

第12回 日本レーザー・スポーツ医科学学会学術集会
プログラム・抄録集

The 12th Annual Meeting of the JAPAN ASSOCIATION
for LASER MEDICINE & SPORTS SCIENCE



日時:平成20年11月29日(土) 午前9時30分より

学術集会会場:都市センターホテル(東京都千代田区)

学術集会会長:久保田潤一郎(久保田潤一郎クリニック 院長)

15. Shockwave therapy in treatment of musculoskeletal system disorders

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Shockwave therapy /SWT/ is a new and promising method used for treatment of certain musculoskeletal system impairment including lateral elbow tendinopathies /radial and ulnar epicondylitis/, shoulder and patellar tendonitis, heel spur, achillodynia, plantar fasciitis and a number of other soft tissue impairments. In its relatively short history, SWT treatment developed from extracorporeal shock wave lithotripsy, which was originally used for kidney stones disintegration. Basically, shockwave is a transient acoustic wave with initial short positive phase and high pressure, caused by compression of gas molecules in the target tissue. The width of the first part of the shockwave is very short, around 1 microsecond, then followed by sudden decrement in pressure. This negative pressure phenomenon is sometimes called "cavitation" due to the expansion of gas molecules and creation of a small cavity. According to the recent studies, diverse effects were observed after application of SWT in treated tissue. According to the paper by Murata et al., extracorporeal shockwaves induce the expression of "analgetic" proteins such as ATF3 and GAP43 in rat dorsal root neurons and this induction is very probably responsible for longlasting pain relief after shockwave application. Tendon healing processes were also observed after SWT in animal models. Significant increase in degraded collagen and glycosaminoglycan levels were observed shortly after treatment. Angiogenesis, osteogenesis and bone remodelling was described in a study of Wang in SWT prior to hip arthroplasty in adult hip necrosis. Moreover, resorption of calcium deposits was also observed in X-ray images in patients with calcifying tendonitis of rotator cuff. Major indications for SWT are including variety of tendinopathies and muscle insertion pain, calcification processes including heel spur, exostoses. Less frequent indications for SWT are repeated acute micro traumas in sports injuries, resistant trigger points, peri-arthritis and chronic vertebral pain. Only absolute contraindication of SWT is anticoagulation treatment with kumarine derivatives and/or blood coagulation diseases /haemophilia/. SWT is usually well tolerated, the side effects are usually local and temporary, such as haematomas, hyper or hyposensitivity, swelling. Serious adverse effects are very rare, only few papers report pneumothorax, paranasal cavity rupture or vein thrombosis /excessive doses, erratic applications/. Therapeutic procedure in SWT contains localisation of impairment by the means of palpation, considering the X-ray, ultrasonography or MRI scans if necessary. Application of ultrasound gel is essential, even the discrete portion of gel between the applicator and skin can lead to dampening and deflection of the delivered shockwaves. More information about the therapy, indications and studies will be discussed in details in oral presentation.