The importance of postural habits in perpetuating myofascial trigger point pain

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Summary

Various structural abnormalities that contribute to the perpetuation of myofascial trigger point activity and the pain arising from it, have previously been well documented. In addition, however, there are a number of postural habits that are important to recognise as they may also contribute, as shown in the five cases discussed.

These postural habits, which are likely to be carried out both frequently and unconsciously, are adopted during the course of sitting, standing or sleeping. They are entirely independent of any structural abnormalities that may be present. Correcting them is a necessary contribution to treatment, as failure to do so is liable to lead to persistence of the pain.

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Introduction

Pain arising from the activity of myofascial trigger points (MTrP) is extremely common.[1] When a MTrP becomes active, usually as a result of trauma or postural overload of a muscle, a small area of excessive tenderness can be found within a palpable taut band of muscle fibres.[1] Many MTrP treatments have been recommended to alleviate MTrP pain. They include the injection of a local anaesthetic,[1] deep and superficial dry needling,[2;3] electrotherapy,[4] and exercise.[5] It is not the purpose of this paper to comment on the relative merits of these procedures, but rather to discuss various postural habits that are liable to contribute to the persistence of MTrP pain and lack of treatment success.

It is generally agreed that there are many factors that may contribute to the persistence of MTrP pain. These include nutritional, occupational and psychosocial factors.[1] Most emphasis up to now would seem to have been placed on mechanical disorders. Both Simons et al,[1] and Baldry,[3] discuss various structural abnormalities in this category, including lower limb inequality, small hemi-pelvis, Morton's foot disorder and short upper arms. It is my experience however, from treating patients with MTrP pain over the past five years, that undesirable 'postural habits' that are adopted by the patient during sitting, standing or sleeping are of even greater importance. The habit usually places the affected muscle(s) into an active (as opposed to relaxed) state, or into a shortened position. Such habits are invariably carried out unconsciously, and patients may be surprised when they are pointed out. The practitioner must actively seek these postural habits since patients may continue to sit, stand or sleep in the adverse posture with apparent ease. Patients must be made aware of these habits and shown how to avoid them, for treatment to be successful.

There are a large number of these undesirable postural habits, and there follow five examples.

Case 1

Arm bracing on knees

Persistent bracing of the arms on the knees is a common postural habit adopted mainly but not exclusively by men. Maintaining this position for any length of time overloads the muscles of the shoulder girdle and arm, particularly the triceps.

A chef (Figure 1), complained of intermittent episodes of right-sided suprascapular and posterolateral arm pain. This problem had started two months earlier after an endoscopic examination. The main activities aggravating his pain were motorcycling, mashing potatoes and operating a

Figure 1 Arm bracing habit (Case 1).

dumb waiter, all involving triceps as prime mover. Active MTrPs, reproducing his pain on pressure, were found in the right scalenus medius, coracobrachialis, and triceps. It was also apparent that whenever he sat down he subconsciously assumed the arm bracing position (Figure 1).

Following three sessions of superficial dry needling (SDN) at the MTrP sites and muscle stretching exercises,[6] plus the correction of his postural habit, the pain was alleviated. I concluded that this habitual posture had produced MTrPs in the medial scalenus medius muscle which had been activated during the endoscopy procedure. Subsequently, satellite MTrP activity developed in the triceps.[1] The patient's postural habit of arm bracing probably sustained the activity of all three MTrPs, whereas sitting with the arms relaxed may have allowed them to resolve naturally.

Case 2

Leg crossing and side leaning

Leg crossing (Figure 2) is a very common postural habit in both sexes. If one looks around a room of seated people it is likely that 50% will have one leg crossed over the other. It is usual to have a preference to cross either the right or the left leg. Leg crossing raises the pelvis on the side of the uppermost leg, thereby shortening the ipsilateral quadratus lumborum by approximating the iliac crest to the twelfth rib and lumbar vertebral attachments. Sitting with both legs tucked underneath to one side (Figure 3) also shortens this muscle, as does leaning on one arm of a chair so that the body is side-flexed (Figure 4). Both these latter positions are frequently used when relaxing in the evening, with the former particularly being adopted by women and young people.

The patient in Figure 2 had a five-year history of constant aching over his right greater trochanter following a slipping incident whilst getting out of a bath. This condition had failed to respond to local injections, spinal injections, physiotherapy and

Figure 2 Leg crossing habit (Case 2).

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Figure 3 Sitting with legs tucked sideways.

Figure 4 Side leaning.

traditional Chinese acupuncture. The pain, varying from 4 to 8 on a visual analogue scale, was worse both when sitting and driving, and frequent changes of position were necessary in order to get temporary relief.

Pressure applied to MTrPs in the right quadratus lumborum and gluteus minimus reproduced his pain to some extent. It is well known that MTrP activity in the quadratus lumborum can lead to satellite MTrPs in the gluteus minimus.[7]

The pain was brought under control using SDN at the MTrP sites together with appropriate muscle stretching exercises and correction of his habitual posture. I believe that correction of the shortening of the quadratus lumborum muscle from postural habits was a significant factor in this patient's successful outcome.

Case 3

Arm Crossing

This patient, a very active pensioner, invariably relaxed by sitting with her arms in the positions shown in Figures 5 and 6. She also habitually slept on

Figure 5 Arm crossing habit (Case 3).

Figure 6 Arm between legs habit (Case 3).

her side with the uppermost arm adducted across the midline. Her complaint was of left suprascapular and upper arm pain with paraesthesiae in the fingers of the left hand. On examination she was found to have active MTrPs in both the pectoralis major and upper trapezius on that side.

