**INTRODUCTION**

- Somatosensory rehabilitation (SSR) is a standardized method of evaluation and treatment of somatosensory and/or neuropathic conditions, including alldynia.\(^1\)
- Alldynia is a common feature of complex regional pain syndrome (CRPS), and is often a barrier to participation in classic rehabilitation programs, and is associated with poor prognosis.\(^2,3\)
- This retrospective cohort study examined the effectiveness of SSR for reducing alldynia in persons with CRPS of one upper limb.

**METHODS**

- Independent chart review of all client records (May 2004-August 2015) in the Somatosensory Rehabilitation Centre of the Human Body (Fribourg, Switzerland)
- Outcomes measures: *Questionnaire Douleur St. Antoine (QDSA)* [French McGill Pain Questionnaire]; total area of alldynia as recorded by mapping the area of skin where a 15g monofilament was perceived as painful (Fig. 1), and the Rainbow Pain Scale (alldynia severity: minimum pressure eliciting pain within the alldynic territory) (Fig. 2).\(^4\)
- Effectiveness of SSR mirrors results in other pain programs, and is associated with poor prognosis.

**RESULTS**

For demographics and clinical features, see Table 1.

- Intention to treat – included all records with baseline and follow-up of any duration; some cases had multiple nerve lesions therefore varies across analyses
- Baseline QDSA (x=51.4, SD=17.4) vs. final QDSA (x=20.4, SD=20.0)
- Paired sample t-test comparing tQDSA at baseline and final evaluations: \(t(57)=13.6, p<0.001\)
- Effect size Cohen's d = 1.64 (accounting for inherent correlation of paired samples). 58% of cohort completed treatment, 13.2% dropped out, 12% ceasing treatment for other work/life issues.
- Final tQDSA scores for those completing a full course of treatment were lower than for full cohort (x=12.3, SD 10.2, range 0-41).

<table>
<thead>
<tr>
<th>Demographics &amp; clinical features</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in years)</td>
<td>45.4</td>
<td>13.4</td>
<td>18-74</td>
</tr>
<tr>
<td>Duration of NeP (in months)</td>
<td>31.2</td>
<td>57.5</td>
<td>1-335</td>
</tr>
<tr>
<td>Baseline tQDSA (in points)</td>
<td>48.1</td>
<td>17.7</td>
<td>5-99</td>
</tr>
<tr>
<td>Final tQDSA score (in points)</td>
<td>20.4</td>
<td>20.0</td>
<td>0-67</td>
</tr>
<tr>
<td>Area of alldynia (in cm²)</td>
<td>80.7</td>
<td>78.9</td>
<td>2.6-300.8</td>
</tr>
<tr>
<td>Duration of injury (in days)</td>
<td>81.0</td>
<td>76.4</td>
<td>5-381</td>
</tr>
</tbody>
</table>

**DISCUSSION**

- Mechanism-specific rehabilitation interventions for CRPS are needed to address burden of pain.\(^5-7\)
- SSR is a method of assessment and treatment specifically intended to address the somatosensory aspects of neuropathic pain, including alldynia often observed in CRPS.\(^1\)
- Effectiveness of SSR mirrors results in other pain syndromes with features of central sensitization (such as phantom limb pain) when peripheral pain generators are added.\(^8-10\)
- SSR represents a distinct departure from traditional ‘desensitization’ interventions which flood the area of altered sensation with intense somatosensory stimuli, with the intent of producing somatosensory accommodation to the stimulus.\(^11,12\)
- Main outcome (QDSA) is well validated but alldynography and Rainbow Pain Scale require psychometric evaluation.
- Retrospective and uncontrolled cohort study provides preliminary limited evidence for the effectiveness of the somatosensory rehabilitation method but suggests more research is warranted.

**REFERENCES**


**Key principles of SSR**

- Precise evaluation to define alldynic territory using 15g monofilament and Rainbow Pain Scale (See Figs. 1&2)
- Anatomical hypothesis of cutaneous nerve branch(es) implicated (see Fig. 1)
- STOP sensitization by temporarily NOT TOUCHING painful area (minimize evoked pain)
- Comfortable stimulation of a related cutaneous branch – ‘distant vibrotactile counterstimulation’ (DVCS)

**PURPOSE**

Our primary research question is: How effective is somatosensory rehabilitation for alldynia in persons with CRPS of one upper limb?