"Does CRPS impair visuo-motor coordination in peripersonal space?"

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Abstract
Complex Regional Pain Syndrome (CRPS) is an affection characterized by chronic pain, motor and vegetative symptoms, but also by cognitive symptoms affecting body perception and representation. In addition, neglect-like deficits were clinically described. However, CRPS patients’ performances at standard neglect tests are inconsistent and so far, we cannot conclude that these cognitive changes extend to stimuli presented in the space outside the body (i.e. peripersonal). Therefore, we used a line bisection task in a virtual reality environment in order to test whether upper-limb patients, in comparison to a matched control group, present an impaired perception and exploration of the peripersonal space around the affected hand. We hypothesized that these impairments would also be mediated by the vision of the affected hand and the feeling of where this hand is located (proprioception). To test these hypotheses, CRPS participants were asked to move a robotic handle with their unaffected...

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Complex Regional Pain Syndrome (CRPS) is a chronic pain syndrome characterized by sensory, motor and vegetative symptoms, and also by cognitive changes affecting body perception and representation. Despite some evidence that this body misrepresentation might be due to spatial perception difficulties, other authors are in favor of a motor deficit that could reflect learned strategies to avoid provocation of the CRPS limb. However, CRPS patients’ performance at standard spatial tasks are not adequate to test this question. So far, we cannot conclude that these cognitive changes extend to stimuli presented in the space outside the body (i.e. peripersonal space). **Hypothesis**: CRPS patients are impaired when perceiving and exploring the peripersonal space of the pathological limb.

**METHODS**

**T-TESTS (0)**

**ANOVA**

* CRPS patients show a significant deviation towards the left side of space.
* CRPS patients present no bias when crossing lines projected at a short distance from the starting position in the unaffected workspace.

**CONCLUSION**

Our results are in line with previous studies that show a systematic leftward visuospatial deficit in the upper-limb CRPS population, similar to pseudoneglect behavior observed in healthy volunteers. Therefore, we hypothesize that such an initially common visuospatial deviation could be exaggerated in CRPS patients due to a spatial attention imbalance. Because a general bisection bias has been highlighted when performing the task with the healthy hand, data are more in favor of a motor neglect hypothesis than a motor deficit due to an avoidance strategy.

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