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CASE REPORT

Ocular Findings in a Case of Trisomy 18 With Variant of Dandy-Walker Syndrome

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Trisomy 18 is the second most common chromosomal syndrome and has multiple dysmorphic features. However, ocular findings in trisomy 18 are rarely reported. Retinal folds are the most common ocular finding described to date, although retinal hypopigmentation, dysplasia, and areas of hemorrhage and gliosis are also found in trisomy 18. Dandy-Walker syndrome is a brain malformation that has been reported in association with numerous chromosomal abnormalities, although it has rarely been reported in association with trisomy 18. Here, we present a case of trisomy 18 with ocular pathology and variant of Dandy-Walker syndrome, a combination that has not previously been reported.

1. Introduction

Trisomy 18, also known as Edwards syndrome, is one of the most common numerical chromosomal disorders. The incidence of trisomy 18 is approximately 1 in 6000 live births. It is associated with a high rate of intrauterine death, and 95% of live-born infants with trisomy 18 die within 1 year.[1]

Typical abnormalities of trisomy 18 include small, premature appearance, a prominent occiput, clenched hands with a tendency for the index finger to overlap the third finger, the fifth finger to overlap the fourth finger, a short sternum, and low arch dermal ridge patterning on the fingertips.[2]

The Dandy-Walker malformation (DWM) consists of an enlarged posterior fossa with a high position of the tentorium, hypogenesis or agenesis of the cerebellar vermis, and a cystic dilatation of the fourth ventricle that fills nearly the entire posterior fossa.[3] DWM has been reported in a wide variety of syndromes, including chromosomal anomalies and antenatal exposure to teratogens.[4] Twenty cases of trisomy 18 associated with Dandy-Walker syndrome have been reported,[5–7] but only three of these cases were reported in detail.[5,6]

Ocular findings have been described in fewer than 10% of trisomy 18 cases. Retinal folds were the most common histopathologic finding in the cases

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reviewed. Other common retinal observations include hypopigmentation of the posterior pigment epithelium, dysplasia, and areas of hemorrhage and gliosis.[8] Here, we present a case of trisomy 18 with DWM and multiple abnormal ocular findings.

2. Case Report

A female neonate was born by cesarean section to a healthy 31-year-old woman, gravida 2 para 1, at 37 weeks of gestational age. Birth weight was 1448 g. The mother had received regular prenatal care, and intrauterine growth restriction with small placenta was noted by prenatal ultrasound at 30 weeks of gestation. Family history was unremarkable for congenital abnormalities, and an older sibling was normal. The patient's Apgar scores were 6 at 1 minute and 7 at 5 minutes. She was transferred to our neonatal intensive care unit for respiratory distress and intrauterine growth restriction. The baby's ponderal index was 2.64, which was between the 10th and 90th percentile. Her length was 38 cm, head circumference was 29 cm, and chest circumference was 26 cm; these measurements were all below the 5th percentile.

Physical examination revealed multiple congenital anomalies, including a prominent occiput, a short sternum (Figure 1A) of 4 cm in length (normal length: 5–6 cm) (Figure 1B), preaxial polydactyly (Figure 2A), clenched hands with overlapping of the index and fourth fingers over the third finger (Figure 2B), single transverse palmar crease, rocker bottom feet (Figure 2C), and a prominent clitoris. The patient's eyes had small pupils with irregular margins, surrounded by reddish pigmentation (Figure 3A). A detailed ophthalmic examination was performed. The corneas measured 8 mm bilaterally (normal range: 10–12 mm). The lens was clear without cataracts. No iris coloboma was noted except for iris depigmentation with persistent pupillary membrane with a swallow anterior chamber. Both optic discs showed inferior coloboma (the right side being larger than left side; Figures 3B and 3C). Retinal dysplasia was also noted in both eyes.

Ultrasound of the brain revealed thinning of the corpus callosum, cerebellar hypoplasia, and a small gyrus volume. Magnetic resonance imaging (MRI) of the brain revealed a small head size and mild brachycephaly, Dandy-Walker variant (vermian-cerebellar hypoplasia) (Figure 4), and brain infarction in the right cerebral hemisphere. Echocardiography showed a double outlet right ventricle, a ventricular septal defect, coarctation of the aorta, engorgement of the main pulmonary artery, and a huge patent ductus arteriosus, in addition to congestive heart failure. Sonograms of the liver, spleen, and kidney were normal. Cytogenetic analysis showed 47, XX, +18. The infant was not mechanically ventilated and she died of cardiopulmonary failure at 94 days of age. An autopsy was not performed.

3. Discussion

Trisomy 18 is one of the most common chromosomal disorders and the second most common autosomal trisomy (after trisomy 21) in newborns. The most common dysmorphic features associated with trisomy 18 are well documented, and include abnormal appearances of the face and limbs. Abnormalities of the cardiovascular system (ventricular septal defect in 94%, patent ductus arteriosus in 77%, and atrial septal defect in 68% as reported by Lin et al[9]) and central nervous system are very common, as are renal and gastrointestinal abnormalities. The most

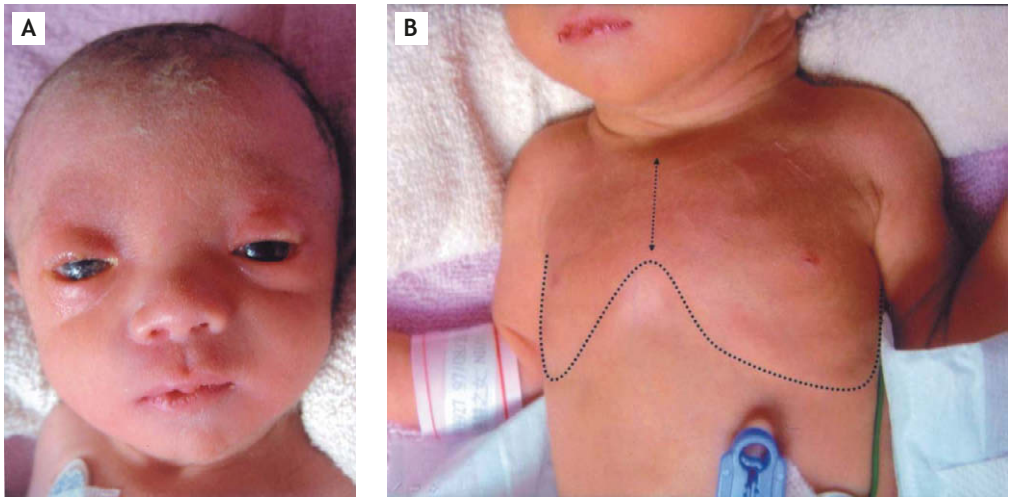

Figure 1 (A) Facial appearance and (B) short sternum of our patient.