CASE REPORT

Acupuncture in Osgood-Schlatter disease

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SUMMARY

This article describes the use of acupuncture in the management of knee pain in Osgood-Schlatter disease. Manual and electroacupuncture were used. The patient responded well to acupuncture and found it effective in relieving his knee pain. Acupuncture should be considered in Osgood-Schlatter disease, both to manage the pain and to limit the need to take oral analgaesics for a prolonged period.

BACKGROUND

I had been unable to find any published case reports in which manual acupuncture had been used successfully in Osgood-Schlatter disease and therefore present this description.

CASE PRESENTATION

A 15-year-old boy was diagnosed with Osgood-Schlatter disease by his general practitioner 6 weeks previously and presented to my acupuncture clinic with a 1-year history of bilateral knee pain. His only medical history included ADHD. He was keen on sports, in particular trampolining and volleyball.

He had first noticed the pain only in the left knee but it progressed over several months to involve both knees. There was no history of trauma or previous injury to the knees. The pain was initially only present when he was playing sports but more recently was present almost constantly; he described it as a 'crushing' pain with 'sharp' exacerbations. The pain was at its worst on resuming movement following a period of immobility; playing sport also exacerbated the pain. On a numerical rating scale (NRS),¹ he scored his pain level at 8 of 10 (0=no pain, 10=worst pain imaginable). Relieving factors included strapping, for which he attended a physiotherapist, and rest from or reduction in his level of sporting activity.

He had tried managing the pain with regular paracetamol and ibuprofen, and tramadol as required; he did not find these analgaesics to be very effective and neither he nor his mother wished him to take regular analgaesia for a prolonged period.

On examination, he appeared healthy; there was no fever, weight loss or malaise. On inspection, both knees looked the same; there was no swelling, no inflammation and no 'lump' over the tibial tuberosity on either knee. Both knees were tender to palpation over the tibial tuberosities, the patellar tendons and at the lateral edges of the joints.

TREATMENT

I anticipated that treatment would probably need to be carried out over a prolonged period of time,

given the nature of Osgood-Schlatter disease. Acupuncture was initially performed weekly for 5 weeks. Sterile, single-use, disposable Tewa needles were used bilaterally at the following points: 0.25×40 mm PJ-series needles at ST36, GB34, SP9, SP10 and ST34; 0.20×30 mm PJ-series needles at LR3, ST35/Xiyan. Needles were retained for 25 min and manipulated every 5–10 min with gentle 'twirling' of the needle. The patient was treated on an examination couch in a sitting position.

There was no improvement noticed in the level of pain following the first session of acupuncture. Following the second session, the patient felt some relief, which lasted 3–4 days; during this time, his pain score was 5/10 (NRS), gradually increasing to 7–8/10 (NRS) over the remainder of the week. He described the relief obtained following the acupuncture as similar to that he had obtained from knee strapping. After the third session, there was a noticeable improvement, with a few days being pain-free and with the level of pain not reaching the same intensity as previously, at a maximum pain score of 6/10 (NRS). Over nine further weekly sessions, a similar pattern of pain relief was observed, with periods of 5–7 days of good pain relief following acupuncture, followed by a gradual increase in the level of pain over the following days; however, the maximum level of pain experienced had decreased to 4–6/10 (NRS), making it much more manageable and enabling analgaesic medication to be taken less frequently.

Following the initial weekly treatments, acupuncture was performed at increasing intervals of 2–4 weeks and remained ongoing at ~4-weekly intervals for a total of 10 months. Following each session of acupuncture, effective pain relief was achieved for ~3–4 weeks.

As electrical stimulation of acupuncture points is considered to increase acupuncture analgaesia,² I suggested using electroacupuncture. Initially, the patient was anxious about trying this but after 14 sessions of manual acupuncture he decided to try it. Electroacupuncture was performed using the Schwa-Medico AS Super 4 Digital electrical needle stimulator. Tewa JJ-series 0.25×40 mm needles were used at points ST34, ST36, SP9 and SP10 bilaterally. The machine settings were fixed at frequency 2 Hz, pulse width 210 µs, duration 3 s alternating with frequency 100 Hz, pulse width 120 µs and duration 3 s; the program (fixed program 2.0, HAN Stimulation 1 on the AS Super 4 Digital) was allowed to run for 30 min. The patient received instruction in the use of the machine and was able to control the level of stimulation himself under supervision from me. Stimulation was increased

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until the patient could feel the sensation of 'buzzing' through the needles and such that the level of stimulation was not uncomfortable; this was usually achieved at 1.2–2.4 mA.

The patient received a total of five sessions of electroacupuncture and his pain level was well-controlled at a pain score of 2 (NRS). Unfortunately, during this time, he sustained an injury to his right patellar tendon during sports training and received a diagnosis of patellar tendon tear from his physiotherapist. Examination of his knees at this stage revealed that the tenderness over the tibial tuberosities had resolved and that his patellar tendons were the source of his ongoing discomfort. We decided that the most appropriate course of action at this stage would be for him to continue seeing his physiotherapist for management of the patellar tendon tear but to discontinue acupuncture for the Osgood-Schlatter disease.

Safety considerations

The points used in this case are generally regarded as very safe. Deep needling at GB34 should be avoided since the common fibular nerve and anterior tibial artery lie deep to this point. At ST35/Xiyan, care must be taken not to needle into the knee joint, but to aim to needle the joint capsule where the nerve endings lie.

