To investigate the effect of low-level laser therapy on cartilage degradation and synovitis in rabbits with progressive OA, which could be achieved through the regulation of catabolic factors and anabolic factors in cartilage.

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Effects of extracorporeal shock wave therapy on cartilage protection and subchondral bone remodeling in rabbits osteoarthritis induced by ACLT

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Keywords: Osteoarthritis; Extracorporeal shock wave therapy; Cartilage Protection; Subchondral Bone

To investigate the effects of ESWT on cartilage protection and subchondral bone remodeling in rabbits osteoarthritis. Twenty-four rabbits were divided into two groups: ACLT group and ESWT group. Rabbits in two groups received ACLT to establish the knee OA model. Rabbits from ESWT group received ESWT (Intensity of 5.5 bar, Frequency of 5 Hz, 3 times per week, total 6 times in 4 weeks). Histological observation of rabbit articular cartilage; the bone mineral density was measured. The bone histomorphometry analysis was done in subchondral bone of femoral and tibial. IL-1β, TNF-α and NO was detected by ELISA. RT-PCR was used to analyze MMP-1, MMP-3, MMP-13 and TIMP-1 in cartilage. Histological assessments of MFC in ESWT group were significantly lower than that in ACLT group. MMP-1 and MMP-3 in ESWT group was significantly lower than that in ACLT group. ESWT could protect cartilage damage and subchondral sclerosis by regulating MMP-1, MMP-3 and TIMP-1 in cartilage and modulating subchondral bone metabolism.

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P195-e

Effect of extracorporeal shock wave therapy on knee osteoarthritis

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Keywords: Knee osteoarthritis; Extracorporeal shock wave therapy; Functional outcome

Introduction. – Knee osteoarthritis (OA) is the most common type of arthritis and a major cause of morbidity and disability. Extracorporeal shock wave therapy (ESWT) has been found to improve motor dysfunction and reduce pain in OA in animals.

Keywords: Knee osteoarthritis; Extracorporeal shock wave therapy; Structural remodeling; Functional remodeling

Objective. – To investigate the effects of whole body vibration (WBV) on structural and functional remodeling of subchondral bone in early osteoarthritis (OA) rabbits induced by anterior cruciate ligament transection (ACLT).

Methods. – Twenty-four adult rabbits were randomly divided into two groups: ACLT group and WBVT + ACLT group. Rabbits in two groups received ACLT to establish the knee OA model. Rabbits from WBVT + ACLT group received WBVT (Intensity of frequency: 40 Hz, Amplitude of vibration: 2~4 mm, Treatment time: 40 min/d, Duration: 4w). After intervention, the left femur and tibia of two groups were placed in Micro-CT scanning system. Using three-dimensional reconstruction Micview V2.1.2 and ABA analysis software to analyze bone of the femoral condyle and tibial bone volume fraction (BVF), trabecular thickness (TbTh), trabecular spacing (TbSp), trabecular number (TbN), volumetric BMD, tissue BMD. Geomagic Studio 11.0 software was used to translate modulus (EM), the reaction force (RF) and average Von Miss Stress of femoral condyle and tibial plateau.

Results: – BVF, TbN, Th.Th, EM, RF, VMF, vBMD and tBMD of distal femur and tibia were significantly lower than that in ESWT + ACLT group (P < 0.05). Tb.Sp of distal femur and tibia were significantly lower than that in ESWT + ACLT group (P < 0.05).

Conclusion. – WBVT could effectively improve the early stages of rabbit knee osteoarthritis subchondral bone microstructure and mechanical properties.

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