PAINFUL NECK MOVEMENT: AN ADDITIONAL DIFFERENTIATING SIGN BETWEEN CERVICAL SPONDYLOSIS AND MYOFASCIAL PAIN SYNDROME

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ABSTRACT

Aim: To find any specific pattern of pain severity during various neck movements in cervical spondylosis versus the myofascial pain syndrome.

Patients: The study was carried out on 50 myofascial pain syndrome patients and 60 cervical spondylosis patients.

Methods: Neck pain during neck flexion, extension, rotation and lateral flexion was measured using a numerical rating scale.

Results: Pain score during neck flexion was more in myofascial pain syndrome than in cervical spondylosis patients. On the other hand, neck pain during neck extension was more in cervical spondylosis patients than in myofascial pain syndrome patients. There was no statistical significant difference between both groups as regard rotation and lateral flexion. Moreover, neck extension was more painful than neck flexion in 90% of patients with cervical spondylosis. On the other hand, neck flexion was more painful than extension in myofascial pain syndrome patients.

Conclusion: This study suggested that comparing pain severity during neck flexion to that during neck extension could be of help not only in differentiating pain of cervical spondylosis from that of MPS, but also in identifying the main cause of neck pain in patients with clinical signs suggestive of MPS and who have concomitant radiological evidence of cervical spondylosis. This could be of therapeutic value.
INTRODUCTION

Neck pain is one of the most frequent regional pain problems in the field of Rheumatology and Rehabilitation. It is second in frequency after low back pain (Nakano 1993). Degenerative changes in the cervical spine (or cervical spondylosis, CS), and myofascial pain syndrome (MPS) are currently the most frequent causes of neck pain (Phull, 1988; Simons & Travell, 1984 and Wolf, 1988). These two conditions represent approximately 85% of all cases of neck pain attending the Rheumatology and Rehabilitation Clinic, at the place where the study was performed.

MPS is a regional pain arising from muscles and/or its fascial sheath and is characterized by the presence of taut band and trigger points in the involved muscles (Gerwin, 2001; Tunks & Cook, 1999; Fricton, 1994 and Fricton, 1982). The diagnostic criteria of MPS have been established (Wesolowski & Wang 1992 and Hardin & Halla 1997). CS is accompanied by radiological changes that start after the age of 39 years and occurs usually in most patients above the age of 50 years (King & Goddard 1994). If it is symptomatic, the patient would complain of neck pain related to neck movement, radicular manifestation (sensory and/or motor) with or without vertebrobasilar insufficiency complaint (Travel & Simons, 1983).

It might be difficult to reveal the exact cause of neck pain in a patient with signs of MPS who have spondylotic changes in his radiological picture of the cervical spine because most patients above the age of 50 years would have radiological evidence of spondylotic changes in their cervical spine without any neck complaint (Kaiser & Holland, 1998 and King & Goddard, 1994). Identifying the cause of neck pain could be important from the therapy point of view because these two disorders have different treatment approaches (Criscuolo, 2001; Wolf, 1988; Fricton, 1994; Wesolowski & Wang, 1992; Travel & Simons, 1983, Cheshire et al., 1994; Shafshak et al., 1994 and Goldenberg, 1995).

It was reported that the pattern of painful neck movement might be helpful in differentiating neck pain of articular origin from that of fibromyalgia (Yunus et al., 1988). However, it is not known whether there would be a difference in the pattern of painful neck movement in CS versus MPS. This is because fibromyalgia is different from MPS in both its etiology and features (Buskila, 2001; Tunks & Crook, 1999; Cheshire et al., 1994; Wolf et al., 1990; Cailliet, 1991 and Nakano, 1993).
Aim of the study:

The purpose of this study was to assess pain severity during various neck movements in CS versus MPS, any difference in this relation might be considered as an additional differentiating sign between them.

