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Retinoblastoma in a two-year-old child: MRI features and diagnostic value

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Abstract

Retinoblastoma is the most common intraocular malignancy in children and requires early diagnosis for optimal prognosis. We report the case of a two-year-old child presenting with leukocoria. Orbital MRI revealed a well-defined intraocular mass arising from the posterior retina, showing low T2 signal intensity, peripheral diffusion restriction, and heterogeneous contrast enhancement. Associated retinal detachment was identified as a hyperintense subretinal fluid collection without enhancement. No optic nerve invasion or extraocular extension was observed. These findings were highly suggestive of unilateral retinoblastoma. MRI plays a crucial role in diagnosis, local staging, and therapeutic planning.

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Case presentation

A two-year-old child was referred for evaluation of leukocoria noticed by the parents. There was no significant past medical or family history. Ophthalmologic examination revealed an intraocular mass in the right eye associated with retinal detachment. Orbital MRI was performed.

Description

Orbital MRI demonstrated a well-defined intraocular mass arising from the posterior retina (Figure 1). The lesion showed:

- Intermediate signal intensity on T1-weighted images
- Low signal intensity on T2-weighted images
- Predominant peripheral diffusion restriction
- Heterogeneous enhancement after gadolinium administration

Associated retinal detachment was visualized as a subretinal fluid collection with high signal intensity on T2-weighted images and no post-contrast enhancement.

No optic nerve invasion, scleral breach, or extraocular extension was detected. Brain MRI did not reveal pineal or suprasellar lesions.

These imaging findings were highly suggestive of unilateral retinoblastoma.

Declarations

Conflicts of interest: The authors declare no conflicts of interest.

Authors' contributions: All authors contributed to the implementation and realization of this work. All authors declare that they have read and approved the final version of this manuscript.

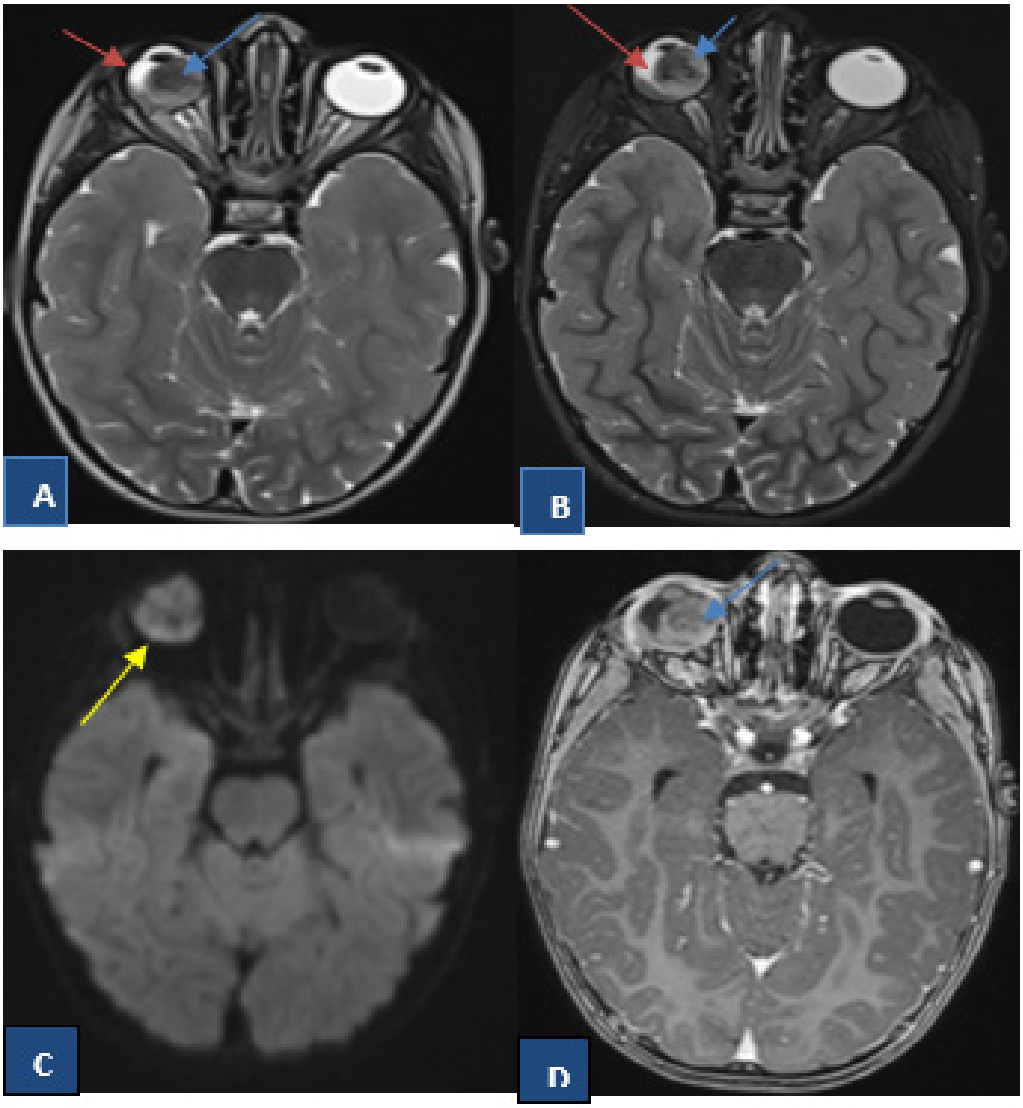

Figure 1: **(A,B)** Axial T2-weighted and STIR MRI demonstrating a hypointense intraocular lesion arising from the retina (blue arrow) with adjacent hyperintense subretinal fluid consistent with retinal detachment (red arrow). **(C)** Diffusion-weighted MRI showing peripheral restriction (yellow arrow). **(D)** Post-contrast T1-weighted MRI showing heterogeneous tumor enhancement without optic nerve invasion (blue arrow).