Spondyloenchondrodysplasia: a rare cause of short stature

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Skeletal dysplasias (osteochondrodysplasias) are a group of diseases that must be included in the differential diagnosis of disproportionate short stature. History, clinical and radiologic findings and consanguinity are important features to be considered when a specific diagnosis is investigated. Spondyloenchondrodysplasia is a very rare skeletal dysplasia characterized with enchondromas in the long bones and platyspondyly. Manifestation of the disorder may include neurological involvement (spasticity, intracranial calcifications and mental retardation) and immune dysfunction. Herein, we report a 12-year-old boy who admitted to our clinic with short stature, who was born to consanguineous parents. He presented clinical (significant widening of wrists, ankles and knees) and radiologic (enchondromatous lesions in the metaphysis of long bones) features of spondyloenchondrodysplasia but did not yet have neurologic or immunologic involvement.

Key words: skeletal dysplasia, spondyloenchondrodysplasia, enchondroma.

Spondyloenchondrodysplasia (SPENCD) is a very rare skeletal dysplasia that presents with multiple enchondromata in the metaphyses of the long bones and platyspondyly[1]. SPENCD may have a heterogeneous clinical spectrum, and some patients with spasticity, mental retardation and cerebral calcifications were described recently[2]. Autoimmune manifestations (such as autoimmune thrombocytopenic purpura, hemolytic anemia, thyroiditis, systemic lupus erythematosus [SLE]) may also accompany SPENCD[3]. Herein, we report a boy with specific clinical and radiologic signs of SPENCD but no neurologic or autoimmune disorders.

Case Report

A 12-year-old boy was admitted to the pediatric endocrinology outpatient clinic with short stature. Short stature had been noticed for the last three years. The birth height and weight were not known. He was the first child of consanguineous (first-cousin) parents. His family history revealed that his two uncles also had short stature.

On physical examination, his height was 123 cm (standard deviation score [SDS]: -3.8) and body weight: 22.3 kg (SDS: -3.2). Arm span-height difference (3.1 cm) and sitting height/height ratio (0.50) were normal. His bone age was 10 years (Greulich-Pyle). Enlargement/widening of his wrists, ankles and knees was significant (Fig. 1). He had increased lumbar lordosis. Puberty (Tanner) stage was 1. He had normal intelligence and no neurologic abnormalities. The other systemic examinations were normal.

Laboratory investigations revealed normal complete blood count, urine analysis, renal and liver function tests, thyroid hormone levels, and serum immunoglobulins. Autoimmune markers were also negative.

Radiographic findings showed presence of radiolucent, multilobulated non-ossifying lesions (enchondromatous lesions) in the metaphyses of the distal ulnae, radii, proximal humeri, and proximal fibulae. Distal femoral and proximal tibial epiphyses showed irregularities. Lateral spine radiographs showed platyspondyly in the thoracal and lumbar vertebrae and also nodular lesions involving the vertebral bodies and irregularities of the vertebral endplates (Fig. 2).

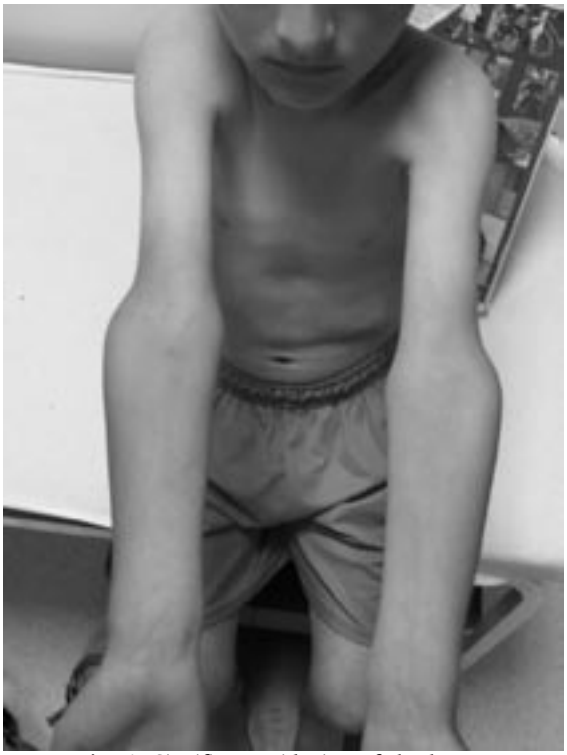

Fig. 1. Significant widening of the knees.

Our patient was diagnosed as SPENCD based on his clinical and radiologic findings. He has been followed in our outpatient clinic in terms of growth velocity and probable immunologic and neurologic abnormalities.

Discussion

Spondyloenchondrodysplasia (SPENCD) was first described by Schorr et al. in 1976[1]. They reported two brothers affected by enchondromatosis with marked involvement of the spine including platyspondyly, and they defined SPENCD as the presence of radiolucent spondylar and metaphyseal lesions that represent islands of chondroid tissue within bone[1]. It is a genetic disorder with autosomal recessive inheritance. Short stature is a common finding. Some patients have disproportionately short limbs in severe cases. In others, body length and proportions are in the lower normal range. Increased lumbar lordosis, kyphoscoliosis, barrel chest, genu valgum or varum, short and broad hands, dolichocephaly, turricephaly, frontal bossing, and mild midface hypoplasia are occasional findings. Joints may be prominent or painful[4].

