Transient kyphotic deformity of the thoracolumbar junction resulting from a large abdominal cyst: a case report

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Abstract

BACKGROUND CONTEXT: Pronounced kyphosis of the thoracolumbar junction is a common orthopedic problem in adolescents and may require prolonged bracing therapy or correction spondylodesis.

PURPOSE: To describe a case where a kyphotic deformity was related to gynecological instead of spine pathology.

STUDY DESIGN: Case report.

METHODS: A 17-year-old girl presented with a structural hyperkyphosis of the thoracolumbar spine and radiographic changes of the involved vertebral end plates.

RESULTS: The thoracolumbar hyperkyphosis appeared to have evolved from a massive intra-abdominal ovarian cyst. Endoscopic paracentesis of the cyst resulted in a complete regression of the hyperkyphosis.

CONCLUSIONS: A hyperkyphosis is not always related to spine pathology, and other potential causes must be excluded before bracing therapy is initiated.

Keywords: Case report; Hyperkyphosis; Etiology; Ovarian cyst

Introduction

Hyperkyphosis of the thoracolumbar spine is a frequently encountered problem in the adolescent age group. The reported incidence is up to 8% of the population [1–3]. The most common cause of a pronounced kyphosis of the thoracolumbar junction is a Scheuermann disease [4]. Adolescents with Scheuermann disease are often treated with prolonged bracing therapy in an attempt to reduce the deformity [3,5]. For the diagnosis of true Scheuermann disease, specific radiographic criteria, such as the presence of a thoracolumbar hyperkyphosis, wedge-shaped deformity of three adjacent vertebra and irregularities of the involved vertebral end plates [3,6], have to be met. The social impact of the diagnosis of Scheuermann disease on an adolescent should not be underestimated. In each case of a pronounced kyphosis, the presence of the other radiographic criteria should be carefully checked. A case report is presented where a structural kyphotic deformity of the thoracolumbar spine appeared to originate from a massive abdominal tumor.

Case report

A 17-year-old girl with a kyphotic deformity of her spine was referred to our department for treatment of Scheuermann disease. Apart from some fatigue, there were no complaints. She was a fanatic in gymnastics. No trauma was reported. There was no family history of spinal deformities.

On physical examination a healthy girl with a thoracolumbar hyperkyphosis was seen (Fig. 1). There were no tight hamstrings, which is an often-encountered finding in Scheuermann disease [3]. In addition to her spinal deformity, a dull percussion of the upper abdomen was noted.

Radiographic examination revealed a pronounced kyphosis of the thoracolumbar junction. A kyphotic angle of 45 degrees was measured between vertebra T9 and L2.
(Fig. 2, A). Some irregularities of the end plates were noted. However, wedging of the vertebral bodies was not present. A bilaterally elevated diaphragm and a homogeneous grey appearance of the abdomen were also noted (Fig. 2, A). Subsequent ultrasonography revealed a massive cystic tumor extending from the lower pelvis to the diaphragm (Fig. 3).

During laparoscopy, 7 liters of clear fluid could be aspirated from the cyst, which appeared to originate from the right ovary. Histological analysis of the specimen revealed a serous cyst adenoma.

Two years after surgery, the sagittal alignment of her spine had recovered completely, without bracing therapy. The kyphotic Cobb angle between T9 and L2 had decreased from 45 to 20 degrees (Fig. 2, B). The patient was without any complaints and had returned to her gymnastic activities.

Discussion

A kyphotic growth disturbance of the thoracolumbar spine is not always related to a Scheuermann disease. Especially when not all radiographic criteria for a Scheuermann disease are present, chances are that there is an entirely different cause for the deformity. In our patient a massive intra-abdominal tumor appeared to be responsible for the development of a hyperkyphosis of the thoracolumbar junction.

Especially in the adolescent age group, where there is a relatively rapid skeletal growth, the spine is vulnerable for the development of a spinal deformity [2,6,7]. It is important to come to the right diagnosis in order to initiate the appropriate treatment. This patient could have been misdiagnosed, as with Scheuermann disease, and subsequent treatment with...
bracing therapy would then have resulted in adverse effects on further growth of the spinal column together with a discomfort from the brace.

In this case report there appeared to be no spine pathology present at all. Initially, radiographic changes of the thoracolumbar spine were present similar to those observed in a Scheuermann disease. However, the kyphotic deformity appeared to be completely reversible after removal of the tumor. A temporary change in the sagittal contour of the thoracolumbar spine itself is not uncommon and indeed an entirely physiologic finding in pregnant women. However, the relation of a spinal deformity to pregnancy is more easily established than to an unknown intra-abdominal tumor from a different origin.

In 1965, Marshall Urist reviewed the early progress in the understanding of the concept of osteoinduction [1]. He expressed the idea that, in the proper environment, progenitor cells convert to bone-forming cells and produce bone. Building on that concept, subsequent research has shown how substances such as bone morphogenic protein can stimulate bone formation in clinical situations.

References


References