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Case Report

Beaking eyes: a rare presentation

Renuka Barki, Anu Sheshadri Channagiri*, Pradeep Nitture

Department of Opthalmology, SSIMS and RC, Karnataka, India

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***Correspondence:**
Dr. Anu Sheshadri Channagiri,
E-mail: anusheshadric@gmail.com

ABSTRACT

As the ocular globes grow and develop, their shapes evolve from asymmetric, elongated, or conical to a nearly spherical, elliptical morphology. We see such morphological changes around the globe in adults with a few of the pathological conditions. Here is a 51-year-old male with an incidental finding of posterior beaking of the right eyeball on an MRI of the brain. Tilting of the disc was noted on the fundus examination, no clinical findings were relevant to any pathology. So, can this be a normal physiological variance?

Keywords: Globe abnormality, Beaking eyes, Fetal MRI, Posterior staphyloma

INTRODUCTION

As we all know, age-dependent structural changes of the globe occur during gestation. The posterolateral globe margins bulge outward, and the eyes are conical in early gestation. As the ocular globes grow and develop, their shapes evolve from asymmetric, elongated, or conical toward a nearly spherical, elliptical morphology.[1] Transient symmetric, non-elliptic globes with convexity of the posterolateral margins are a normal developmental phenomenon up to 29 weeks.

A study investigating the globe morphology on fetal MR imaging showed that it was normal that physical non-spherical globe shape might be conical, with angulation of its posterior and posterolateral margins up to 29 weeks' gestation, and should not be misinterpreted as pathologic.[2] But what if it does not mould into a spherical shape and remains in a conical shape? This is a case report that addresses the above concern about the physiological changes in the globe and asks whether we should be worried if we see any alteration in the shape of the eyeball in adults

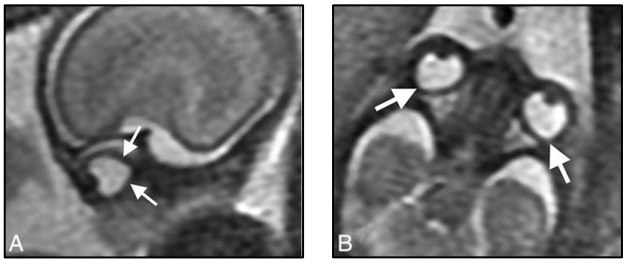

Figure 1: Sagittal (A) and axial (B) "fetography" T2WI (TR/TE, 5000/163 ms) of a normal fetal brain at 20 weeks' gestational age.
The globe morphology is conical, with angulation of its posterior (arrows, A) and posterolateral (arrows, B) margins.

CASE REPORT

This is a case report of a 51-year-old male referred from the neurology department with an incidental MRI finding of an altered shape of the right globe. The patient presented with complaints of chronic giddiness for a month. The patient underwent an MRI of the brain in multiple planes. Axial T1, T2WI, Coronal, Axial FLAIR, SagT1, Axial DWI, SWAN, FIESTA, and Sag Enhance

have been acquired as an investigation for giddiness. On the MRI, there was posterior beaking of the right globe noted involving the optic disc area with no obvious thickening and a normal globe in the left, as seen in the image. The patient was referred back to neurology department for further management of giddiness and was asked for yearly follow up.

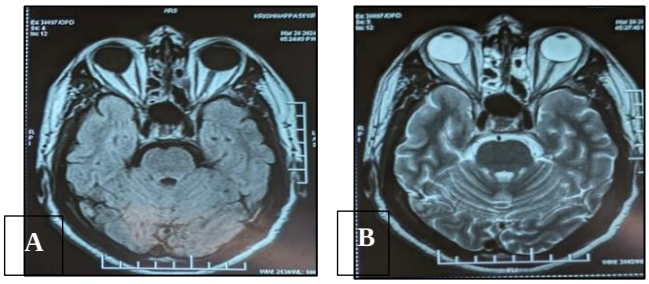

Figure 2: Axial T1WI (A) and T2WI (B) of MRI showing posterior conical shape of the right globe.

The patient was referred to the ophthalmology department for the same. There were no ocular complaints. There was no history of ocular trauma. The vision was 6/6 in both eyes. Color vision was normal. Normal anterior segment with bilaterally reactive pupils. Axial length was 22.54 on the right and 22.45 on the left.

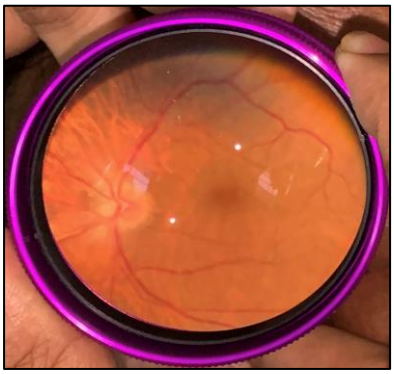

Figure 3: The fundus examination revealed a tilted and abnormally positioned disc in the right eye.

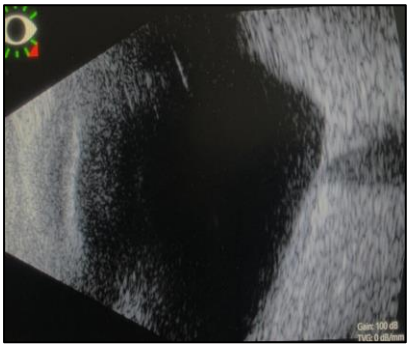

Figure 4: The altered shape of the right globe was confirmed by the B-scan of the right eye.

DISCUSSION

Eye globe abnormalities can be readily detected on CT and MR studies. In order to interpret the globe abnormality, a primary understanding of the globe anatomy is necessary. The differential diagnosis can be made easier and refined by categorising the abnormalities according to the layers and the compartments of the globe.[3] Mature fetal globe shapes are generally described as round/spherical. Li et al reported that normal fetal globe shape is better classified as elliptic because globes are consistently larger in transverse than anteroposterior dimension throughout gestation.[4] In a study of normal developmental globe morphology, Whitehead and Vezine demonstrated that elliptic ocular globe morphology is not fully achieved until the third trimester.[1] Convexity of the posterolateral globe margins in the axial plane and conical, keel-shaped globes in the sagittal plane are transient and normal in the early developing eyes. This morphology may persist until around 29 weeks. Thereafter, the globes assume a nearly round or elliptic shape. They also said that non elliptical globe >29 weeks should raise a suspicion of possible structural pathology.

The most close differentials for altered globes in an adult are posterior staphyloma and phthisis bulbi. MRI will demonstrate various areas of increased signal depending on the degree of calcification in T1-weighted images. T2-weighted images of Phthisis bulbi can show filling defects due to calcifications, and FLAIR sequence will exhibit increased signal in the damaged eye contrasting with the contralateral eye.[5]

In a case of posterior staphyloma we see macrophthalmos with increased anteroposterior diameter of the globe, focal deformity and uveal outpouching.[6]

These radiological features are not seen in the above case. No such similar radiological features were seen in our case. Neither we came across any signs or symptoms suggestive of the above differentials, nor we found any similar case reports of adults with abnormal globe contour not associated with any pathology. So, can it be a physiological variance?

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