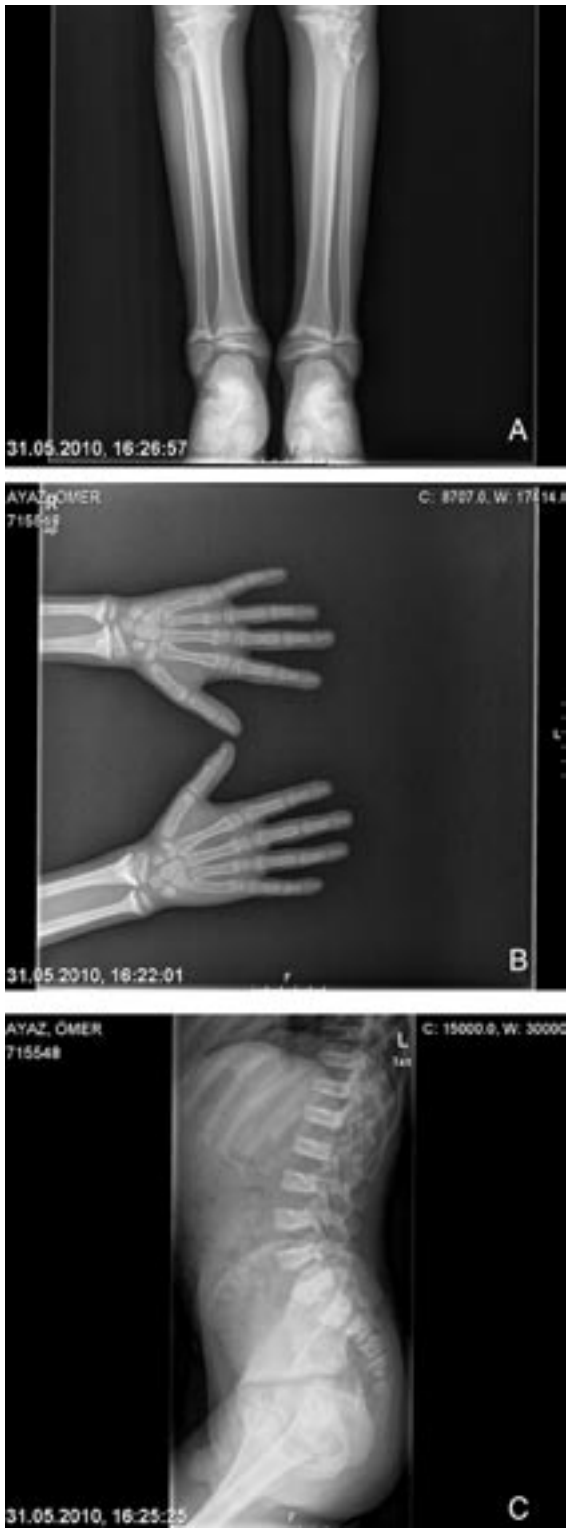

Fig. 2.: A) Enchondromatous lesions in the metaphysis of the proximal fibulae and irregularities in the proximal tibial epiphyses. **B)** Enchondromatous lesions in the metaphysis of the distal radius and irregularities in the distal ulnar metaphyses. **C)** Platyspondyly in the thoracal and lumbar vertebrae and nodular lesions in the vertebral bodies.

The present case had short stature, but sitting height/height ratio was normal. His lumbar lordosis was increased, and joints, particularly wrists, ankles and knees, were prominent but not painful.

Spondyloenchondrodysplasia (SPENCD) must be differentiated from other spondylometaphyseal dysplasias (SMDs). The peculiar form of the vertebral bodies and the enchondroma-like lesions of the tubular and flat bones are the most helpful findings in the differential diagnosis. A difficult differential diagnosis is SMD of the Kozlowski type[5]. Kozlowski type is the most commonly seen SMD with autosomal dominant transmission, but because of mutations, X-related recessive transmission is also possible. Patients are normal at birth; in early infancy, growth retardation, truncal shortness, joint movement restriction, genu valgum, and mild scoliosis can be seen. In adulthood, significant dwarfism develops. Radiographic findings are widening, scalloping and irregularity of the metaphyses of tubular bones, shortness of the femoral neck, progressing coxa vara, severe and diffuse platyspondyly of vertebral bodies, delay in ossification of carpal bones, and delay in bone age[6].

Spondyloenchondrodysplasia (SPENCD) has also been included in the differential diagnosis of enchondromas. Following the original report (by Schorr[1]), most authors suggested inclusion of SPENCD in the group of enchondromatoses[3,4]. Diagnostic criteria for SPENCD, which were described by Schorr[1], were platyspondyly with irregularity of both upper and lower endplates and nodular lesions localized at the vertebral body, and the radiolucent, rounded or multilobulated nonossifying lesions extending from the growth plate into the metaphysis and diaphysis[1]. The platyspondyly and typical enchondromatous lesions in the long bones were the diagnostic skeletal findings in the reported case.

Despite the radiographic criteria of SPENCD, clinical manifestations are reported to be heterogeneous. Some patients have spasticity, intracranial calcifications and mental retardation. Tüysüz[2], Renella[3] and Navarro[7] reported patients with central nervous system manifestations. Our patient had no neurologic symptoms.

In addition to the neurologic manifestations, immune dysregulation may also accompany. Sjögren syndrome, polymyositis, hypothyroidism, and severe scleroderma were reported recently[7]. SLE, autoimmune Coombs-positive hemolytic anemia and autoimmune thrombocytopenia are the other autoimmune disorders that may appear with SPENCD[3,7]. Immunodeficiency and inadequate antibody formation may also accompany skeletal changes[2]. Our patient's serum immunoglobulins were normal, and autoimmune markers were negative.

A pathophysiological relationship between neurologic and immune manifestations and skeletal abnormality is not yet known. There is no chronological correlation between the appearance of symptoms and cerebral lesions[3]; therefore, we plan follow-up regarding the aforementioned neurologic and immunologic manifestations. The family has been genetically counselled accordingly, with special emphasis on autosomal recessive inheritance pattern.

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