Management of Legg–Calve–Perthes disease with acupuncture: a case report

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ABSTRACT
Legg–Calve–Perthes disease (LCPD) is a rare temporary hip joint deformity mostly effecting young children from 4–10 years of age. It involves mainly the head of the femur, which softens and breaks down due to interruption of blood supply (avascular necrosis). We report a case of LCPD that was treated late and had a poor prognosis, but improved significantly during a prolonged course of acupuncture.

INTRODUCTION
Legg–Calve–Perthes disease (LCPD) is an idiopathic hip disorder that produces ischaemic necrosis of the growing femoral head; as a result, the femoral head collapses.1 Apart from the obvious disadvantages of being significantly shorter in height for their age and having one leg longer than the other, resulting in a slight limp, in some cases the sufferers experience stiffness, swelling in the hip and leg, and may develop arthritis of the knees. Permanent femoral head deformity is the most significant outcome. We report a case of LCPD that was treated late and had a poor prognosis, but improved significantly during a prolonged course of acupuncture.

CASE REPORT
A 12-year-old boy was admitted to an orthopaedic clinic in 2006 with limping, and was diagnosed as having LCPD (figure 1A). At hospital surgeons had applied a splint and orthosis without improvement, and therefore in 2008 offered to perform surgery with full replacement of the femoral head (figure 1B). The parents declined this option, and instead decided to visit an acupuncture clinic the same year. The boy had no relevant family history; he was born normally with a weight of 3.2 kg. His family had no history of chronic disorders. At 6 years of age LCPD was identified clinically as there was a restriction in movement at the left hip joint; this diagnosis was supported by imaging studies (see figure 1A, showing sagging rope sign and, flattened head and short neck of left femur). His full blood count and C reactive protein level were normal. He complained of pain that increased on movement. On examination, internal rotation of the left hip was painful and his left lower limb was shortened by 1 cm compared to the right leg.

A course of acupuncture was offered in September 2008 that included a needle acupuncture application for 20 min (stainless steel needles of 0.25 mm diameter and 25 mm length) at all the following body points, bilaterally where appropriate: GV4, GV5, GV6, GV13, GV14, GV20, Yintang, Taiyang, SI18, BL10, BL11, BL13, GB20, GB30, GB31, GB34, BL17, BL18, BL23, BL60, ST25, ST36, ST40, CV6, CV7, CV11, CV12, LI4, LI11, SP6, KI3, KI8 and LR2, plus...
laser acupuncture application (Everlase, MedicTinedic, Varde, Denmark; helium neon soft laser at 660 nm) locally on different acupuncture points in the hip joint area for 5 min; at night an abduction splint was applied, though the orthosis was discontinued. Initially, he was offered three sessions per week for 2 months, then two sessions per week for 2 months and later one session per week, which was continued until August 2012.

After having 30 sessions of acupuncture, the boy started to improve clinically (started walking with a stick with less limping) and imaging showed that new bone cells had started to develop in the femoral head (figure 2A). After 130 sessions, in 2010, radiographic results depicted an almost 90% improvement, and after 196 sessions in August 2012 he returned to the full activities of daily life including participation in sporting activities (figure 2B–D).

**DISCUSSION**

This case of LCPD improved significantly during a prolonged course of acupuncture. LCPD is a rare idiopathic deformity. Experimental studies indicate that the pathological repair process, which is marked by an imbalance of bone desorption and formation, contributes to the pathogenesis of femoral head deformity.
It typically presents in boys aged 4–8 years. Affected children are usually shorter than their peers and have hyperactive tendency. There is increased incidence with a positive family history, low birth weight and abnormal pregnancy/delivery. Age is the key to prognosis. Onset after 8 years indicates poor prognosis. Between 6–8 years of age, results are not always satisfactory with conservative management. Greater than 9 years of age, there is questionable benefit from conservative management.

In the present case, our patient was diagnosed at the age of 6 years. However, the outcome of conservative treatment until the age of 8 years was not good. Patients aged <6 years at onset are best managed non-surgically, whereas older patients may benefit from surgical treatment. Good surgical results have been reported in 40% to 60% of older patients (>8 years), indicating the need to develop more effective treatment based on the pathobiology of the disease. If symptoms persist, a technetium bone scan or MRI scan can help to identify the pathology, which is seen as an area of reduced perfusion on bone scan or a signal change on MRI.

There is a tendency to operate when the patient is older with a poor range of motion, and to perform operative treatment only when there is subluxation or head at risk signs. One study showed that indications for the treatment of LCPD are based more on the personal experience of the surgeon rather than on scientific data.

To date, the literature does not support the management of LCPD with acupuncture and, to the best of our knowledge, this is the first reported case managed with acupuncture. The long-term natural history of LCPD is also not known. The passage of time and the use of an abduction splint at night could have contributed to (or indeed may have been primarily responsible for) our patient’s improvement. However, we conclude that acupuncture may be an option for conservative treatment of LCPD, but more reliable evidence will require further studies.

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**REFERENCES**

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