SUBJECTS & METHODS

Subjects:

Fifty patients with painful neck movement due to MPS, selected to have no radiological evidence of CS (20 women and 30 men, aged 20-43 years), and 60 patients with neck pain attributed to CS (24 women and 36 men, aged 39-61 years) were the subjects of this study. The duration of neck pain varied from 1–9 months, and from 3-25 months among MPS patients and CS, respectively.

The diagnosis of MPS was made according to the criteria suggested by others (Wesolowski & Wang, 1992 and Hardin & Halla, 1997), namely regional neck pain and scapular pain with classical two trigger points in taut bands. However, patients with neck pain due to CS were selected to have the characteristic clinical features and radiological spondylotic changes (Wesolowski & Wang, 1992 and Travel & Simons, 1983) in the absence of trigger points and limb muscle weakness, but with or without sensory radicular complaint. Patients with a history of neck trauma, malignancy, seronegative spondyloarthropathy, concurrent infection or elevated ESR, or who were suspicious to have any other cervical lesion (including definite disc prolapse as proved by MRI) were excluded from this study in order to exclude any disorder that might contribute, or modify neck pain.

Pain severity assessment:

Pain severity assessment was performed in all patients by one investigator who was blinded as to the diagnosis. Pain severity was scored by the investigator after assessing neck pain in each of the following 6 directions: neck flexion, extension (hyperextension), lateral flexion (or bending) to the right side, lateral flexion to the left side, rotation to the right side, and rotation to the left side. Also, the patient was asked to specify the most painful movement (MPM) among these 6 directions. Pain severity in each direction was assessed in the above mentioned order starting by neck flexion and ending by rotation to the left side in half of the patients in each group. In the other half of patients, assessment of each movement direction was done in the reverse order, starting by rotation to the left side and ending by neck flexion.
Pain scoring was performed according to the following: A score of 5 meant that the patient was unable to start the movement in that direction because of pain. A score of 4 meant that the pain was severe to the extent that complete range of movement was not possible, a score of 3 indicated that pain was severe, but complete range of motion was possible, a score of 2 meant that there was more than slight but less than severe pain during moving the neck in each specific direction. A score of 1 meant that there was a slight pain on moving the neck in that direction, and a score of 0 meant no pain during neck movement in that direction.

**Statistical Assessment:**

Pain severity scores for each movement direction among MPS patients were compared statistically to the scores of the corresponding movement in CS patients using both the Student \( t \) test and Wilcoxon rank sum \( W \) test. Also, patients of both groups were compared regarding age and the total pain scores (*the sum of scores of all directions*) using the \( t \) test. They were also compared regarding sex. Other comparisons between groups were performed using the Chi square test.

**RESULTS**

There was no significant difference between MPS patients and those CS ones regarding sex (\( p>0.05 \)). There was, however, a significant difference in the patients’ age between both groups (\( p<0.01 \)). The mean age ± SD of CS and MPS patients was 52.4 y (± 8) and 34.5 y (± 7.7) respectively.

Neck extension scores were significantly higher among CS patients than among MPS patients (\( p<0.01 \)). However, neck flexion scores were significantly higher in MPS patients than in CS patients (\( p<0.01 \)) (Table 1).

<table>
<thead>
<tr>
<th>M applauded (No:50)</th>
<th>CS (No: 60) X (± SD)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total pain score</td>
<td>9.1 (± 4.4)</td>
<td>7.7 (± 4)</td>
</tr>
<tr>
<td>Flexion pain score</td>
<td>2.3 (± 1.2)</td>
<td>0.98 (± 0.8)</td>
</tr>
<tr>
<td>Extension pain score</td>
<td>1.06 (± 1)</td>
<td>2.4 (± 0.95)</td>
</tr>
<tr>
<td>Rt Rotation pain score</td>
<td>1.4 (± 1.2)</td>
<td>1.3 (± 1)</td>
</tr>
<tr>
<td>Lt Rotation pain score</td>
<td>1.4 (± 1.1)</td>
<td>1.2 (± 0.9)</td>
</tr>
<tr>
<td>Rt Lateral flexion pain score</td>
<td>1.5 (±1.2)</td>
<td>1.2 (± 1)</td>
</tr>
<tr>
<td>Lt Lateral flexion pain score</td>
<td>1.38 (± 1.1)</td>
<td>1.5 (± 1.2)</td>
</tr>
</tbody>
</table>

