

통증 및 근골격재활

게시일시 및 장소 : 10 월 18 일(금) 08:30-12:20 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 10:00-10:45 Room G(3F)

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Analysis of Intraoperative Neurophysiological Monitoring in Neuromuscular and Idiopathic Scoliosis

Myungsang Kim^{1*}, Jung Hyun Park¹, Yu Sang Jung², Jinyoung Park^{1†}

Department of Rehabilitation Medicine, Gangnam Severance Hospital, Rehabilitation Institute of Neuromuscular Disease, Yonsei University College of Medicine, Seoul, Republic of Korea¹, Department and Research Institute of Rehabilitation Medicine, Severance Hospital, Yonsei University College of Medicine²

Adolescent idiopathic scoliosis (AIS) is the most common scoliosis accounting for 80%. The progression of the abnormal curvature does not cease even after the growth spurt finished. The prevention of the progression is important and bracing is known to be the only effective non-surgical treatment. As the muscles of concave side would be more shortened by progress, we hypothesized that the relaxation of these muscles by extracorporeal shock wave therapy (ESWT) would reduce the Cobb's angle in patient with AIS.

Case 1.

A 19-year-old female patient visited a neuromuscular clinic for management of AIS which first detected at the age of 13. She had no motor or sensory deficit. When she flexes forward, rib hump was noticed on the Rt. lower thoracic area. By lateral lumbar flexion test, the distance between the 3rd finger's tip and infrapatellar line were 3.8 cm / 10.6 cm (Rt./Lt.). There was no leg length discrepancy. In a simple plain image of whole spine standing PA, type III (by King-Moe classification) scoliosis of Lt. concave curvature from T11 to L3 with the apex level at L1 and Cobb's angle of 32.7° (Figure 1A) was presented. Onto the ongoing manual therapy, a total 8 sessions of ESWT were applied during 6 months using AR2 electromagnetic ESWT (Donier MedTech, Kennesaw, GA, USA). In one session, 2,000 shocks were applied on Lt. paravertebral muscles between T11-L3, and another 2,000 shocks on Rt. multifidus originating from L3-L5 and quadratus lumborum muscles with tolerable intensity (0.05~0.1 mJ/mm², energy level of 4~6) and frequency (6~8 Hz). The values of the lateral lumbar flexion were improved and the gap between both sides were decreased (Figure 2). The Cobb's angle was decreased to 27.6° (Figure 1B).

Case 2.

A 20-year-old female patient visited this clinic for the management of AIS which first detected at the age of 14. She had no motor or sensory deficit. The rib hump was noticed with the Rt. lower thoracic area when flexed forward. By lateral lumbar flexion test, the distances were 4.0 cm / 2.0 cm (Rt./Lt.). There was no leg length discrepancy. By the

simple plain image of the whole spine standing PA, the type III scoliosis of Lt. concave curvature from T10 to L3 with the apex level at L1 and Cobb's angle of 27.2° (Figure 1C) were presented. Onto the ongoing manual therapy, a total 7 sessions of ESWT were applied during 2 months. In one session, 2,000 shocks were applied on Lt. paravertebral muscles between T10-L3, and another 2,000 shocks on Rt. multifidus originating from L3-L5 and quadratus lumborum muscles with tolerable maximum intensity (0.05~0.1 mJ/mm², energy level of 4~6) and frequency (6~8 Hz). The values of the lateral lumbar flexion were improved and the gap between both sides were decreased (Figure 3). The Cobb's angle was decreased to 21.6° (Figure 1D). From these cases, we suggest the ESWT would be effective in improving the Cobb's angle itself in AIS, and further data accumulation would be needed.

