

ESWT for lower extremity disorder in juvenile athlete - Focused extracorporeal shock wave therapy for ischial apophysitis in young high-level gymnasts -

Toru Omodani

Tokyo Advanced Orthopaedics, Tokyo, Japan

Introduction

Clinical results of Extracorporeal shock wave therapy (ESWT) for apophysitis have been reported but only for Osgood-Schlatter disease using radial type. Ischial apophysitis (IA) is a traction apophysitis of the ischial tuberosity caused by the accumulation of repetitive traction forces from the hamstrings. The purpose of this study was to investigate the effects and safety of ESWT for IA in gymnasts. We hypothesized that ESWT would be effective in relieving pain. We also hypothesized that ESWT would not cause adverse events of impaired bone growth.

Material & Method

The subjects were 18 high-level gymnasts (mean age of 13 years) with a chief complain of chronic buttock pain diagnosed with IA.

Ten patients received only physiotherapy (PT), while eight received both PT and ESWT to the ischial tuberosity. The basic protocol for ESWT was to use an energy dose of 0.20 mJ/mm² or less with 3,000 shots per session at 4-week intervals.

We investigated whether PT and ESWT relieved the pain and allowed the patient to return fully to gymnastics. Based on radiographs at the last observation, we examined whether early closure of the apophyseal line of the ischium and around hip joint on the affected side occurred.

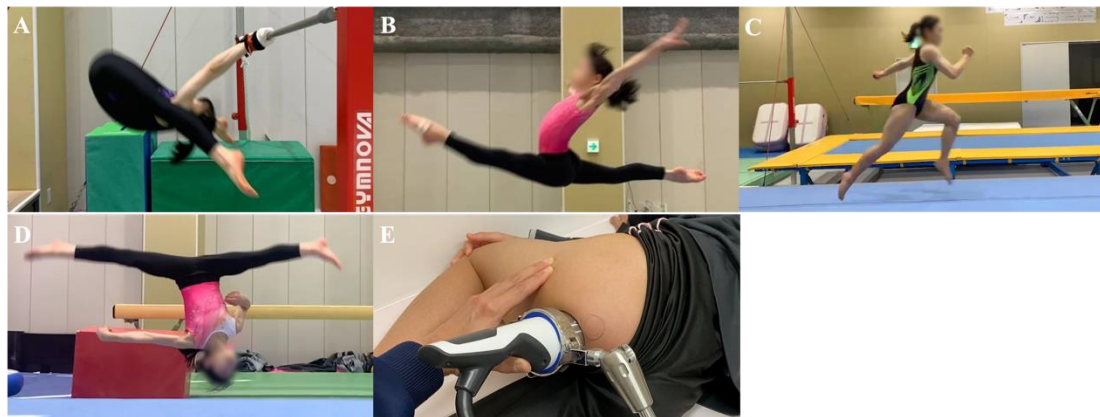


Figure 1 Painful gymnastics movements (A-D) and ESWT for ischial tuberosity (E).

Results

In the PT group, pain was relieved in 2 of 10 patients. In the ESWT group, pain was relieved and full return to gymnastics was possible in all 8 patients. None of the patients showed early closure of the apophyseal line.

