Aarskog-Scott syndrome: Report of 7 cases and review of literature

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Abstract
Aarskog-Scott syndrome (ASS) is an X-linked disorder, characterized by facial, skeletal and genital anomalies. It is also known as faciogenital dysplasia (FGDY, OMIM No. 305400) and facio-digito-genital syndrome. The main features are short stature, hypertelorism, short hands and feet, and shawl scrotum. We are reporting 7 cases with this syndrome that were referred to our genetic center from 1995 to 2006 for clinical genetic counseling and cytogenetic study.

Key words: Aarskog-Scott syndrome; Genes, X-linked

Introduction
Faciogenital dysplasia, (FGDY, OMIM No. 305400) or Aarskog-Scott syndrome (ASS) was first described, separately by Aarskog and Scott at the third conference (1970) on the clinical delineation of birth defects, in two different families with multiple affected males (1,2). The syndrome is an X-linked disorder characterized by short stature, craniofacial dysmorphism (hypertelorism, downslanting palpebral fissures), short hands and feet and urogenital abnormalities (3). Birth size is usually normal and growth retardation does not become evident until the age of two to five. Most patients are below the third percentile in height, adults rarely exceeding the third percentile. The facies is especially characteristic. The forehead is broad, often with a widow’s peak and prominent metopic ridge. They have round face, hypertelorism, downslanting palpebral fissure, mild ptosis of one or both eyelids, short broad and somewhat stubby nose with anteverted nostrils. The philtrum is long and the midface somewhat flattened. Frequently, there is a broad upper lip with a linear dimple below the lower lip. The earlobes are often thick, with malformed upper helices. The hands are short and wide with hypermobile fingers and hyperextensibility of the proximal
interphalangeal joints and mild flexion deformity at the distal interphalangeal joints. Clinodactyly of fifth fingers is also seen. There may be mild cutaneous syndactyly.

Bilateral simian creases and a single crease in the fifth fingers are frequent. The feet are broad, with bulbous toes. The joints in the hands, knees, and feet are lax. The external genital anomalies are striking; the scrotal fold extends ventrally around the base of the penis, causing the scrotum to appear bifid, somewhat resembling a shawl thrown around the neck; hence termed “shawl scrotum”.

There are often unilateral or bilateral cryptorchidism and inguinal hernia. There are various orthopedic problems, including mild cubitus valgus, internal tibial torsion, metatarsus varus, pes planus, pectus excavatum, and hypermobility of interphalangeal joints. Bone age is retarded. Puberty is often delayed and adult height rarely exceeds 160 cm.

Hypodontia, retarded dental eruption, broad central upper incisors (permanent dentition), orthodontic problems and some degree of maxillary hypoplasia have been seen (3). Mild to moderate mental deficiency is relatively frequent. Hyperactivity and attention deficit disorders are common, particularly in the mentally subnormal patients (4).

Aarskog-Scott Syndrome is an X-linked condition. It is caused by mutation of the FGD1 gene mapped to the X p11.21 region (5). FGDY1 appears to code for a Rho/Rac guanine nucleotide exchange factor, a class of proteins involved in growth regulation and signal transduction, suggesting a mechanism through which the growth anomalies seen in the Aarskog-Scott Syndrome are produced (3).

**Case report**

Summary of clinical manifestations of 7 cases of Aarskog-Scott syndrome referred to Kariminejad – Najmabadi Pathology & Genetics Center, is shown in table 1.
Among the patients referred to our genetic center for psychomotor retardation, from 1995 to 2006, seven cases were diagnosed with Aarskog-Scott Syndrome. Round facies, hypertelorism, down-sloping palpebral fissures, small nose and broad philtrum were constant features in all seven patients. Ptosis was observed in 5 out of 7, and 4 out of 7 had maxillary hypoplasia, hypodontia, short hand, clinodactyly of the fifth finger, pectus excavatum and shawl scrotum. All cases were male, consistent with X-linked inheritance of the syndrome. Most cases (6 of 7) were referred below the age of 7 years. Most of the patients showed some degree of short stature, and all of them had mild to moderate mental retardation.

References