

Management of chronic shoulder pain with restricted mobility - a case series

INTRODUCTION

Chronic shoulder pain accounts for 20%–50% of all musculoskeletal problems.^[1] Common aetiologies for unilateral shoulder pain include inflammation, degeneration or/and painful myofascial trigger points (MTrPs) which are independent of subacromial pathology.^[2,3] The current treatment of latent MTrPs includes physiotherapy, acupuncture, dry needling, injection of botulinum toxin, steroids and/or local anaesthetics.^[2,3] We present a case series of three patients with chronic shoulder pain, in which trigger point injection (TPI) and pulsed radio frequency (PRF) under ultrasound guidance (USG) improved analgesia and functional outcome.

CASE REPORTS

Case 1

A 75-year-old male presented with painful restriction of the right shoulder with routine activities such as lifting plate from dining table, or tying turban, for 8 months. The patient was referred by an orthopaedician after failed pharmacotherapy and physiotherapy. A possibility of surgery was also conveyed, but the patient was not willing for surgery. Magnetic resonance imaging showed tear of supraspinatus, infraspinatus and subscapularis tendon, hypertrophy of the acromio-clavicular joint and mild degenerative changes in the glenohumeral joint.

The patient reported visual analogue scale (VAS) pain score of 5 at rest and 9 on movement with limited abduction (up to only 10°) at shoulder joint. On examination, the characteristic ‘jump sign’ of trigger points was present in supraspinatus, infraspinatus and deltoid muscles on the right side. Using USG, TPI was performed in supraspinatus, infraspinatus and deltoid muscles with 7.0 ml of solution (methylprednisolone 20 mg and ropivacaine 0.2%). Post-procedure VAS was 0 at rest and 4 on movement.

At 2-month follow-up, the VAS increased to 3 at rest and 6 on movement for which a combined USG TPI (7 ml solution of 0.2% ropivacaine and 20 mg

methylprednisolone) and PRF (Cosman Medical Inc., Burlington, MA, USA) of 42°C for 2 min [Figure 1] was performed at recognised trigger points in the supraspinatus, infraspinatus and deltoid muscles. Post-intervention VAS decreased to 0 at rest and 3 on movement. At 6-month follow-up, the patient was pain free at rest and on movement with improved range of shoulder movement up to 55°.

Case 2

An 81-year-old male presented with painful restriction of the right shoulder (up to 20°) with failed pharmacotherapy and physiotherapy was managed with TPI and PRF of trigger points (as in Case 1) in supraspinatus and deltoid muscles. Post-intervention pain relief facilitated regular physiotherapy. During a regular follow-up of 5 months, the patient reported pain relief with improved right shoulder abduction of up to 45°.

Case 3

A 52-year-old male diagnosed case of frozen shoulder presented with painful limitation of right shoulder joint abduction (<30°) for 8 months. A suprascapular nerve block received elsewhere did not result in pain relief. The patient received a combined USG TPI and PRF treatment (as in Case 1) at our centre, which resulted in pain relief and improvement in shoulder abduction (abduction up to 50°). At 2-month follow-up, VAS was 2 at rest and 4 on movement. Local anaesthetic with steroid (0.2% ropivacaine and 20 mg triamcinolone) was injected at previous trigger points. Three months later, VAS reduced to 0 at rest and 1 on movement, with right shoulder abduction of up to 70°. None of the patients had any procedure-related adverse effect.



Figure 1: (a) Trigger points (b) pulsed radio frequency in muscle trigger points

DISCUSSION

The notable feature of the present case series was that correct diagnosis of trigger points was made after a detailed history and clinical evaluation. The painful restriction of movement of the shoulder joint was non-responsive to pharmacological agents and physiotherapy. The patients had trigger points in the supraspinatus, infraspinatus and deltoid muscles with localised or referred pain in the region. The referred pain could be attributed to central sensitisation and altered synaptic connections of the dorsal horn neuron following nociceptive stimuli. These new receptive fields of neurons perceive non-painful stimuli as painful and produce referred pain. The referred pain of trigger points can present elsewhere mimicking painful subacromial bursitis, tendonitis and tendinopathy (causes of frozen shoulder). Hence, the differential diagnosis of trigger point pain should be considered in patients having chronic shoulder pain not treatable by anti-inflammatory medications as was present in this case series.^[3] Over an extended period, MTrPs can cause painful muscle weakness, and restricted range of movement due to contracted taut band as was the presenting symptoms in our patients. The patients did not prefer surgical intervention and opted for minimally invasive interventions for pain relief. Following TPI and PRF, VAS reduced both at rest and on movement with improved shoulder range of movement at 3–6-month follow-up.

The current treatment of latent MTrPs includes physiotherapy, acupuncture, dry needling, injection of botulinum toxin, steroids and/or local anaesthetics.^[2-4] TPI acts through mechanical needling or chemical effect of agents injected, resulting in relaxation and lengthening of the muscle fibre.^[5] A pilot study in patients with rotator cuff injury reported more than 50% pain relief for 2 weeks following TPI of brachialis muscle.^[6] Similarly, in the present case series, all three patients received USG TPI and reported 50%–80% pain relief with the added benefit of increased duration of analgesia.

At times, refractory MTrPs are difficult to manage as in Case 1. Hence, a second sitting of TPI was supplemented with PRF treatment which prolonged analgesia up to 6 months. This extended duration of analgesia with PRF was due to reduction in

transmembrane potential of the micronerves (A δ fibre or C-fibre) in or around the muscle and expression of c-fos gene at the lamina I and II of dorsal horn, causing inhibition of C-fibres.^[7,8]

PRF had been used previously to treat refractory pain from myofascial origin or scar neuromas.^[9,10] It could provide 3–6-month pain relief when applied to trigger point pain in the neck region.^[9,11] This was similar to the duration of pain relief in our case series.

CONCLUSION

USG guided TPI with PRF of MTrPs in patients with chronic painful restriction of the shoulder joint resulted in significant pain relief, allowed physiotherapy and improved the functional outcome of the patients.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Thapa D, Ahuja V, Dhiman D. Management of chronic shoulder pain with restricted mobility - a case series. *Indian J Anaesth* 2016;60:858-60.

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