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Adolescent lumbar disc prolapse

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87 adolescents with lumbar disc prolapse treated from 1978 to 1985 were reviewed. The clinical pattern was different from that usually seen in adults, as 41 patients had no leg pain; and signs of neurologic deficit were often absent. Nonoperative treatment was successful in 57/61 patients, and 26 patients underwent discectomy with eventual return to full activity in 23 patients.

Some authors have concluded that no significant differences exist between adolescents and adult lumbar disc disease (Epstein and Lavin 1964, Bradford and Garcia 1971, Bunnell 1982). Others state that adolescent disc prolapse is different in both presentation and eventual outcome (Key 1950, Bulos 1973, Kamel and Rosman 1984).

We report the etiology, clinical features,and results of treatment of 87 consecutive adolescents suffering from lumbar disc prolapse with particular emphasis on radiographic evaluation in establishing the diagnosis.

Patients and methods

From 1978 to 1985, a total of 87 adolescents aged 13–18 years were treated by the senior author for lumbar disc prolapse. In 37 patients there was a history of trauma. Details of the different causes are given in Table 1. There were a variety of symptoms (Table 2), the most common being back pain, which was present in 78 patients. Leg pain was elicited in 46 patients, and 9 patients complained of abdominal pain.

There were many clinical signs, although neurologic abnormalities were often absent. Limited range of movement of the spine, particularly forward and lateral flexion, was a common feature in all the patients. Positive straight leg raising test and tension signs were elicited in patients with leg pain. However, marked limitation of straight leg raising was present in half the cases without leg symptoms. Pain on deep pressure over the affected disc level was present in most of the patients. Fourteen patients presented with painful nonstructural scoliosis, 6 of whom had leg pain.

Radiographically, there were congenital anomalies at the lumbosacral junction in 12 patients and Schmorl's nodes were evident in 38 patients. Prior to 1981, water-soluble myelography was performed in all the patients included in this series.

Since 1981, CT examination was the method of choice. Asymmetric loss of the normal ventral epidural fat and/or the presence of asymmetric increased density ventrally or ventrolaterally in the canal were important criteria in our series. However, myelography has been performed in 2 patients since 1981 to exclude other pathology, such as a spinal cord tumor. Discography was a supplementary method of investigation in 9 patients. Adolescents with normal or equivocal radiographic examinations were excluded from our study.

Bed rest was the basic treatment for all the patients, combined with analgesics, muscle relaxants, and heat. Forty-seven patients were hospitalized for 5–16 days, mainly for traction. A lumbosacral corset was used in the majority of patients. As pain subsided, gradual return to normal activity was advised.

In 26 patients, nonoperative management failed to improve their symptoms and lumbar discectomy was carried out. In this series, spinal fusion was not carried out. Ten were subjected to surgery in the absence of leg pain, but they had marked limitation of straight leg raising.

All the patients were followed up for a minimum of 12 months and discharged then if they had remained almost asymptomatic for about 6 months. Based on the

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patients' assessments of the current state of their pain, results were classified as excellent (no pain), good (occasional pain with heavy activity), or poor (frequent low back pain or sciatica).

Results

Fifty-seven patients were considered to have an excellent or good result from a nonoperative regimen. Thirty patients had not improved from rest and medications. Of these 30, 4 declined surgical intervention and continued to have pain, only in 2 combined with sciatica.

Twenty-six patients were subjected to disc excision. Of these, 13 were at the L5/S1 level, 10 at the L4/5 level, and 3 at both levels. At operation the disc was found to be bulging across the whole width in 25 cases. Four patients had localized prolapse at the L5/S1 disc. There was no tissue sequestration. The disc material resembled the substance of the normal nucleus. There were no operative or postoperative complications.

All but 3 patients had an excellent or good result after disc excision with eventual return to full activity, but with slow recovery of spinal mobility. Of the 3 patients with a poor result, 1 had a reexploration of the same disc (L5/S1) and the disc above, but no prolapse was found. The pain improved after the second procedure, but as it was frequent this case was classified as a poor result.

Of the 87 patients, 14 had nonstructural scoliosis at presentation to our clinic. In 6 patients the scoliosis resolved with nonoperative treatment, of whom 3 continued with pain, but declined surgery, and were classified as poor results. The remaining 8 adolescents were operated on, and although there was a dramatic pain relief postoperatively, the scoliosis took a few months to resolve.

Table 1. Cause of lumbar disc prolapse in 87 adolescents

Cause	No. of cases
Unknown	50
Contact sport	12
Gymnastics	8
Fall	7
Motor vehicle accident	6
Heavy lifting	4

Table 2. Symptoms at presentation of 87 patients of adolescent lumbar disc prolapse

Presentation	No. of cases
Back and unilateral leg pain	21
Back and bilateral leg pain	16
Back pain only	33
Back and abdominal pain	8
Unilateral leg pain only	8
Abdominal and unilateral leg pain	1

A total of 80 of our 87 patients had an excellent or good result.

Discussion

Only 2 percent of all prolapsed discs occur in children and adolescents (Bunnell 1982). The reported incidence of lumbar disc excision in this age group has ranged from less than 1 to 7 percent (Kurihara and Kataoke 1980, DeOrio and Bianco 1982). Yet, nonoperative treatment remains the mainstay , as evidenced by the fact that we operated on only one third of our patients with radiographically proven disc prolapse.

The clinical findings are not always the same in young people as in adults. Although back pain was the main symptom in our series, leg pain was absent in 41 patients, of whom 10 underwent discectomy with a favorable outcome. Fourteen patients presented with painful scoliosis that took up to 6 months to resolve in both the nonoperative and operative groups. However, pain persisted in half of the nonoperative group. Abdominal pain was the chief complaint in 9 patients. In our series, signs of neurologic deficit were often absent.

Water-soluble myelography was the examination of choice earlier in the series. However, computed tomography has proven to be an invaluable procedure in the diagnosis of lumbar disc prolapse. Discography occasionally has a place in investigating patients with persistent severe symptoms and normal or equivocal myelograms or CT scans.

The operation always showed a swollen disc with increased nuclear tension and no tissue sequestration as described by Taylor et al. (1981). Only 4 discs out of 29 explored had localized prolapse.

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