Influences of Clinical Features of Systemic Sclerosis (SSc) on the Michigan Hand Questionnaire (MHQ)

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Abstract

Rationale
Domains of SSc hand impairment include digital ulcers, skin thickening, tendon/joint involvement and atrophy. The MHQ is a 37-item hand-specific outcomes questionnaire with 6 subscales: overall hand function, activities of daily living (ADL), pain, work performance, aesthetics, and patient satisfaction with hand function. MHQ is highly validated in rheumatoid arthritis (RA). We have shown reliability and validity in SSc. We examine the influence of SSc hand features on the MHQ.

Methods and Patients
94 ambulatory SSc patients, 47 with limited and 47 with diffuse disease, completed MHQ along with SF36 and SHAQ. 81 (86%) were female. Mean age was 51 ± 12 and disease duration 7y ± 7. SSc patients were subgrouped by disease features into 1) tendon involvement (palpable tendon friction rubs/impaired fist closure) 2) digital tip ulcers 3) upper extremity skin score (fingers, hands, forearms; 0-3 per area, range 0-18), and 4) disease classification.

Methods

Skinner score the form below about your hands and your health. This item will help troops in the war. How well you feel and how well you are able to do your usual activities.

- Hand function impairment is universal in SSc
- MHQ is a 37-item hand function outcome questionnaire with 6 subscales:
  - Overall Hand Function
  - Activities of Daily Living
  - Pain
  - Work Performance
  - Aesthetics
  - Patient Satisfaction with Hand Function
- MHQ has been validated for arthritis and SSc

Methods

Subjects
- 94 patients with diagnosis of SSc by ACR classification criteria
- Patient characteristics:
  - 47 patients with limited and 47 with diffuse SSc
  - Age: 51 y ± 12
  - Gender: 81 (86%) females
  - Disease duration: 7 y ± 7

Disease Characteristics Grouping
1) tendon involvement: palpable tendon friction rubs/impaired fist closure
2) digital tip ulcers
3) upper extremity skin score:
   - fingers, hands, forearms: 0-3 per area, range 0-18
4) disease classification: Limited vs. Diffuse

Results

Spearman’s Correlations for the MHQ, SHAQ, and Domains of Scleroderma Hand Function

<table>
<thead>
<tr>
<th>Skin Score</th>
<th>Digital Ulcers</th>
<th>Tendon Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combined</td>
<td>Limited</td>
<td>Diffuse</td>
</tr>
<tr>
<td>MHQ</td>
<td>-.39*</td>
<td>-.15*</td>
</tr>
<tr>
<td>Overall Hand Function</td>
<td>-.34*</td>
<td>-.21*</td>
</tr>
<tr>
<td>Activities of Daily Living</td>
<td>-.34*</td>
<td>-.01*</td>
</tr>
<tr>
<td>Pain</td>
<td>.21*</td>
<td>.11*</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>-.25*</td>
<td>-.16*</td>
</tr>
<tr>
<td>Work Performance</td>
<td>-.27*</td>
<td>-.15*</td>
</tr>
<tr>
<td>Satisfaction Hand Function</td>
<td>-.34*</td>
<td>-.08*</td>
</tr>
<tr>
<td>SHAQ</td>
<td>.25*</td>
<td>.10*</td>
</tr>
</tbody>
</table>

Lower scores on MHQ reflect higher impairment except for MHQ Pain where higher scores reflect higher pain levels. * P < 0.0001; $ P < .001; # P < 0.01; $ P < 0.05; NS = Not Significant

Conclusions

Digital ulcers and skin thickening had minimal impact whereas tendon involvement dominated patient ratings of hand function. No significant correlations were found between number of digital ulcers and MHQ, MHQ subscales, SHAQ or SF36 for all patients and diffuse SSc patients. Tendon involvement correlated with several MHQ scales in the total patient sample and both SSc groups. These observations are consistent with clinical studies of digital ulcers wherein neither SHAQ nor other hand functional tools have been shown to be sensitive to change. MHQ is a valid and reliable measure of hand function in SSc although sensitivity to change has not been assessed. Occupational therapy focused on fist closure and tendonitis would be predicted to influence hand function whereas future studies of digital ulcers and skin involvement will require more specific instruments.

References