Atopic dermatitis is unusual presentation of Smith-Magenis Syndrome (SMS)

Khoulood Al Mahmood, MD *
Hessa Al Buainain, MD **

Summary:
We report a five years old Qatari female with Smith-Magenis syndrome, presented with atopic dermatitis,which is an unusual clinical skin manifestation of this syndrome. The family history was unremarkable particularly for atopy.

Introduction:
Smith-Magenis Syndrome(SMS) is a relatively rare genetic disorder, first described in 1982 by Ann C.M. Smith (a genetics counselor) and Ellen Magenis (a pediatrician,medical geneticist and cytogeneticist at the Oregon Health Sciences Uuniversity),the syndrome results from a deletion on chromosome 17, specifically referred to as deletion 17p11.2, the chromosome deletion is small(a microdeletion) and difficult to detect. Most individuals are not diagnosed until they receive specialized genetic tests, usually in mid-childhood or adulthood, this syndrome does not run in families.
The exact incidence of SMS is not known, the disorder is rare and estimated to occur in approximately 1 in 25,000-50,000 live births, only about 150 cases have been identified worldwide from a diversity of ethnic groups, with an equal sex ratio.

Diagnostic criteria/ definition
The diagnosis is based on clinical examination.
The SMS is characterized by:

- Mental retardation with speech delay
- Specific behavioral phenotype and major sleep disturbances
- Mild dysmorphy

The diagnosis is confirmed by blood tests called chromosome(cytogenetic) analysis and utilize a technique called FISH(fluorescent in situ hybridization) to detect deletion on chromosome 17.

Clinical description:
Common features of SMS include

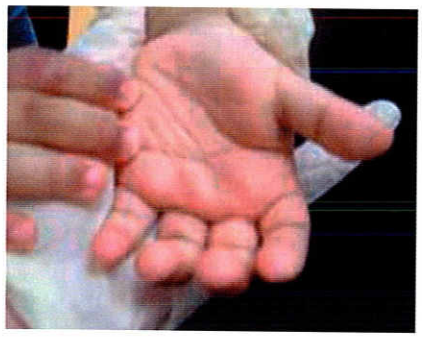
- history of infantile hypotonia and failure to thrive
- distinct facial features: brachycephaly (figure (1),flat mid face area, prominent forhead, eyelid folds, broad nasal bridge, protruding jaw, and low-set ears.
- brachydactyly(short fingers and toes) with broad hands clinodactyly of the fifth fingers, fingertip pads and abnormal dermatoglyphic (figure 2).
- short stature.
- hoarse deep voice
- ocular abnormality include iris anomalies, microcornea, strabismus, cataract and myopia.
- abnormal teeth, alignment, and hypoplastic nails
- chronic ear infections.
- congenital heart defects(52%), otolaryngologic abnormalities (94%), hearing impairment (68%), cleft palate, signs of peripheral neuropathy(75%), seizures(26%), scoliosis (65%), renal or genital anomalies(35%).
- endocrine and immunologic abnormalities include low thyroxin levels, low immunoglobulin level,hypercholesterolemia mental retardation (IQ scores ranged between 40 and 60) with speech delay is a constant feature associated with self-injurious behavior, temper tantrums, spasmodic upper body sqeeze, insensitivity to pain.
- hyperactivity and attention deficit cause behavioral problems at home and school.
- major sleep disturbances include early sleep onset, instability of sleep, early sleep offset.

Abnormalities in the circadian rhthm of plasma, urinary melatonin and urinary 6-sulfatoxymelatonin, sleep disturbances and behavioral problems may be partly related to inappropriate diurnal melatonin release.

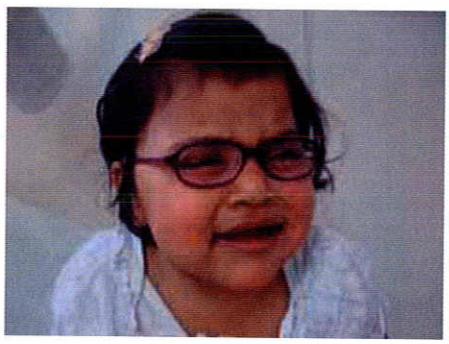
Case report:
Five years old Qatari female, product of full term normal vaginal delivery presented to dermatology clinic with a history of bronchial asthma and severe atopic dermatitis since birth with the following features:
Mild mental retardation
Abnormal behavioral(crying without reasons)
Recurrent chest and ear infections
Myopia in both eyes
Cleft palate and abnormal alignment of her teeth
Hypotonia
Short stature
Broad hand with short fingers
Bossing of forehead
Abnormal dermatoglyphic

* Resident, Department of Dermatology, Qatar
**Consultant, Department of Dermatology, Qatar

Long palpebral fissure with eversion of lateral half of eyelids
Large prominent ear lobes
Right non-obstructive hydronephrosis and hydroureter.
family history: no history of consanguinity.
She is the youngest, has two normal brothers and older normal sister.



Figure(1) Flat broad head



Figure(2) Abnormal dermatoglyphic Prominent finger pads Broad nasal bridge Long palpebral fissure eversion of the lateral half of the eyelids

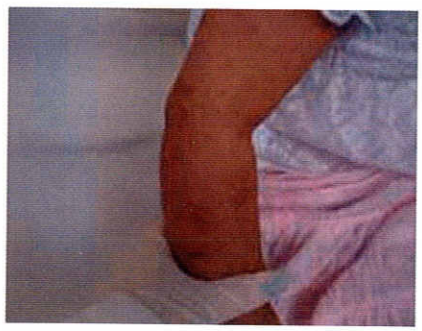


Figure (3)
Severe xerosis with eczema and hyperpigmentation

Patient diagnosed clinically by geneticist as kabuki syndrome.

Investigation:
Complete blood count:within normal range
Blood chemistry: showed high albumin and urea nitrogen level
Thyroid, parathyroid function: normal
Amino acids analysis in plasma: normal
Pyruvate level in the blood: normal
Spot urine for organic acids: normal
ECG: normal
CT(brain): showed hypoplastic inferior vernix
Chromosomal karyotype: normal
Genomic microarray study showed microdeletion in 17p11.2
According to the result of the genomic microarray, the patient was dignosed with Smith-Magenis syndrome

Disscusion:
Smith-Magenis Syndrome and Kabuki Syndrome can be presented by broad hands, brachydactyly,short fifth finger abnormal dermatoglyphic, abnormal nails and teeth and dysmorphic facial features but there are no cases reported the association between the Smith Magenis Syndrome and atopic dermatitis. This is the first case to be reported as pateient with Smith –Magenis Syndrome present with atopic dermatitis in absence of family history of atopy and atopic dermatitis which is unusual presentation of this syndrome.

References:
American journal of medical genetics volume 41, issue, page 225-229, 3 June 2005.
Gale Encyclopedia of Genetic disorder 2005.
AmericanJournal of Human genetics,49:1207-18.
Greenberg, F., Lewis, R.A., L.et al. (1996).
Multi-disciplinary clinical study of Smith-Magenis Syndrome.
Smith ACM, McGavranL, RobinsonJ, et al:interstitial deletion of (17) in nine patients.Am J Med Genet 1986,24:393-414.