Name
Frontonasal Dysplasia

Alternative Names
FND
Median Facial Cleft Syndrome

Record Category
Disease phenotype

WHO International Classification of Diseases
Congenital malformations, deformations and chromosomal abnormalities > Congenital malformations and deformations of the musculoskeletal system

OMIM Number
136760

Mode of Inheritance
Isolated cases

Gene Map Locus
N/A

Description
Frontonasal dysplasia is a rare midline anomaly characterized by malformations of the central portion of the face, especially of the forehead, the nose, and the philtrum. True ocular hypertelorism; broadening of the nasal root; a median facial cleft affecting the nose, upper lip, and palate; uni- or bilateral clefting of the alae nasi; lack of formation of the nasal tip; anterior cranium bifidum occultum; and a V-shaped prolongation of the hair onto the forehead are the main features. Frontonasal dysplasia may be associated with congenital heart abnormalities, in particular, tetralogy of Fallot, vertebral anomalies,
agenesis of the corpus callosum, Dandy-Walker malformation, a short neck, short limbs, polydactyly of the hands and feet, and cryptorchidism. These abnormalities can be present in any combination or severity although hypertelorism is a constant feature. Most cases are sporadic although a few familial cases have been described. Some reports are consistent with either autosomal or X-linked dominant inheritance.

**Molecular Genetics**

The pathogenesis is unknown but it is possible that a primary neural crest migration defect or a fetal ischaemic episode inhibiting cell migration is the initial event. A "non-separation" theory which assumes that, during closure of the neural tube, the ectodermal elements fail to separate or that the craniopharyngeal canal persists have also been proposed to account for the variety of clinical signs. It has been proposed that search for a gene underlying frontonasal dysplasia should focus on 4 chromosome bands: 3q23, 3q27, 7q21, and 11q21.

**Epidemiology in the Arab World**

**Egypt**

Meguid (1993) described a 6-year-old Egyptian boy, from consanguineous young parents, with frontonasal dysplasia (FND) and lipoma of the corpus callosum associated with tetralogy of Fallot. The main features were severe hypertelorism, downward slanted palpebral fissures, bilateral epicanthal folds, a grossly deformed nose with notched alae nasi, absent nasal tip and long philtrum. A computerized tomography (CT) scan of the brain showed cerebral atrophy and lipoma of the corpus callosum. From the findings in this case and previous reports, Meguid (1993) concluded that lipoma of the corpus callosum associated with FND is always located in the anterior part of the corpus callosum.

**Saudi Arabia**

Alzoum et al. (2002) described two siblings of phenotypically healthy first-degree consanguineous parents, with frontonasal dysplasia associated with multiple pericallosal lipomas. The parents had eight other healthy sibs and the mother was 40 years old when the first of the two patients was conceived. Case one, a 12-year-old girl, presented with hypertelorism and congenital craniofacial deformities in the form of a median cleft affecting the palate, lip, and nose. CT scans of the facial bones revealed hypertelorism, a depressed and bifid nasal bridge, and depression of the floor of the anterior cranial fossa. Magnetic resonance imaging of the brain showed two small curvilinear pericallosal lipomas, one in relation to the rostrum and the other in relation splenium of corpus callosum. Case two, a 7-year-old boy, presented with a cleft palate, bifid nose, and absent
nasal bridge. CT scans of the facial bones showed hypertelorism, an absent nasal septum, an anteriorly bifid nasal bone, a depressed nasal bridge, and all paranasal sinuses absent except the anterior ethmoidal air cells. Magnetic resonance imaging revealed two separate curvilinear pericallosal lipomas; one in relation to the posterior part of the corpus callosum and the other in relation to the rostrum. Both the children demonstrated normal intelligence. Interestingly, these two patients were unique in having less severe multiple curvilinear type of lipomas, as compared to the more interfering single anteriorly located tubulonodular lipomas in the previously reported FND patients. Alzoum et al. (2002) noted that the presence of another lipoma around the splenium and posterior body of the corpus callosum in their patients suggests that the disappearance of the meninx from this region also occurs late. The consanguinity in the parents as well as the identical location of the lipomas suggested an autosomal recessive mode of inheritance for the disorder in these patients.

**United Arab Emirates**

Al Talabani et al. (1998) studied the pattern of major congenital malformations in 24,233 consecutive live and stillbirth at Corniche hospital, which is the only maternity hospital in Abu Dhabi, between January 1992 and January 1995. A total of 401 babies (16.6/1,000), including 289 Arabs, were seen with major malformation. The consanguinity rate among the parents of malformed babies was 47% of which 72% were first cousin marriages compared to 32% in the general population. Sporadic conditions accounted for 26% of the cases. In their study, Al Talabani et al. (1998) observed three cases of frontonasal dysplasia in families from the United Arab Emirates. Recurrence was not reported in other members of the families. Al Talabani et al. (1998) concluded that their study was very close to representing the true incidence of congenital abnormalities in the whole United Arab Emirates, as they investigated over 98% of deliveries in Abu Dhabi, the capital of United Arab Emirates.

**References**


**Related CTGA Records**

Dandy-Walker Syndrome
Tetralogy of Fallot

Links

http://my.webmd.com/hw/health_guide_atoz/nord809.asp
http://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=GB&Expert=250
http://www.rarediseases.org/search/rdbdetail_abstract.html?disname=Frontonasal%20Dysplasia

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