OUTCOME AND FOLLOW-UP

The patient found that acupuncture was the only treatment that helped consistently with his pain; the frequency and intensity of the pain decreased such that he was able to take part in sports more easily and was able to use analgaesic medication for 'breakthrough' pain rather than using it regularly.

DISCUSSION

In 1903, Osgood and Schlatter described a painful condition affecting the tibial tuberosity.³

Osgood-Schlatter disease or syndrome is a common cause of knee pain in children, in particular active adolescents.³ It presents with local pain and tenderness over the tibial tuberosity and is widely accepted to be a traction apophysitis of the tibial tubercle.⁴

It affects both boys and girls and is associated with growth spurts; therefore it tends to present in boys between the ages of 12–15 years and in girls at 10–12 years. In up to 30% of cases, both knees are affected.

The cause of the condition is thought to be excessive traction forces from the quadriceps muscle patellar ligament causing avulsion at the proximal tibial apophysis insertion;^{3 4} its association with the growth spurt may therefore be as a result of an imbalance between strong quadriceps contraction forces on the growing bone.⁵

Following avulsion, the bone or cartilage continues to grow and ossify; this can result either in non-union of the fragments or bony union with the tibial tuberosity. Mild enlargement and the formation of a 'bony lump' may occur over the tibial tuberosity.⁴

A diagnosis of Osgood-Schlatter disease is made clinically.⁶ Patients usually present with a gradual onset of pain that initially is mild and intermittent, and later becomes localised at the tibial tuberosity. The pain typically occurs during exercise and is relieved by rest. Sometimes, a tender 'lump' can be seen and felt at the tibial tuberosity; over time, this becomes painless but does not disappear completely. Pain can be reproduced at the tibial tuberosity by local palpation and also occurs on resisted knee extension.

Other causes of knee pain in children should be considered when making the diagnosis, particularly in the presence of trauma, systemic symptoms (fever, malaise, weight loss), bone or joint pain elsewhere, pain at night or after rest, or painful examination of the knee or hip joint.⁵ Osgood-Schlatter disease does not involve the knee joint itself, so results of examination of the knee joint and knee movement are normal.

Pain due to Osgood-Schlatter disease usually resolves spontaneously over a period of a few weeks or months and complete recovery occurs in about 90% of patients. Occasionally, the pain does not resolve until the end of the growth spurt; in up to 10% of cases, pain can persist into adulthood, despite conservative treatment.^{4 5}

Management of the pain includes regular paracetamol, non-steroidal anti-inflammatory drugs and application of ice to the tibial tuberosity. Corticosteroid injections are not effective and are not recommended.⁵ Physiotherapy may also be helpful in reducing the muscle imbalances, through stretching and strengthening exercises. Sporting activity does not need to discontinue completely and a reduction in activity may be enough to control the pain. It may be useful to reduce the frequency and intensity of activity until the pain is reduced, and then gradually increase it again as symptoms allow; titrating activity levels to the symptoms can then be repeated as required. It is important not to discourage sporting activity but to encourage it below the level that induces pain.

In the primary care setting, it is important that patients are reassured that the condition is self-limiting and rarely requires more than the relatively simple management measures outlined above. In cases in which pain persists into adulthood or when symptoms are uncontrolled and severe, specialist assessment is recommended. Several surgical techniques have been described, involving excision of bony fragments or cartilaginous material, or percutaneous fixation of the tibial tuberosity.^{5 7} Results from surgical intervention are variable but can be considered where conservative treatments have failed.⁵

As adolescents can have a very different perception of pain and of what is going on in their bodies compared with either younger children or adults, they can find it more difficult to cope with chronic pain. In addition, although acupuncture is generally very well accepted in the lower limbs, adolescents nonetheless find acupuncture much more difficult to tolerate

Learning points

- ▶ Acupuncture has been used to help to relieve knee pain resulting from a variety of causes.⁸
- ▶ Osgood-Schlatter disease is a common cause of anterior knee pain in adolescents.
- ▶ It is important to try to adequately manage pain in these patients so that they are not discouraged from participating in sports.
- ▶ Adolescents can find it more difficult to cope with chronic pain than other age groups do and awareness of this is important in the approach to treatment.
- ▶ Management of the pain associated with Osgood-Schlatter disease, using acupuncture, has been successful in this patient; acupuncture should be considered in these patients in order to manage the level of pain and to limit the need for them to take oral analgaesics for a prolonged period of time.

than either younger children or adults do. As a group, they are more likely to be averse to the idea of needling and they are more likely to experience vasovagal episodes as a result of needling. It is therefore important to give an adequate explanation of what the treatment will involve before initiating and to generally be sensitive to how they are feeling.⁸

My patient was certainly very anxious from the outset. Methods that we (myself, the patient and his mother) used to help to overcome this and to put him at ease included enabling him to use his smartphone during treatment; other measures that also proved useful included: using Bach Rescue Remedy Spray TM (Bach Flower Remedies Ltd) prior to and during needling; placing the needles most distant to the most tender areas first; limiting the amount of needle manipulation; and using smaller-gauge needles where possible, for example, at ah-shi points or acupuncture points that were particularly tender. I felt that these measures would enable the patient to feel more relaxed and comfortable during treatment, and thereby optimise the central effects of acupuncture.⁹

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