Ocular abnormalities in Floating-Harbor syndrome

Ibrahim Asseidat, MD, and Lawrence M. Kaufman, MD, PhD

We present the first case report of a comprehensive eye examination in a patient with Floating-Harbor syndrome. Ocular findings were limited to partially accommodative, acquired esotropia, and unusual eyelashes. A variety of other ocular features have been previously reported in the nonophthalmic medical literature and are herein reviewed.

Floating-Harbor syndrome (FHS) is a rare disorder described initially by Pelletier and Feingold in 1973 at Boston Floating Hospital and by Leisti and colleagues in 1975 at Harbor General Hospital in Torrance, California, hence the assignment of the "Floating-Harbor" moniker.[1,2] The syndrome is characterized by short stature with delayed bone age, stereotypical facial appearance (triangular face and large nose), and delayed development of expressive speech.[3] The diagnosis is based on clinical grounds only, as no laboratory test has yet been established.[3] The clinical features can resemble patients with velo-cardio-facial syndrome, which can be ruled out by a normal fluorescence in situ hybridization 22q probe.[3]

Case Report

A 5-year-old Hispanic boy presented for his first eye examination with a chief complaint of esotropia noted since 1 year of age. He was born full term but small for gestational age. His medical history was notable for chronic failure to thrive, dysmorphic facial features, and speech and developmental delay. He underwent placement of a gastric feeding tube at 4 years of age that resulted in a marked improvement in his growth. Family history was noncontributory.

The eye examination revealed central, steady, and maintained fixation with each eye, intact pupillary function, and normal anterior segment and posterior segment ocular anatomy in both eyes. The external examination results were notable only for unusual curly, long, and irregularly distributed eyelashes on the upper and lower lids of both eyes (Figure 1). Motility testing showed a comitant 55^{Δ} esotropia, with normal ductions and versions in each eye. Retinoscopy after 1% cyclopentolate eye drops revealed $+4.00 + 1.00 \times 90$ in both eyes.

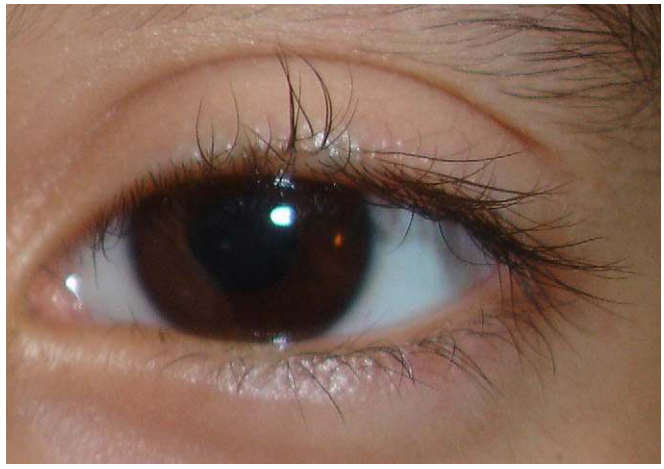

FIG 1. Photograph of patient's left eye, showing the curly, long, and irregularly distributed eyelashes.

On 3 consecutive examinations during the next 1.5 years, the results were notable only for a partially accommodative esotropia with a residual comitant esotropia of 35^{Δ} with glasses, and his unusual eyelashes. The visual fixation, pupil function, and ocular anatomy remained unremarkable. Repeat cycloplegic refraction was unchanged.

The patient initially was seen by a pediatric geneticist at the age of 3.5 years, and yearly thereafter. He was assigned a diagnosis of Floating-Harbor syndrome at 5.5 years of age. At that time his height was 94.8 cm (0.02% of growth percentile based on stature for age), weight was 14.40 kg (0.41% of growth percentile based on weight-for-age), and head circumference was 48.0 cm (<5th percentile of growth based on head circumference for age). Other findings included mild global developmental delay, marked expressive speech delay, triangular face, prominent nose, smooth philtrum, thin upper lip, poor dentition, and posteriorly rotated ears (Figure 2). Laboratory studies were normal, including urine organic acids, plasma amino acids, and high-resolution chromosome analysis. Fluorescence in situ hybridization and chromosomal microarray analysis failed to show a deletion at 22q.

Discussion

The patient presented here was diagnosed with Floating-Harbor syndrome based on his short stature, expressive language delay, characteristic appearance of a triangular face and large nose, and normal laboratory testing.[3] The results of his eye examinations were notable only for partially accommodative comitant esotropia and unusual eyelashes.

