

## A CASE OF JUVENILE CREST SYNDROME REPRESENTING AS FAILURE TO THRIVE

### *BÜYÜME GERİLİĞİ OLARAK BAŞVURAN JUVENİL CREST SENDROMU*

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#### ABSTRACT

The CREST syndrome refers to the manifestations of calcinosis, Raynaud's phenomenon, esophageal involvement, sclerodactily and telangiectasis. Onset during childhood is very uncommon and fewer than 100 cases have been reported in the literature. We describe a 9-year-5 month girl diagnosed as CREST syndrome whose symptoms were present since 1-year-old. Since that time she had been followed as growth failure. This patient points out that growth retardation in childhood may be the initial manifestation of CREST syndrome.

#### ÖZET

CREST sendromu, kalsinozis, Raynaud fenomeni, ösafajial tutulum, sklerodaktili ve telenjektazilerle karakterize bir hastalıktır. Çocukluk çağıında başlaması oldukça nadirdir ve literatürde 100'den az olgu bildirimini mevcuttur. Bu makalede, şikayetleri 1 yaşından beri olan 9 yaş 5 aylık CREST sendromu tanısı alan bir kız olgu tanımlanmıştır. Olgu o tarihten itibaren gelişme geriliği tanısıyla izlenmiştir. Bu olgu çocukluk çağıında karşımıza çıkan büyüme gelişme geriliği tablolarının CREST sendromunun başlangıcına işaret edebileceğini vurgulaması açısından dikkat çekicidir.

#### INTRODUCTION

Growth assessment is an essential component of pediatric health surveillance. Many biophysiologic and psychosocial problems can adversely affect growth, and aberrant growth may be the first sign of underlying problem. The most powerful tool in growth assessment is the growth chart used in combination with accurate measurements of height, weight, and head circumference (1). A third of children younger than 5 years in developing countries have linear growth retardation or stunting (2), defined as height-for-age below -2 SD of reference values. Stunting is a measure of chronic undernutrition and is caused by poor nutrition often compounded by infectious diseases(3).

Scleroderma is a chronic multisystem disorder of unknown cause characterized by fibrosis of skin, blood vessels and visceral organs. The CREST syndrome refers to the manifestations of calcinosis, Raynaud's phenomenon, esophageal involvement, sclerodactily and telangiectasis. CREST (also called limited cutaneous scleroderma) has a more favorable prognosis than the diffuse form of scleroderma. Onset during childhood is very uncommon, and fewer than 100 cases have been reported in the literature(4,5). There is no specific treatment for scleroderma.

#### CASE

A 9-year-5 month girl applied for inability to put on weight. She had progressive dysphagia, loss of muscle strength and tightening of the skin especially over the fingers, hands and face since the age of one year. Shortness of breath or mid-chest pain were absent. On physical examination, she weighed 19.8 kg (under 3rd percentile), and her height was 125.5 cm (between 3rd and 10th percentiles). Her weight for height and height for age indexes were 81.3 %, 93.2 % respectively. She had expression-less face with pinched nose and small mouth (Figure 1). Her skin showed scleroderma-like changes at the fingers, hands, arms, feet, legs, trunk and head. She had shiny hands and with tapering fingers (Figure 2). Raynaud's phenomenon was observed. Telangiectasia over the extensor region of arms and oral mucosa was also present. Cardiovascular and respiratory system examinations revealed no pathological signs.

Screenings for renal functions by routine tests and cardiac functions were normal. The stool examination showed no signs of malabsorption. Chest x-ray was normal. The histology of the affected skin was consistent with systemic sclerosis. Rheumatoid factor (RF), antinuclear antibodies (ANA), anti-double-stranded DNA (aDS-DNA), Scl-70 and

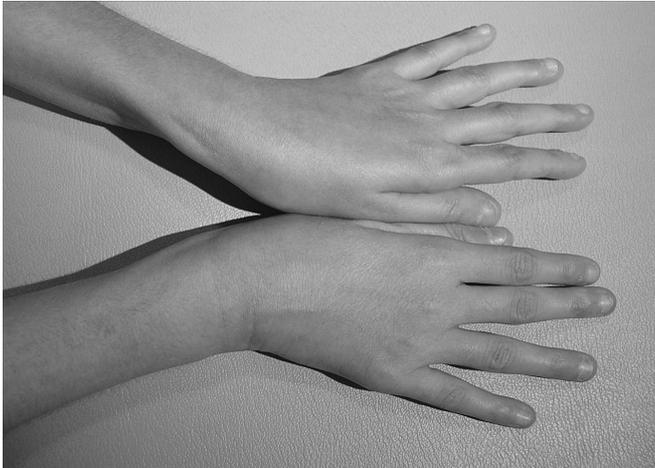
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**Figure 1. Minimal ectropion, expressionless face with pinched nose and small mouth.**



**Figure 2. Flexion contractures and loss of subcutaneous fat tissue of hand fingers.**

anticentromere antibodies (ACA) were negative. Based on the presence of Raynaud's phenomenon, esophageal involvement, sclerodactyly and telangiectasia the diagnosis of CREST syndrome was made. Penicillamine treatment was given at 2.5 mg/kg/day dose. A high-protein and high-calorie diet was advised. One month later she weighed 21.5 kg (between 3rd and 10th percentiles), and her height was 127.5 cm (between 3rd and 10th percentiles). Her weight for height was 84.7 %. Her height for age was 94.3 %. Three months after penicillamine treatment, skin thickness around her forehead and hands were improved and dysphagia was diminished.

