Ophthalmic manifestations of Waardenburg Syndrome- A case series from India rco2021.10e0447

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Background

Heterochromia iridum refers to difference in the iris colour between two eyes. This condition may co-exist with either ocular or systemic pathologic conditions. In this study, we describe clinical features of patients who presented to us with heterochromia iridum along with sensorineural deafness and pigmentary anomalies; features consistent with Waardenburg syndrome. It is a rare congenital multisystem disorder, which affects cells derived from neural crest origin. Organs affected eyes, cochlea, hair and skin.

Case Description

Case 1-The child had broad nasal root with lateral displacement of medial canthi (dystopia canthorum) and mild eyebrow flare (Fig 1A). Hypopigmented iris(bluish) in left eye and brown iris in right eye (Figure 1A).

Case 2: The father of the child (case 1) aged 30 years also had features of dystopia canthorum, normal colored iris in right eye and blue colored iris in left eye with prominent crypts (Fig 1B). Distinct white forelock and premature greying of scalp hair (Fig 1C). Patient was referred for audiologic rehabilitation.

Case 3:A 14-year-old child, on ocular examination had hypopigmented blue iris in right eye and normal brown iris in left eye (Fig 1D). He had dystopia canthorum, synophrys of eyebrows(monobrow) and premature greying of hair.

Case 4 and 5:A 9 year old girl and her 6 year old brother presented together. The girl had bilateral hypochromic iris, whereas her brother had hypochromic iris in the right eye.(Fig 2A and 2B). Both had telecanthus, synorphrys, white forelock, multiple patches of shin depigmentation over the forehead and fore arms(Fig 2D) Fundus examination of the girl (Patient no 4) revealed normal optic disc with hypopigmented choroid and a large, flat choroidal nevus(flat with ill defined edges) in the temporal half of retina extending from temporal aspect of fovea up to equatorial region spanning about 20-25 disc diameters in surface area(Fig 2C), advised regular follow up for the same.

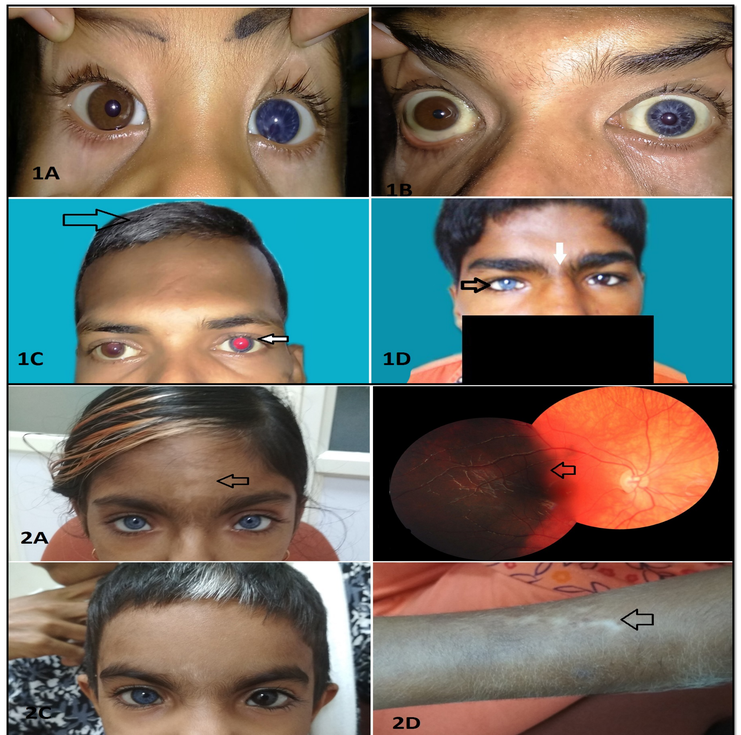
Case 6:A 3-year-old girl , with hypopigmented iris in right eye, telecanthus, synorphrys and premature greying of hair.

MAJOR CRITERIA

1. White forelock, hair depigmentation.
2. Pigmentary abnormality of the iris.
3. Dystopia canthorum.
4. Congenital sensorineural hearing loss.
5. Affected first-degree relative.

MINOR CRITERIA

1. Skin depigmentation.
2. Synophrys/medial eyebrow flare.
3. High/broad nasal root.
4. Hypoplastic alae nasi.
5. Gray hair before 30 years old.



Discussion

Waardenburg syndrome (WS) is an autosomal dominant genetic condition, characterized by defect in neural crest derived tissue and exhibits a very high penetrance rate and a variable expressivity of clinical features .The patients are grouped according to a Major and a Minor diagnostic criteria proposed by the Waardenburg consortium, a person must have two major or one major plus two minor criteria to be diagnosed as WS type1.

Results

We describe a case series of 6 patients to highlight the wide spectrum of manifestations. Children affected may first present to the ophthalmologist with “blue colored eyes”. Most Common feature among all the 6 was heterochromia iridis, dystopia canthorum in 5/6, hearing loss in 5/6(WS2>WS1), white forelock in 3/6 and 1st degree relation amongst 5/6 of them(suggestive of AD pattern of inheritance)- all of which are a part of Major Criteria of Waardenburg syndrome. 3/6 of them showed synophry - part of minor criteria and 2/6 of them showed hypopigmented white skin patches. On Audiometry examination, all showed moderate to severe sensorineural hearing loss in both ears.

Conclusion

Early identification by the ophthalmologist and diagnosis of the condition can lead to timely intervention and prevention of further complications like deafness. Genetic counselling and molecular genetic testing plays an important role in screening of relatives those who are at risk , thereby improving the quality of life.

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