Also, scores of neck flexion were significantly higher than scores of extension in MPS patients. In CS patients, pain scores of neck extension were
significantly higher than scores of neck flexion. There was no significant statistical difference of total pain scores between both groups (p>0.05). Comparisons between pain scores of other neck movements within each group and between both groups were statistically insignificant (p>0.05) (Table 1).

The distribution of the MPM among the studied cases is displayed in table (2). The MPM was in one direction in the majority of patients, but it was in two different directions in 3 MPS patients and 5 CS patients (Table 2).

Table (2): The most painful neck movement.

<table>
<thead>
<tr>
<th>Movement</th>
<th>MPS</th>
<th></th>
<th>CS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>33</td>
<td>66</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Extension</td>
<td>1</td>
<td>2</td>
<td>42</td>
<td>70</td>
</tr>
<tr>
<td>Rotation</td>
<td>10</td>
<td>20</td>
<td>3</td>
<td>65</td>
</tr>
<tr>
<td>Lateral flexion</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Extension and rotation</td>
<td>------</td>
<td>-----</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td>Extension &amp; lateral flexion</td>
<td>------</td>
<td>-----</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Flexion and rotation</td>
<td>3</td>
<td>6</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Further data analysis revealed a characteristic pattern of pain severity during neck flexion versus extension as shown in table (3). The number of patients having relatively more pain during neck extension than during flexion was significantly higher in the CS group than in the MPS group (p<0.001); and the number of patients having more pain during neck flexion than during extension was significantly higher in the MPS group than in the CS group (p<0.001).
DISCUSSION

The results of this study revealed that the severity of pain during flexion and extension movement of the neck could be used in differentiating pain of CS from that of MPS. However, pain severity during neck rotation or lateral flexion appeared to be insignificant in this differentiation. This observation might be important because although it was suggested that the pattern of painful neck movement could be of help in the differential diagnosis of neck pain (Yunus et al., 1988 and Wolf et al., 1990), yet this pattern was not addressed previously in CS versus MPS.

In CS patients, neck extension was significantly more painful than flexion (p<0.001). Furthermore, the severity of pain during neck extension was significantly higher in CS patients than in MPS patients (p<0.01). This suggests that painful neck extension would occur more likely in CS patients than in MPS patients. This is in accordance with the observation of others who described painful neck movement especially extension in CS patients (Travel & Simons, 1983 and Cailliet, 1991).

Regarding MPS patients, pain during neck flexion was more severe than that during extension (p<0.001) Also, pain scores during neck flexion were significantly higher among MPS patients compared to CS patients (p<0.01). This suggests that there is a higher tendency for painful neck flexion in MPS patients than in CS patients.

Neck extension was the most painful movement in 70% of CS patients. However, neck extension was more painful than neck flexion in 90% of CS patients. On the other hand, neck flexion was the most painful movement in 66% of MPS patients, but neck flexion was more painful than extension in 86% of MPS patients. Furthermore, this pattern of painful
extension versus flexion in CS patients was significantly different from that pattern in MPS patients. These findings suggest that comparing pain severity during neck extension to that during neck flexion would be better than relying on the most painful movement in differentiating pain of CS from that of MPS.

This study suggested that pain would be most probably of articular origin (i.e. CS) if the neck extension was more painful than flexion. Contrary to this, it suggested that neck muscles could be the most likely cause of neck pain if neck flexion was more painful than extension. Neck flexion stretches the posterior cervical muscles, which is assumed to be the source of pain in MPS, but disengage the posterior intervertebral articulation (Yunus et al., 1988). This might explain the painful neck flexion in MPS. On the other hand, neck extension leads to engagement of the facet joints and narrowing of the intervertebral foramen (Lu et al., 2000). This might explain the painful neck extension in patients with osteoarthritis of the apophyseal joints.

