

TITLE*:

Somatosensory and nociceptive changes in chronic post-stroke shoulder pain.

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ABSTRACT SUMMARY (max. 75 words)*:

Preliminary results from a cross-sectional study that investigated the relation between the presence of post-stroke shoulder pain and somatosensory and nociceptive changes are presented. The main finding is that both abnormal somatosensation and nociception are more frequently observed in stroke patients with pain as compared to pain-free stroke patients and healthy controls.

INTRODUCTION*:

Hemiplegic shoulder pain (HSP) is a common complication after a stroke [1]. Its etiology is not well understood and treatment is often unsatisfactory. Therefore, a better understanding of the mechanisms underlying post-stroke HSP is needed. A first step towards understanding these mechanisms is the assessment of symptoms and signs in relation to the presence of pain [2]. In this study we wanted to determine contrasts in somatosensory and nociceptive function between stroke patients with HSP (CVA+), pain-free stroke patients (CVA-) and healthy controls (HC).

EXPERIMENTAL METHODS:**

Chronic stroke patients (> 6 months post-stroke) were recruited from the Roessingh Rehabilitation Centre in Enschede. For CVA+, shoulder pain had to be chronic (pain duration > 3 months). For CVA- and HC, subjects with pain complaints were excluded from participation. Other exclusion criteria were: diabetes mellitus, HIV, multiple sclerosis or peripheral nerve damage. All subjects underwent the following tests. Clinical testing: sensation of light touch, cold and sharpness. Quantitative sensory testing (QST): tactile detection threshold (TDT), electrical sensation (EST), pain (EPT) and pain tolerance (EPTT) thresholds and pressure pain threshold (PPT). All tests were performed at the left and right upper arm. Outcome parameters were subjective asymmetry between sides, allodynia and threshold ratios between sides. For patients, abnormality of threshold ratios was determined by Z transformation to HC data. Abnormality was defined as a z-score lower than -2.5 or higher than 2.5 [3].

RESULT AND DISCUSSION*:

Preliminary data analysis (CVA+: n=14, CVA-: n=29, HC: n=19) confirms and extends previous studies that investigated somatosensory and nociceptive function in stroke patients [4, 5]. Sensation for touch, cold and sharpness was more often asymmetrical in stroke patients as compared to HC. Furthermore, asymmetrical sensation for touch and cold was more common in CVA+ as compared to CVA- and allodynia was only reported by CVA+ patients. Ratios of the TDT, EST, EPT and EPTT were significantly higher in stroke patients as compared to HC. Furthermore, abnormal EST, EPT and PPT ratios were more common in CVA+ as compared to CVA-. Besides the previously reported relation between post-stroke HSP and somatosensory changes, our results suggest that post-stroke HSP is also related to nociceptive changes.

* required

**optional, but recommended

CONCLUSION*:

Both somatosensory and nociceptive function is more often altered in stroke patients with chronic HSP as compared to pain-free stroke patients or healthy controls. However, due to large inter-subject variation, it is difficult to compare absolute differences in QST thresholds. The neurophysiological interpretation of the data therefore remains difficult.

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