Author affiliations: Department of Ophthalmology & Visual Sciences, University of Illinois at Chicago, Chicago, Illinois
Submitted July 23, 2008.
Revision accepted November 17, 2008.
Reprint requests: Lawrence M. Kaufman, MD, PhD, Department of Ophthalmology & Visual Sciences, University of Illinois at Chicago, 1855 W. Taylor Street–M/C 648, Chicago, IL 60612 (email: idoc00@sbcglobal.net).
J AAPOS 2009;13:218-220.

1091-8531/2009/$36.00 + 0
doi:10.1016/j.jaapos.2008.11.002

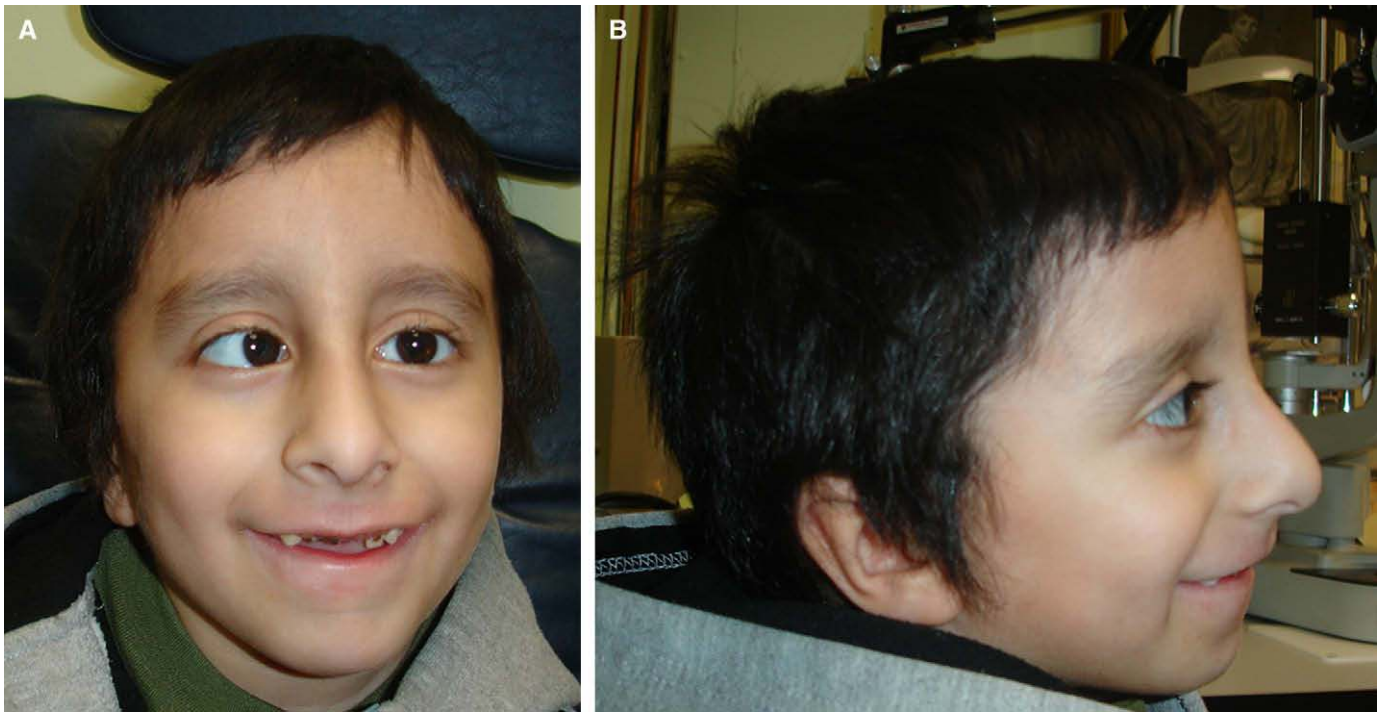

FIG 2. Photograph of front (A) and side views (B) of patient's face, showing triangular face, prominent nose, esotropia, smooth philtrum, thin upper lid, poor dentition, and posteriorly rotated ear.