## DISCUSSION

The diagnosis of failure to thrive, usually a diagnosis of children under 3 yr of age, is considered if a child's weight is below the 5th percentile, if it drops down more than two major percentile lines, or if weight for height is less than

the 5th percentile. Weight for height below the 5th percentile remains the single best growth child indicator of acute undernutrition. A body mass index less than the 5th percentile also indicates that a child is underweight.<sup>1</sup> Severe childhood undernutrition has been noted in chronically ill patients in neonatal or pediatric intensive care units as well as among patients with burns, HIV, cystic fibrosis, failure to thrive, chronic diarrhea syndromes, malignancies, bone marrow transplantation, and inborn errors of metabolism (6). Controlling for socio-economic covariates, prospective cohort studies consistently show significant associations between stunting by age 2 or 3 years and later cognitive deficits, school achievement, and dropout. In young children, underweight and stunting are also associated with apathy, less positive affect, lower levels of play, and more insecure attachment than in non-growth-retarded children. Longitudinal studies show more problems with conduct, poorer attention, and poorer social relationships at school age (3).

All forms of scleroderma are rare in childhood. The peak age at onset for systemic sclerosis is 30-50 year, with a female:male ratio of 3:1. Children represent <10% of all cases. The most common form in childhood is localized scleroderma, which may take the form of morphea or linear scleroderma.<sup>7</sup> Localized scleroderma is often benign but may cause significant deformity if it occurs on the face or extends across joint surfaces. Progressive systemic sclerosis is much less frequent in childhood but may have a rapidly progressive and ultimately fatal course. The two forms usually do not overlap. CREST (calcinosis, Raynaud's phenomenon, esophageal dysfunction, sclerodactyly, and telangiectasia) syndrome also may occur in childhood with manifestations similar to those seen in adults. In addition, some children in whom mixed connective tissue disease is initially diagnosed ultimately develop progressive systemic sclerosis. Research into both the causes and the optimal therapy for childhood scleroderma is hampered by the small number of patients treated at individual centers. This limitation has made it difficult to perform well-controlled studies (8). In Scleroderma, gastrointestinal involvement can result in malabsorption and failure to thrive. Failure to thrive has been described, but only in patients with extensive visceral involvement (9). Wullfraat and et al is described two children with atypical generalized scleroderma and severe failure to thrive in the absence of gastrointestinal symptoms. (10).

This report describes a case with early-onset CREST syndrome characterized by generalized skin changes, failure to thrive, dysphagia, telangiectasia and Raynaud's phenomenon. Juvenile CREST syndrome is a very rare disease in childhood. D-penicillamine treatment had significantly greater effect in improving skin thickening than other disease modifying agents (8). In childhood-onset CREST syndrome, treatment with disease-modifying agent penicillamine may be successful in arresting or reversing cutaneous and visceral manifestations as in our case.

This patient points out that growth retardation in childhood may be the initial manifestation of CREST syndrome. As in

this case, physicians should consider connective tissue diseases which presents with dysphagia and failure to thrive.

#### REFERENCES

1. Keane V. Chapter 14: Assessment of growth. In: Kliegman RM, Behrman RE, Jenson HB, Stanton BF(eds) . Nelson textbook of pediatrics 18th edition: Saunders, an imprint of Elsevier Inc. 2007; 70-74
2. UNICEF, The State of the World's Children 2005: childhood under threat, UNICEF, New York (2004).
3. Walker PS, Wachs TD, Gardner JM, Lozoff B, Wasserman GA, Pollitt E, Carter JA and the International Child Development Steering Group. Child development: risk factors for adverse outcomes in developing countries. Lancet 2007;369:145-157.
4. Alvarez O, Cabral D, Prendiville JS, Stringer D, Petty RE, Malleson PN et al. Intestinal pseudo-obstruction as an initial presentation of systemic sclerosis in two children. Br J Rheumatol 1997;36:280-284.
5. Goldenberg J, Pinto-Pessoa A, Odete-Hilario M. Scleroderma in children: A report of eleven cases. Rev Rheum (Engl Edn) 1993;60:99-104.
6. Heird WC. Chapter 43: Food insecurity, hunger, and undernutrition. . In Kliegman RM, Behrman RE, Jenson HB, Stanton BF (eds). Nelson textbook of pediatrics 18th edition: Saunders, an imprint of Elsevier Inc. 2007; 225-232.
7. Lehman TJ. Systemic and localized scleroderma in children. Curr Opin Rheumatol. 1996;8:576-579.
8. Seibold JR. Systemic sclerosis. In: Klippel JH, Dieppe PA (eds). Rheumatology . St. Louis: CV Mosby Co. Yearbook Europe Ltd; 1994:8.1-8.12.
9. Uziel Y, Miller ML, Laxer RM. Scleroderma in children. Pediatr Clin North Am 1995;42:1171-203.
10. Wulffraat NM, Woo P, Rooney M, De Meer K, Kuis W. Atypical juvenile generalized scleroderma presenting as polyarthritis and failure to thrive. Br J Rheumatol 1998; 37:222-7.