

THORACIC PAIN ARISING FROM CERVICAL DISORDERS

A CASE HISTORY

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INTRODUCTION

Examination using the Maitland concept involves recognising that a disordered joint may be responsible for both local and referred pain¹. The clinical picture becomes more confusing when a passive test movement, involving simultaneous movement of joints under the affected area and under the area of referred pain, reproduces the patient's symptoms. Differentiation tests are special tests that are then applicable¹. The test is then performed in the reverse manner. The pain response confirms which joint is at fault. The differentiation tests were of particular value in this case study, where a cervical disorder was responsible for pain in the thoracic region.

Wells² relates "shoulder" dysfunction to cervical spine pathology. Although the symptoms appear to arise from the soft tissue of the shoulder joint complex, the origins are in the cervical spine. The presentation may be confusing because the syndrome does not present as an acute radiculitis, with no neurological symptoms or irritability. The pain is usually a persistent dull ache deep in the shoulder, clavicular area, pectoral region or scapular area. There are often areas of localised tenderness ("myalgic spots") which may be located in the muscles overlying the painful areas, including those adjacent to the medial border of the scapula².

Experimental studies on man have produced referred pain into the scapular region by irritation of the cervical interspinous ligaments, musculature and intervertebral discs, as well as the connective tissue covering them². Feinstein³ injected the para-vertebral muscles of the neck and back with saline and reproduced a "boring, heavy, crampy, deep" referred pain. At the level of the second and fourth cervical vertebrae, pain was referred into the inferior angle of the scapula.

Although the skin over the vertebral border of the scapula is supplied by the second to the seventh thoracic nerve roots, the underlying muscles are innervated by the lower cervical nerve roots of the brachial plexus. As a result of the distal embryological migration of the ventrolateral sheath of cervical musculature, the para-scapular muscles (subscapularis and latissimus dorsi) are innervated by the collateral branches of the posterior cord of the brachial plexus, and the rhomboids by the dorsal scapular nerve (C5). Cloward describes the scapular pain as a motor rather than a sensory phenomenon, with reflex spasm of the muscles supplied by the affected cervical nerve roots⁴. The dorsal aspect of the disc is innervated by the sinuvertebral nerve^{5,6} and sensory receptors pass through the spinal cord as a reflex arc, synapsing with the ventral root to the para-scapular muscles. The intervertebral disc receptors can sense disc deformation, effecting stimulation of the pathway.

CASE REPORT

The patient was a fit 50 year old male who worked as a technical supervisor. His job involved reading and writing. His main recreation was jogging.

Subjective Assessment

The patient was complaining of two main areas of intermittent pain (Figure 1). The patient considered the pain in Area 1 to be the most severe. It was concentrated in the upper cervical region and radiated into the base of his skull. He rated the intensity of the deep pain as 3/5 and described it as a "nagging headache" which occurred daily. The pain in Area 2 was located in the mid-scapular region (between the root of

SUMMARY

A case study is presented where a cervical disorder is responsible for thoracic symptoms. Maitland's differentiation tests become essential in clarifying which area of the spine is the source of the symptoms. The results of the treatment suggest that intermittent cervical traction may be helpful in cases of this nature.

OPSOMMING

'n Gevalle studie word aangebied waar 'n servikale kwaal verantwoordelik is vir torakale simptome. Maitland se differensiasie toetse is nodig om op te klaar watter deel van die werwelkolom die bron van die simptome is. Die uitslagte van die behandeling dui dat wisselende servikale traksie van hulp mag wees in sulke gevalle.

the spine of the scapula) and was described as a "dull ache". It occurred daily and was rated as 3/5. There were no neurological symptoms.

