NEUROMUSCULAR SCOLIOSIS
MODERATE TERM RESULT OF SURGICAL TREATMENT

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INTRODUCTION

Scoliosis is a frequent problem seen in neuromuscular diseases. Differing from idiopathic scoliosis, its emergence in the early years of life and associating disturbances in the most of the patients cause severe disability, and it may be progress even after skeletal maturity has been reached. Close observation of the patients and early interventions are essential.

In this study 21 patients with neuromuscular scoliosis who were surgically treated between 1985-1991 in our clinic were evaluated.

MATERIALS AND METHODS

Twenty-one patients with neuromuscular scoliosis that have been treated surgically is presented. Nineteen of twenty-one patients had poliomyelitis, one had Dejeriné-Sottas disease, and one had spinal muscular atrophy. Eleven of the patients were female and ten male. Average age at the time of operation was 13 years, ranging between 8 and 23.

The mean preoperative curve was 82.5 degree (range 58 to 134 degrees). The preoperative maximum-bending radiographs showed a correction to an average of 59.0 degrees (range 26 to 90 degrees). The mean postoperative curve was 58.6 degrees (range 26 to 100 degrees). The mean loss of correction was 21.67 % at an average duration of 54 months follow-up (range 8 to 84 moths).

The patients were divided into four groups. Group 1 included the two patients who had posterior fusion alone; Group 2 included the fourteen patients who had posterior fusion and Harrington instrumentation; Group 3 included the two patients who had anterior instrumentation and anteriorfusion, followed two weeks later by posterior fusion; and Group 4 included the three patients who had two-staged procedures, consisting of anterior releasing without instrumentation followed by posterior segmental spinal instrumentation usually two weeks later.

In fourteen patients (Group 2) who were treated by posterior Harrington instrumentation and fusion, the average age at operation was 13 years. The average preoperative curve was 80.5 degrees, maximum-bending curve was 55.5 degrees, and flexibility index was 30.4 % in this group. It is reduced to a mean 55.7 degrees postoperatively, and measured an average of 68.4 degrees at the latest control. Thus, average correction was 31.5 %, the average loss of correction was 27.5 %, and the average follow-up time was 56 months.

In five patients who had two stage procedure (Group 3 and 4), the mean preoperative Cobb angle was 88.8 degrees and the mean postoperative angle was 58.0 degrees. This represents a 34 % correction. The mean maximum-bending curves was 68.6 degrees, and an average of flexibility index was 22 %. The mean loss of correction was 6% at an average duration of 20 months follow-up.

There were 10 patients with complications. In 3 patients, rods were broken. In other four patients hook dislodgement were seen. In a sixteen-year old girl who had poliomyelitis, dural leak was occured due to sublaminar wiring. The dura was repaired, and any problems were not encountered at follow-up examinations. In one patient who had T 6 - S 1 instrumentation, pertinent urinary incontinance occured. In one patients who was instrumented by Webb-Morley instrumentation, the screw was broken. This instrument was removed, and posterior Galvestone instrumentation was performed in second stage.

DISCUSSION :

The goals of surgical intervention in neuromuscular scoliosis are to correct the deformity, to prevent progression, to facilitate walking and sitting, to obtain or maintain sitting and / or walking balance and, to prevent or ameliorate neurological deficit. Although close observation and early treatment is advised, there is no consensus on how the patients to be treated. While many authors recommend two-staged approach for severe and rigid curves, Boachie-Adjei et al. reported that they obtained good results by one-staged

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posterior approach even in the patients with curves approximating 90 degree. There is an agreement on using of segmental spinal instrumentation in the treatment of neuromuscular scoliosis whether one-staged or two-staged approach is performed.

Although our series is small in number, Group 2 did not differ statistically in terms of preoperative Cobb angle when compared with Group 3 and 4 (88.8 degrees vs. 80.5 degrees). While the scoliotic curves of the patients who were undergone two-staged procedure were initially more rigid, higher correction rates was obtained in these patients after surgery and the loss of correction was low at later controls. Nevertheless relatively short follow-up period should be considered. Spinal segmental instrumentation is performed in all of the two-staged approachs and when evaluating the outcomes of Group 3 and 4 patients it should be taken into account that this procedure may be responsible for successful results. Also it is hard to decide whether one-staged approach or insufficient instrumentation is responsible for lesser correction and higher correction loss in Group 2.

Since it is known that anterior releasing increases correction rates due to rises in flexibility, it is concluded that combined anterior and posterior procedures offer a better chance for correction of the deformities in neuromuscular scoliosis, especially with severe and rigid curves. Combined procedures seem to be associated with a much less incidence of correction loss probably due to both anterior and posterior fusion.

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