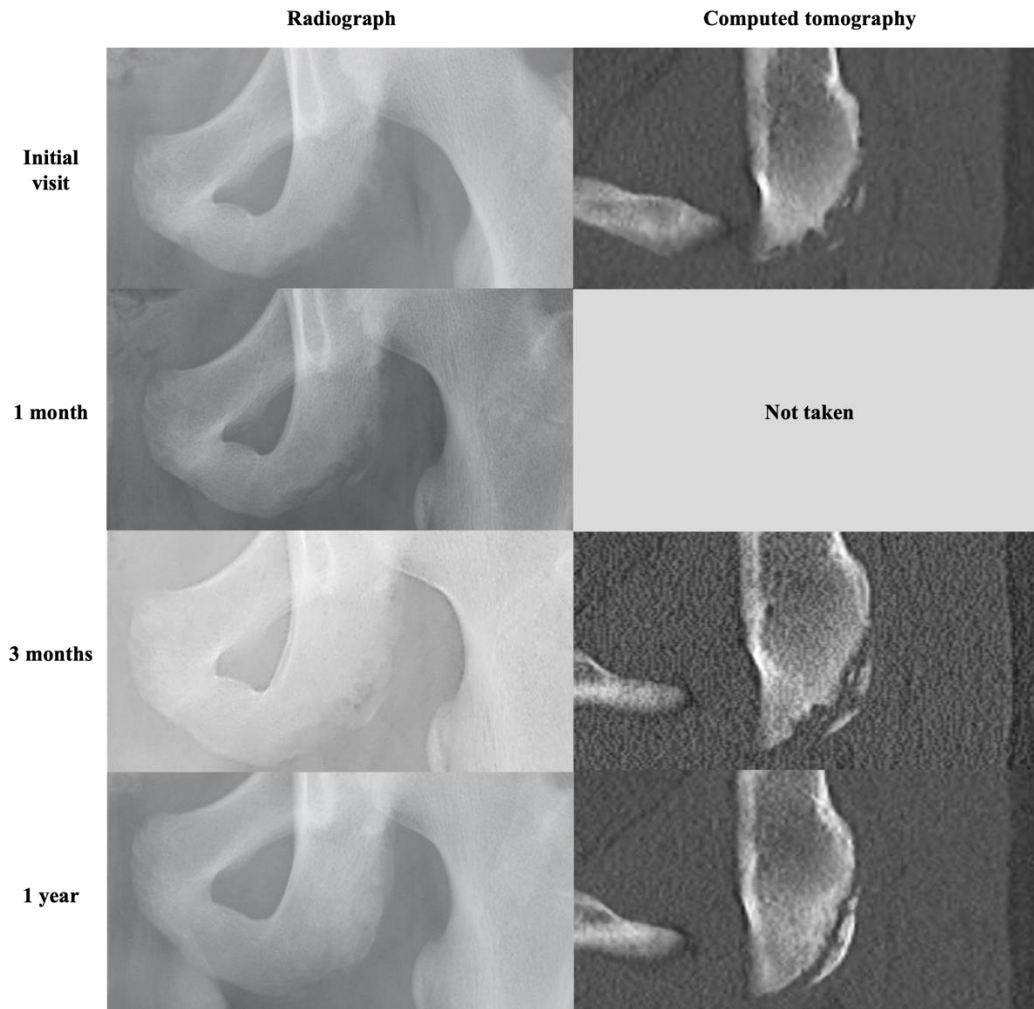


Figure 2 Thirteen-year-old female, international-level gymnast.

A radiograph and computed tomography (CT) at the initial visit showed a radiolucent lesion of the left ischial tuberosity. ESWT was started promptly after diagnosis and practice was continued. One month after ESWT, an image suggestive of cartilage ossification was observed in the left ischial tuberosity, and the pain decreased markedly. Three months after the start of ESWT, the pain was relieved and the patient returned to full activity. Ossification of the cartilage of the left ischial tuberosity progressed further. 1 year after the start of treatment, CT revealed no obvious findings of apophyseal growth plate arrest.

Discussion

Of the 18 young high-level gymnasts with IA, two of the 10 cases treated with PT only showed resolution of pain, while all eight cases who received both PT and ESWT showed resolution of pain and a full return to training. Most importantly, there were no adverse effects of early closure of either the apophyseal or epiphyseal line. ESWT may be a safe and effective treatment option for IA in young high-level gymnasts, although further studies are warranted.

Technology: Focused Shockwave

Device and Manufacturer: Duolith SD1 (STORZ MEDICAL AG: Switzerland)

COI: No conflict of interest