The pain in Area 1 was associated with stiffness and was most intense on waking in the morning. It eased completely if the patient took mild analgesics. The patient slept on either side with one pillow. During the day, the pain was aggravated by sustained neck flexion, and could not be eased by any movement. The pain in Area 2 was reproduced only by active cervical rotation to the right. It was felt at the mid-point of the range and disappeared when

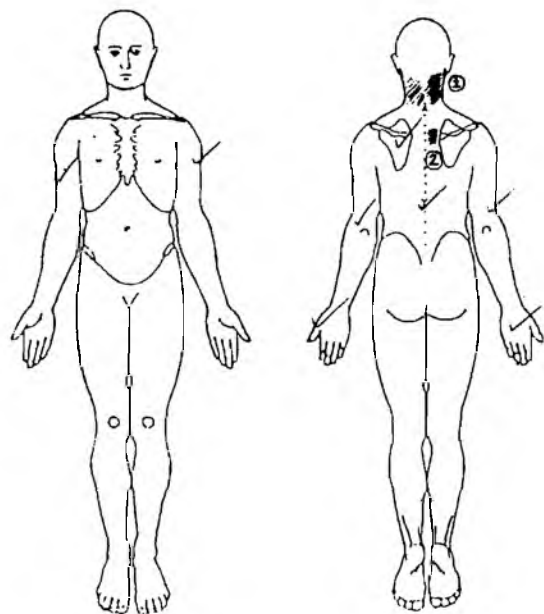


Figure 1. Body chart of patient

the head was moved back. The patient's condition was not considered to be irritable.

For the previous two months, the patient had experienced a gradual increase in the severity of cervical and thoracic pain, which had begun simultaneously. He could not relate the onset of symptoms to any predisposing factors. The patient had suffered a cervical whiplash injury 25 years previously. He had had no treatment at the time. Once the acute injury resolved, his neck became symptom-free. In 1989, physiotherapy treatment (ultrasound and cervical traction) was given for "headaches" similar to those in Area 1. He responded well and did not require further intervention until the present episode of pain. Special questions revealed nothing of significance. The most recent X-rays, taken two years previously, showed generalized cervical spondylosis, more marked at the C3/4 level.

Objective Assessment

The patient had a good posture, but held his neck stiffly. Cervical flexion was full range, with pain in Area 1 rated as 3/5 at the end of range. Upper cervical flexion and extension were pain free with overpressure. Extension was 3/4 of the range of movement and produced pain in Area 1 and 2 at the end of range. Cervical rotation to the right was full range and produced pain in Area 2, rated as 2/5, at the end of range. All other cervical movements were full range and pain free with overpressure. The patient's vertebral artery tests were negative.

All movements of the shoulder joints were full range and pain free with overpressure. Thoracic rotation to the right reproduced pain in Area 2 at the end of range. Maitland's test to differentiate cervical and thoracic rotation¹ revealed an increase in pain in Area 2 with cervical rotation, and a lessening of pain when cervical rotation was released, confirming the hypothesis that the pain was partly of cervical origin.

Palpation of the cervical spine revealed a prominent C4 spinous process. There was thickening of the C3/4 and C4/5 zygapophyseal joints on the right. Muscle spasm was present on the right side of the cervical spine. Central and unilateral postero-anterior pressures on the right, on C2, reproduced pain in Area 1 with Grade II pressures. Unilateral postero-anterior pressures on the right on C3 and C4 reproduced local pain with a Grade II pressure. Palpation of the thoracic spine revealed tenderness and spasm of the rhomboid

and erector spinae muscles on the right side at the level of T3 and T5. All thoracic intervertebral joints, costotransverse joints and ribs in the area were full range and pain free with accessory movement testing. On reassessment the range of cervical extension was increased and the pain was of the same intensity. Cervical rotation to the right was unchanged and continued to cause pain in Area 2.

Treatment

Day 1 – Treatment 1

Treatment consisted of three, 30 second sets of Grade II unilateral postero-anterior pressures on the right on C2, C3, and C4. Treatment was just short of pain. At the end of the treatment session, cervical extension was now 7/8 of the full range of movement, with the intensity of pain experienced in Area 1 and 2 unchanged. Cervical rotation to the right was unchanged. The patient was advised to use two pillows when sleeping in side-lying, so as to keep the neck in a neutral position, and to avoid long periods of cervical flexion at work.

