

Clinical experience of ESWT for upper extremity in athletes

Norimasa Takahashi, Kenji Takahashi

Funabashi Orthopaedic Hospital, Sports Medicine & Joint Center, Funabashi, Japan

Currently, several Orthopaedic diseases has been treated with Extracorporeal shock wave therapy (ESWT). We have done the animal studies which clarified the mechanism of pain relief after ESWT¹⁻³. In 2008, ESWT was approved by Ministry of Health, Labor and Welfare. Since then, ESWT for planter fasciitis has been insured by National health insurance. However, we have used ESWT for several Orthopedic disorders, which were based on the literatures. In my clinic, ESWT has been applied to disorders of upper extremity.

Based on Consensus statement by ISMST in 2016, ESWT is commonly applied to lateral epicondylitis and calcified tendinitis of the shoulder. As stress fracture is certified indication, we have been applied to olecranon stress fracture in baseball players. Since 2013, 37 baseball players who suffered olecranon stress fracture had returned to play with ESWT. Average age of them was 15 years old. They could start throwing 1 month after ESWT and returned game 2 months after the therapy. Since 2015, ESWT has been applied to medial elbow pain in baseball players as an empirically tested clinical uses. These players included both juvenile medial elbow pain with open physis and medial pain with ulnar collateral ligament injury in young baseball players. Based on our early case series, 88% of the players could return to play with ESWT. In our clinic, ESWT was applied to apophyseopathy in adolescent gymnasts as an exceptional indication. As weight bearing occurred to the upper extremity in gymnasts, painful apophyseopathy in distal radius and humeral head often occurred. Although high energy focused shock wave is forbidden to apply epiphyseal line, we applied low energy shock wave to apophyseopathy in gymnasts. Pain relief and sports return was achieved with a minimum rest. No adverse effect was observed in patients with an apophyseopathy after ESWT.

In our clinical experiences, ESWT is a useful modality to treat upper extremity disorders in athletes.

1. Ohtori S, Inoue G, Mannoji C, Saisu T, Takahashi K, Mitsuhashi S, Wada Y, Takahashi K, Yamagata M, Moriya H. Shock wave application to rat skin induces degeneration and reinnervation of sensory nerve fibres. *Neurosci Lett*. 2001 Nov 23;315(1-2):57-60.
2. Takahashi N, Wada Y, Ohtori S, Saisu T, Moriya H. Application of shock waves to rat skin decreases calcitonin gene-related peptide immunoreactivity in dorsal root ganglion neurons. *Auton Neurosci*. 2003;107:81-4.

3. Takahashi N, Ohtori S, Saisu T, Moriya H, Wada Y. Second application of low-energy shock waves has a cumulative effect on free nerve endings. Clin Orthop Relat Res. 2006;443:315-9.