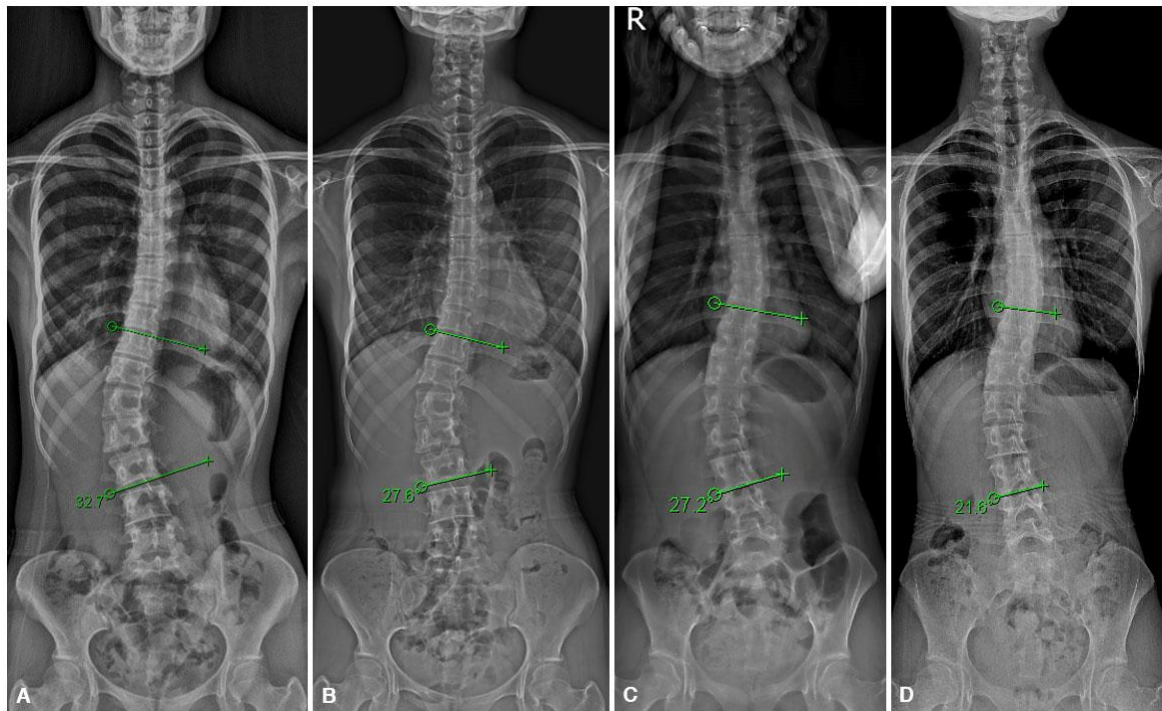


Figure 1. The Cobb's angles before and after serial ESWT. The simple plain images of whole spine standing PA and the Cobb's angles before ESWT in case 1 (A), after ESWT in case 1 (B), before ESWT in case 2 (C), and after ESWT in case 2 (D).