Day 2 – Treatment 2

The patient reported a slight headache in his occipital area on the evening of the treatment, with no change in the pain in Area 2. He had experienced very mild discomfort in Area 1 on waking that morning and had not taken any analgesics. On examination, cervical extension was 7/8 of the full range of movement with a pain rating of 2/5 at the end of range. Cervical rotation to the right was full range and produced a pain rating of 2/5 in Area 2.

Treatment was repeated, progressing treatment time to three sets of sixty seconds. At the end of the treatment, it was possible to increase the amplitude of the mobilisation to a Grade III – without causing pain. Cervical extension was full range and reproduced pain with overpressure, at an intensity of 2/5. Cervical rotation to the right was unchanged.

Day 7 – Treatment 3

The patient was still experiencing pain in Area 2 while turning his head to reverse his car. Cervical extension was full range and pain free with overpressure. Cervical rotation to the right was full range and reproduced pain in Area 2, of an intensity of 2/5.

Unilateral postero-anterior pressures on the right on C3 and C4 were repeated as a Grade III pressure for 60 seconds. On reassessment, the patient reported a slight decrease in the intensity of pain experienced in Area 2 (rated as 1/5). In view of the spondylitic changes on the X-rays, it was decided to apply intermittent variable

cervical traction, in accordance with Maitland's suggested sequence of selecting techniques for unilateral cervical pain¹. Maitland suggests a three to five second hold period and a minimal rest period if the condition is simply an ache, and a longer rest period if the condition is more severe. Ten kilograms of cervical traction were given for five minutes, with a hold period and rest period of five seconds each. There was no discomfort during the traction period, and no objective changes were noted after traction was given.

Day 10 – Treatment 4

The patient felt "much better" and was experiencing very slight pain in Area 2 when turning his head to the right. Objectively, cervical rotation to the right produced a pain of the intensity 1/5 in Area 2 at the end of the range of movement.

Treatment consisted of Grade IV unilateral postero-anterior pressures on the right on C3 and C4, working into slight pain. Intermittent variable cervical traction was applied for 15 minutes, using the same poundage as the previous treatment. There was no objective change in signs and symptoms after the treatment. The differentiation test showed that cervical rotation was still producing thoracic symptoms. Four days later, the patient reported that there was no further thoracic pain.

DISCUSSION

Cervical pathology reproducing thoracic symptoms. The confusing clinical picture exhibited by the patient has important implications for the physiotherapist. Wells² maintains that we must remember that the cervical spine may appear to be asymptomatic in the presence of severe "shoulder" symptoms. Schneider⁷ reports favourable results obtained after treating subjects with apparent shoulder joint pathology with cervical mobilisation according to the Maitland concept.

The case study under discussion highlights the importance of questioning for previous trauma when assessing patients who complain of thoracic pain that is exacerbated by cervical movements. The patient had suffered a whiplash injury. Twomey and Taylor⁸ describe the sequelae of severe trauma to the cervical spine. These include traumatic disc ruptures, clefts in the cartilage and plates and annulus fibrosis, and severe soft tissue damage to the facet joints, with capsular and synovial tears. Disc damage is associated with signs of early disc degeneration due to reduced nutrition. The referred pain

could be ascribed to anterior or anterolateral disc pathology with prolapse⁴, muscle spasm³ or zygapophyseal joint pathology¹.

In the case under discussion, thoracic rotation to the right reproduced the thoracic pain. This might be explained by virtue of the fact that there is reflex spasm of the rhomboid and erector spinae muscles. Rotation of the thorax towards the painful side involves scapular retraction on that side, recruiting the affected muscles and eliciting pain.

Implications for treatment

Mobilisation of the cervical spine by

direct pressure produced positive results. Schneider⁷ advocates such treatment, maintaining that repetitive passive movement of the intervertebral joint decreases or blocks discharge from the joint afferent nerves, inhibiting pain sensation from these joints and reducing referred pain. The patient responded rapidly to intermittent variable cervical traction and it would be interesting to assess the value of this modality in other cases of this nature.

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