The pattern of painful neck movement in MPS as suggested from this study was not different from that which was previously observed in fibromyalgia (Yunus et al., 1988). This similarity could be due to the fact that pain in these two different conditions is assumed to be originating from the muscles (Buskila, 2001; Wolf, 1988; Fricton, 1994; Tunks & Crooks, 1999 and Shafshak et al., 1994).

The difference in patients’ age between the two groups might have been produced by the fact that MPS patients were selected to have no radiological evidence of CS, and these radiological changes occurs above the age of 50 years in the majority of human subjects (Wesoloski & Wanf, 1992). However, one should note that MPS could occur above the age of 50 years (Gerwin, 2001). Also, one cannot incriminate CS to be the cause of neck pain in elderly or any patient with spondylotic changes in his radiological picture of the cervical spine unless other causes of neck pain are excluded with clinical, radiological and/or laboratory investigations. The difference in the pattern of painful neck movement as obtained in this study could be an additional differentiating sign between both disorders.

Conclusion:

In conclusion, this study suggested that comparing pain severity during neck flexion to that during neck extension could be of help not only
in differentiating pain of CS from that of MPS, but also in identifying the main cause of neck pain in patients with clinical signs suggestive of MPS and who have concomitant radiological evidence of CS. This could be of therapeutic value.

REFERENCES


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صفات الألم المصاحبة لحركة العنق في مرضى الالتهاب الفقاري العنق ومرضى متلازمة الألم العضلي اللفافي: علامة إكلينيكية إضافية جديدة للفرق بين المرضى

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بعد كل من الالتهاب الفقاري العنق والمتلازمة الألم العضلي اللفافي من الأسباب الشائعة لآلام العنق في البالغين، ولكن هناك اختلاف في طرق علاجهما ومن ثم هناك ضرورة لمعرفة سبب الألم العنق قبل العلاج.

تم إجراء البحث على 50 مريض متلازمة الألم العضلي اللفافي و60 مريضا بالالتهاب الفقاري العنق، حيث تم تقييم الألم المصاحبة لحركة العنق في حركات قبض وسط العنق، وكذلك أثناء الدوران والقض الجانبي للعنق باستخدام مقياس رقمي. أشارت النتائج على أن هناك اختلاف واضح ذو معنى إحصائي مؤكد بين مجموعة المرضى فيما يختص بشدة الألم المصاحبة لقبضة وسط العنق، ولكن لم يكن هناك أي اختلاف ذو معنى إحصائي بين المجموعتين فيما يختص بشدة الألم الرقبة أثناء الدوران والقض الجانبي للعنق. فقد كانت درجات شدة الألم المصاحبة لقبضة العنق أعلى في مرضى متلازمة الألم العضلي اللفافي من تلك الدراج في المجموعة الأخرى. بينما كانت درجات شدة الألم المصاحبة لضغط الرقبة أعلى في مرضى الالتهاب الفقاري العنق إذا ما قورنت بنفس درجات الألم في المجموعة الأخرى.

وأضح أيضا من النتائج أن حركة قبضة عنق كانت أكثر ألما من حركة قبضة العنق في 54 مريضا (90％) من مرضى الالتهاب الفقاري العنق. وعلى العكس فقد كانت الألم المصاحبة لحركة قبضة العنق أكثر ألما من تلك الألم المصاحبة لحركة قبضة العنق في 43 مريضا (86％) من مرضى متلازمة الألم العضلي اللفافي. وتم تأكيد ذلك إحصائيا. وعلى ذلك فقد يمكن الاستدلال على أن مقارنة شدة الألم العنق الناتجة عن حركة قبضة ووسط السقوط العنقية يمكن أن تعتبر علامة إكلينيكية إضافية للتفرقة بين المرضى ومن ثم المساعدة في التشخيص والعلاج.