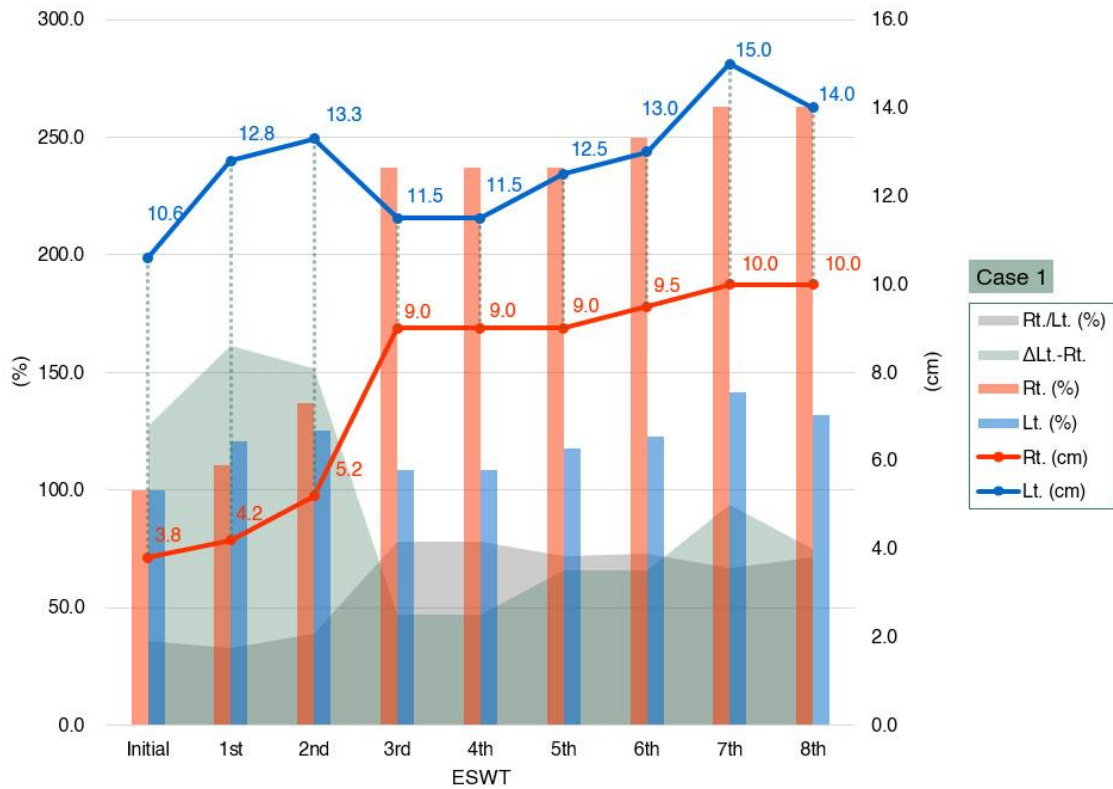


Figure 2. Improvement of lateral trunk flexion in case 1.

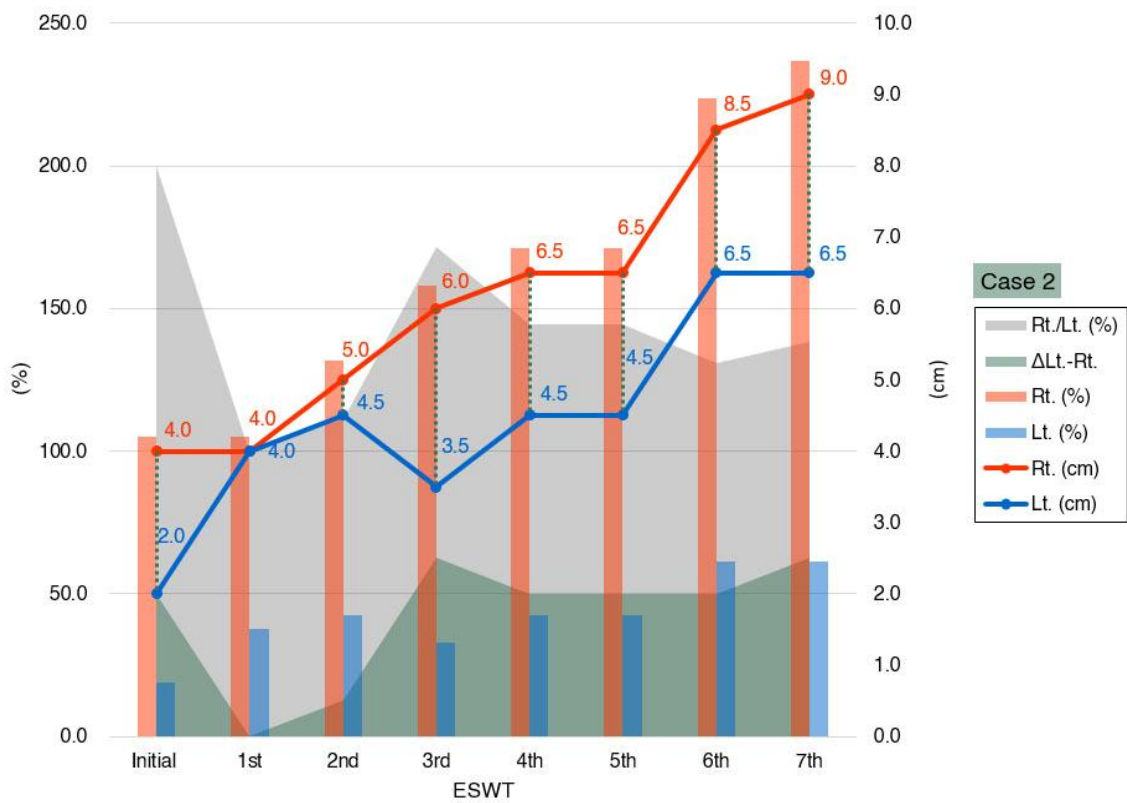


Figure 3. Improvement of lateral trunk flexion in case 2.