Although she had not been aware of habitually adopting a faulty posture it was easy to demonstrate its undesirable effect by showing how arm elevation with extension (stretching pectoralis major) brought on the paraesthesiae. Her symptoms readily cleared with two treatment sessions using SDN at the MTrP sites together with muscle stretching exercises and advice on the importance of avoiding the postural habit.

Shortening of pectoralis major due to MTrP activity caused nerve compression in this case. Although this has not previously been reported, in my experience it is not uncommon.

Case 4

Habitual undesirable sleeping positions

Habitual sleeping positions are often a factor in perpetuating MTrP symptoms. Simons et al recognise the importance of identifying sleeping positions which may contribute to MTrP activation, particularly a side-lying position with the upper leg brought forwards into adduction, thereby shortening the ipsilateral quadratus lumborum, or the foetal position which shortens the rectus abdominis muscle.[1;7]

Whenever MTrP pain is reported to be worse during the night or on waking, it is likely to be due to an adverse sleeping position. The patient depicted in Figure 7 consulted her general practitioner because of intermittent swelling of the dorsum of the left

Figure 7 Sleeping position (Case 4).

hand, a burning pain in the middle finger and an inability to flex the fingers sufficiently to make a fist. Since Heberden's nodes were present, together with radiographic evidence of degenerative changes in the distal phalangeal joints, it could have been assumed that the symptoms were due to osteoarthritis. However, as they often disturbed her sleep and were always worse on rising, the alternative possibility was that her sleeping position (Figure 7) was responsible for them.

On examination, active MTrPs were found in three muscles habitually placed in a shortened position during the night, namely the left extensor digitorum, anterior deltoid and pectoralis major. The swelling of the hand was thought to be due to restriction of the circulation as a result of placing it between the legs during the night. Much to the patient's surprise, it was only necessary to carry out SDN at MTrP sites on one occasion together with muscle stretching exercises and the avoidance of undesirable nocturnal postures for all the symptoms to disappear, including the restriction of joint movements.

There was however subsequent recurrence of the burning sensation in the middle finger when the patient relaxed in the evenings. Questioning revealed that she habitually adopted the posture shown in Figures 3 and 4. Moreover, on re-examination, active MTrPs were found in the left scalenus anterior muscle. It is interesting to note that during deactivation with SDN of this muscle, the burning sensation in the third finger disappeared. It is possible that MTrP activity in the scalenus anterior was responsible for the hand swelling and loss of finger flexion, but as these symptoms disappeared before the treatment of this MTrP, I concluded that they were mainly due to the combined effect of MTrP activity in the extensor digitorum and a restricted circulation.

Figure 8 Sitting postural habit (Case 5).

Case 5

Postural habits in juveniles

Undesirable postural habits are common in young people. An adolescent girl (Figure 8) habitually sat with her lower legs internally rotated, taking weight on the outer borders of her feet. This led to bilateral anterior knee pain and stiffness due to the development of MTrPs in the adductor longus and rectus femoris. These symptoms disappeared following treatment with ultrasound to the MTrPs, stretching exercises and avoidance of her postural habit.

It is not immediately obvious why the position depicted in Figure 8 caused MTrP activity to develop in rectus femoris and adductor longus. One possibility is that it caused them to be held in a persistently contracted state. In my experience approximately 80% of cases of anterior knee pain in young people arise from MTrP activity in rectus femoris and adductor longus together with vastus medialis, but more often in these cases the habitual faulty postures responsible for it are leg crossing and side sitting (Figures 2 & 3).

Discussion

Pain from MTrPs is now known to be extremely common in primary care.[6,8] They can be identified by palpating a taut muscle band with an exquisitely tender spot, pressure on which reproduces the patient's own pain.[1] Needle electromyographic examination at an active MTrP site reveals the

presence of spontaneous electrical activity,[9] and an integrated hypothesis has been proposed as a possible mechanism.[1]

There is reason to believe that any habitual posture that gives rise to prolonged contraction of muscle fibres may cause motor endplate dysfunction and the development of an MTrP (Case 3). In cases where the MTrP has been induced by trauma, persistent use of the posture may prevent natural resolution, (Cases 1 and 2).

When a postural habit causes shortening of a muscle from MTrP activity and its associated pain, successful treatment requires not only deactivation of the MTrPs by one means or another but also stretching exercises to restore the muscle to its normal length.[1;6] Case 2, in which the quadratus lumborum muscle was placed in a shortened position by frequent leg crossing, is a good example of this.

Mechanical factors which cause muscle shortening and perpetuation of MTrP activity are discussed at some length by Simons et al and by Baldry.[1;3] With respect to shortening of the quadratus lumborum, they place emphasis on the important part played by such mechanical disorders as lower limb length discrepancy, small hemi-pelvis and abnormally short upper arms in bringing this about. In my clinical experience, postural habits such as leg crossing and side leaning are more commonly responsible than mechanical disorders.

Because patients may not be aware that they are habitually adopting an undesirable posture, it is essential for whoever is carrying out the treatment firstly to identify the habit and then to draw attention to, and emphasise the importance of breaking it. In my experience the person usually then makes a valiant attempt to do so, particularly if encouragement is given by other members of the family.

Conclusion

Undesirable postural habits are common and until now have been insufficiently well recognised as an important cause of MTrP pain perpetuation. This paper has discussed some of the more frequently adopted postures and stressed the importance of their recognition by practitioners and correction by patients.

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