

The Effect of Corrective Exercises on the Treatment of a Scoliosis Patient: A Case Report

Bir Skolyoz Hastasının Tedavisinde Düzeltici Egzersizlerin Etkisi: Olgu Sunumu

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Abstract

Scoliosis is a pronounced lateral curvature of the spine. Exercise plays an important role in reducing curve progression and improving an individual's quality of life. The purpose of this case report was to evaluate the efficacy of gradually increasing corrective exercises program in an adolescent girl patient with scoliosis. A girl patient, who admitted to the private hospital in Adana with lumbar curvature and adolescent field pain complain, was 10-year-old, her body height and weight were 130 cm and 29 kg, respectively. Objective findings indicated that scoliotic curvature through palpation, and radiographs. She had a 12 degree (M 41.95) thoraco-lumbar curvature obtained using the Cobb method and positive orthopedic tests. Gradually increasing strength and stretching corrective exercises program was used for five months. Isometric strength and dynamic stretch exercises were performed on the shortened muscles of the neck, the trunk and the lumbar region. The flexibility and, relaxation workouts were also performed at the end of the each exercise session. At the end of the five month exercise programme 5-degree scoliosis observed (M 41.99).

Key words: Exercise, patient, scoliosis, treatment

Özet

Skolyoz, omurganın yana eğriliği olarak tanımlanır. Egzersiz, omurga eğriliğinin gelişiminin azaltılmasında ve bir bireyin yaşam kalitesini artırılmasında önemli bir rol oynar. Bu olgu sunumunun amacı, skolyozlu adolesan bir kız hastada, dereceli arttırılan düzeltici egzersiz programının etkinliğini değerlendirmektir. 10 yaşında 130 cm boyunda, 29 kg ağırlığında adolesan hasta torako lumbar bölgede ağrı ve belinde eğrilik şikayeti ile Adana'da özel bir hastaneye başvurdu. Objektif bulgular, palpasyon ve radyografilerde skolitik eğrilik olduğunu göstermiştir. Cobb yöntemine göre değerlendirilen hastada 12 derece sağ lumbar skolyoz tespit edildi (M 41.95) ve ortopedik testler pozitif. Beş ay boyunca yavaş yavaş artan kuvvet ve germe düzeltici egzersiz programı uygulandı. Beş aylık egzersiz programı sonunda 5 derecelik skolyoz gözlendi (M 41.99).

Anahtar kelimeler: Egzersiz, hasta, skolyoz, tedavi

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Introduction

Scoliosis is a common health problem in children, but it is clinically non-significant and its prevalence is less than 1 in 1000 among children aged 6-14 years (1,2). Scoliosis is a pronounced lateral curvature of the spine. Viewed posteriorly, the spine is vertical but in the scoliotic posture may appear to have an S or

C shape, sometimes accompanied by severe thoracic kyphosis. There is a rib hump, where rotation of thoracic vertebrae causes ribs on the convex side of the curve to protrude posteriorly, and the skin is creased at the waist on the side of the concavity. Minor deviations of one or two vertebrae from the vertical position are common but do not constitute scoliosis. In true scoliosis there is marked asymmetry of the torso between

the left and right sides of the body, anteriorly and posteriorly. Based on radiographs, a patient must have a Cobb angle of 10 degrees or more to be said to have scoliosis (3). As scoliosis becomes more pronounced, the Cobb angle increases (4, 5).

Case Report

A girl patient admitted to a private hospital in Adana who had lumbar curvature and adolescent field pain complain. She was 10-year-old, with 130 cm body height and 29 kg weight. Objective findings indicated that scoliotic curvature through palpation, and radiographs. She had a 12 degree (M 41.95) (Figure 1) thoraco-lumbar curvature obtained using the Cobb method (4) and positive orthopedic tests. She had right side 12 degree lumbar idiopathic scoliosis and it was first diagnosed on November 7, 2015. Exercise was suggested by the specialist doctor regarding the adolescent patient being growth period. The first month of five months treatment; stretching exercises were applied in the opposite direction of vertebrae slope. The muscles, which are

located on the opposite bending sides of the spine, are strengthened by dynamic instrumental or weight-bearing exercises. The personal corrective exercises program, including strength and stretching exercises, was performed four days in a week between 10:30 am/12:00 am. In the first month it was applied 20 minutes and gradually increased 10 minutes each month reaching 60 minutes at the last month (5th month) (Figure 1).

Patient participated growth gymnastics courses with healthy children during the weekends to keep her to be active and to break the monotony. Isometric strength and dynamic stretch exercises were performed on the shortened muscles of the neck, trunk and the lumbar region. The relaxation workouts were performed at the end of the each exercise program. 5-degree scoliosis (M 41.99) was observed at the end of the exercise program on April 11, 2016. Improvement was observed according to x-ray and physical examination results. The scoliosis degree had been decreased 7 unit after the 5-month exercise program.

Figure 1. The adolescent girl patient between November 7, 2015 and April 11, 2016.



Discussion

Scoliosis is a three-dimensional deformity of the spine and the trunk (3). To date, adolescent idiopathic scoliosis (AIS), which accounts for approximately 80% of the reported cases, is the most common orthopedic deformity affecting children. Adolescent idiopathic scoliosis (AIS) is

discovered at 10 years of age or older, and is defined as a curve of at least 10°, measured on a standing radiograph using the Cobb technique (4). While the prevalence of AIS is 0.9% to 12% in the general population, almost 10% of people diagnosed with AIS will require some form of treatment. The peak age that scoliosis is first found in boys is 14, while it is often discovered

in girls at age 11 (6). The number of females requiring treatment is estimated to be 1.0%, while treatment in males is 0.1%.

Exercise plays a important role in decreasing curve progression and enhancing quality of life in adolescents. Patients with thoracic curves ≤ 25 degrees and thoracolumbar or lumbar curves ≤ 20 degrees can effectively perform with exercise alone, in other side patients with thoracic curves of 25–50 degrees and thoracolumbar or lumbar curves of 20–40 degrees require bracing along with exercise (7,8,9). In addition, Negrini et al., 2008, showed that exercise had beneficial effects on the rate of progression and Cobb angle. They found also that exercise had a positive effect in reducing brace prescriptions (10).

Therefore, this study was to evaluate the efficacy of gradually increasing corrective exercises program in an adolescent patient with scoliosis. Individual exercise prescription, which is corrective exercise program increased in a gradual manner, was applied to the patient, because she was 10 years old girl. The training program ended with the patient's 100% compliance to the exercise sessions. Eventually, after the workouts, it was observed that after the treatment period, scoliosis fell to from +12 to -5 degrees. She didn't need any drugs to the patient during the treatment period. Her posture also showed significant improvement at the end of the exercise training program. In addition to the reduction in the thoraco-lumbar measurement, this patient experienced decreased pain, increased range of motion and improved quality of sleep. Results of this study is in agreement with results reported by many studies (7,8,9,10).

In conclusion, this kind of graded increasing duration exercise program could be effective for the treatment of the adolescent girl patients. Particularly corrective exercise program, which was applied in this case, could be strongly recommended in this age group.

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