Brief Communication

A case of bilateral retinoblastoma with a novel mutation presenting at retinopathy of prematurity screening

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Retinoblastoma is the most common malignant intraocular tumor in children, fortunately, it is rare with an incidence of one in 15,000 to one in 16,600 live-birth.[1] Retinoblastoma is due to the mutation of retinoblastoma gene (RB-1), which is located in 13q14.1-q14.2.[1] Approximately 75% of retinoblastoma is sporadic, in which RB-1 mutation develops in one cell of one retina, and the remaining 25% is congenital, in which RB-1 mutation develops in everybody's cells (germline mutation).[1] Thus, sporadic retinoblastoma is usually unilateral, and present during the second year of life, while congenital retinoblastoma is usually bilateral, and presents during the first year of life. A case of bilateral retinoblastoma diagnosed at retinopathy of prematurity (ROP) screening is presented in this article, emphasizing that retinoblastoma can be presented in the first weeks of life among preterm infants.

On February 2010, a set of a dizygotic (diamniotic, dichorionic) spontaneous twin was born at the Neonatology Division, Department of Pediatrics, King Abdulaziz Hospital for National Guard, Al-Ahsa, Kingdom of Saudi Arabia at 28 weeks gestation via emergency cesarean section. First ROP screening was at 32 weeks postmenstrual age, corresponding to 4 weeks of life, revealed bilateral intraocular retinoblastoma in the first twin girl, and no retinopathy of prematurity. Her general condition was stable, and her brain MRI and CT showed no feature of retinoblastoma. Then, the patient was referred to another institution for chemotherapy. She completed her systemic chemotherapy treatment, and is currently under laser photo ablation sessions every 2 months. Blood sample of both twins and their parents were sent to Bioscientia Center for Human Genetics, Ingelheim, Germany for molecular genetic analysis. Sequence analysis of the RB-1 gene detected in a heterozygous state, a deletion of a thymine at position c.635 in axon 7 of the RB-1 gene, which results in a frameshift and creates a premature stop codon (p.Leu212ArgfsX2). This mutation was not detected in blood samples of the second twin boy or the parents.

There are more than 1,200 different point RB-1 mutations according to Leiden Open Variation Database (LOVD) which is the most comprehensive free web-based database reporting RB-1 mutations. The c.635delT(p.Leu212ArgfsX2) mutation has not been previously reported in the literature according to Bioscientia Center for Human Genetics and LOVD. Four cases of retinoblastoma detected during retinopathy of prematurity screening in the first few weeks of life have been reported during the last decade.[2-5] Two of them occurred in dizygotic twins, and were bilateral. Similarly, our case was a dizygotic twin with bilateral retinoblastoma. This observation suggests that diagnosis of retinoblastoma during ROB screening is growing, albeit rare. Therefore, a high index of suspicion for diagnosis of retinoblastoma should be practiced during the ROP screening.

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