Table 1. Review of ocular findings in Floating-Harbor syndrome[1-13]

Ocular findings as reported (n = 38)	Total
Deep set eyes	32
Long eyelashes	24
Broad intercanthal distance	14
Esotropia	6
Prominent eyebrows	4
Narrow palpebral fissure	3
Hyperopia	3
Prominent eyes	2
Down-slanting palpebral fissure	2
Up-slanting palpebral fissure	1
Amblyopia	1

The prevalence of the most prominent features in all reported patients at the time with Floating-Harbor syndrome were last reviewed by De Benedetto and colleagues in 2004.[4] These authors included 26 cases, after rejecting 5 previously reported cases as inconclusive, and listed the ocular findings of deep set eyes, long eyelashes and strabismus only.[4] We have identified an additional 12 reported cases that were not captured in the report of De Benedetto and colleagues, including the case described here.[5-13] A summary of all the reported ocular findings as noted in the original publications is shown in Table 1. Note that none of these previous reports detailed the results of a comprehensive eye examination or even stated that an ophthalmologic examination was performed, thus, positive eye findings may have been overlooked and underreported. Also, none of these reports mentioned negative eye finding, such as "strabismus was not evident," so that we cannot state with any confidence the real prevalence of any of these ocular findings in Floating-Harbor syndrome. Of note, the patient reported here did not have deep set eyes, telecanthus, or unusual eyelids or eyebrows as reported in many of the patients with Floating-Harbor syndrome.

Of interest, all the patients with strabismus were noted to have esotropia, but no additional ocular motility details were reported in any of the cases previously published. Regardless, strabismus must be considered a low incidence finding, occurring in 6 of 38 cases of Floating-Harbor syndrome. Alternatively, the strabismus may actually represent a nonspecific association with Floating-Harbor syndrome, perhaps more related to the developmental delay or failure-to-thrive status of these patients.

Although not required to make a diagnosis of Floating-Harbor syndrome, the majority of patients do show the nonspecific and subjective findings of deep-set eyes and long eyelashes. Determining the actual prevalence of all the ocular findings in Floating-Harbor syndrome will require an ophthalmologically focused investigation of a large cohort of these patients.

Literature Search

Literature search conducted through PubMed covering the years 1973 to July 2008 for keywords *floating*, *harbor*, and *syndrome*.

References

1. Pelletier G, Feingold M. Case report 1. In: Bergsma D, editor. Syndrome Identification. White Plains (NY): National Foundation—March of Dimes; 1973. p. 8-9.
2. Leisti J, Hollister DW, Rimoin DL. The Floating-Harbor syndrome. Birth Defects Orig Artic Ser 1975;11:305.
3. Hersh JH, Groom KR, Yen FF, Verdi GD. Changing phenotype in Floating-Harbor syndrome. Am J Med Genet 1998;76:58-61.
4. De Benedetto MS, Mendes FM, Hirata S, Guaré RO, Haddad AS, Ciamponi AL. Floating-Harbor syndrome: Case report and craniofacial phenotype characterization. Int J Paediatr Dent 2004;14:208-13.
5. Femiano P, Castaldo V, Scarano G. Floating-Harbor syndrome: First case in Italy associated with growth hormone deficiency. Minerva Pediatr 2000;52:227-30.
6. Cannavò S, Bartolone L, Lapa D, Venturino M, Almoto B, Violi A, et al. Abnormalities of GH secretion in a young girl with Floating-Harbor syndrome. J Endocrinol Invest 2002;25:58-64.
7. Ioan DM, Fryns JP. Floating-Harbor syndrome in two sisters: Autosomal recessive inheritance or germinal mosaicism? Genet Couns 2003;14:431-3.
8. Selimoğlu MA, Selimoğlu E, Ertekin V, Caner I, Orbak Z. First Turkish patient with Floating Harbor syndrome with additional findings: Cryptorchidism and microcephaly. Yonsei Med J 2004; 45:334-6.
9. Wiltshire E, Wickremesekera A, Dixon J. Floating-Harbor syndrome complicated by tethered cord: A new association and potential contribution from growth hormone therapy. Am J Med Genet A 2005;136: 81-3.
10. Karaer K, Karaoguz MY, Ergun MA, Yesilkaya E, Bideci A, Percin EF. Floating-Harbor syndrome: A first female Turkish patient? Genet Couns 2006;17:465-8.
11. Al-Quraan GA, Bastaki L, El-Nabi MM, Azab AS, Gouda SA, Al-Wadaani AM, Naguib KK. Floating-Harbor syndrome in a Kuwaiti patient: A case report and literature review. East Mediterr Health J 2007;13:975-9.
12. Stagi S, Galluzzi F, Bindi G, Lapi E, Cecchi C, Salti R, et al. Precocious puberty in a girl with floating-harbor syndrome. J Pediatr Endocrinol Metab 2007;20:1333-7.
13. Genc G, Sarac A, Erkek Atay N, Kulali F. Floating-Harbor syndrome: Case report. Minerva Pediatr 2008;60:249-51.