic and therapeutic still remain problematic. We have implemented on a computer interface the bells cancellation test (Gauthier 1989).

Materials and methods.– Behavioral and fMRI data were collected during a visuo-auditory conflict task in 19 healthy adults and one hemineglect patient with right parietal lesion. An earplug system was used for auditory stimuli (1000 Hz pure tones). Adjustable coin-mounted goggles displayed the visual stimuli (filled white circles on a black background). In congruent trials, stimuli were presented simultaneously on the same side (left or right); they were presented on opposite sides in incongruent trials. Participants had to respond with their right hand by pressing a response-pad button corresponding to the auditory or visual target’s side according to the instruction.

Results.– For the left target the patient needed more time than the control group to respond, regardless of the modality or the congruency. Nevertheless, the conflict cost was similar to the control group. For the right target, the patient presented an extensive conflict effect for auditory target and a paradoxical (reversed) conflict effect for visual target. fMRI data showed that, for the auditory target, incongruent compared to congruent trials elicited activations over a bilateral fronto-parietal network in the control group. A comparable result was obtained for the patient except for the right inferior parietal activation (BA40). Instead, we observed a right superior parietal activation (BA7). No activation was found for incongruent trials compared to congruent for the visual target whatever the group.

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Hemineglect evaluation using a spatial visuo-auditory task

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Keywords: Hemineglect; Attention; Spatial visuo-auditory conflict

Objective.– Evaluate new robust clinical tests to detect visual and auditory spatial neglect in hemineglect patients who succeed in clinical visuo-motor exploratory tasks but fail in daily habits.

Participants and methods.– Behavioral and fMRI data were collected during a visuo-auditory conflict task in 19 healthy adults and one hemineglect patient with right parietal lesion. An earplug system was used for auditory stimuli (1000 Hz pure tones). Adjustable coin-mounted goggles displayed the visual stimuli (filled white circles on a black background). In congruent trials, stimuli were presented simultaneously on the same side (left or right); they were presented on opposite sides in incongruent trials. Participants had to respond with their right hand by pressing a response-pad button corresponding to the auditory or visual target’s side according to the instruction.

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