Rare Presentation of Retinoblastoma as Orbital Cellulitis in a Two-Month Infant: A Case Report

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ABSTRACT

A two-month male infant presented to the ophthalmology outpatient department with left eyelid swelling and redness for the past 11 days. The patient had a previous history of febrile illness, raising clinical suspicion of orbital cellulitis. Examination under anaesthesia was performed, which showed a normal right eye, while the left eye had proptosis, watery discharge, conjunctival chemosis, hazy cornea, and white pupillary reflex. CT scan revealed dense calcifications, highly suggestive of retinoblastoma, with scleral involvement at the 4 o'clock position and no optic nerve invasion. MRI of the brain and orbit demonstrated a hypo-intense retinal-based mass in the vitreous cavity with periscleral and perioptic spread, which confirmed the suspicion of retinoblastoma. Based on the clinical and radiological findings, a diagnosis of Group E retinoblastoma with scleral extension was made. The infant was planned for two cycles of chemotherapy followed by enucleation of the left eye. This case highlights the diagnostic challenge presented by retinoblastoma which can present as an inflammatory condition, such as orbital cellulitis, and emphasises the importance of considering malignancy in atypical ocular inflammations, supported by extensive imaging evaluation.

Key Words: *Retinoblastoma, Eyelid swelling, Cellulitis, Child*.

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INTRODUCTION

Retinoblastoma is the most common intraocular cancer that can affect children and usually presents as leucorrhoea and strabismus. It can have an unusual presentation as inflammatory conditions, such as orbital cellulitis, which can pose a significant diagnostic challenge for the treating physician.[1,2] Detailed ocular examination is crucial for diagnosing retinoblastoma in cases where it presents as an inflammatory condition, especially if the inflammation shows no significant improvement with treatment, as inflammation might mask the accurate radiological identification.[3] A study was conducted involving 292 patients diagnosed with retinoblastoma, which revealed that only 4.8% of the patients had initial presentation as orbital cellulitis, highlighting its rarity and the need for a high index of suspicion.[4] Timely diagnosis and prompt intervention can impact prognosis in majority of cases.[5]

CASE REPORT

A 2-month baby boy presented to the outpatient department with the chief complaints of redness, sticky discharge, and swelling in the left eye for the past 11 days. Upon inquiry regarding any additional symptoms, no associated watering or photophobia was reported.

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The child had an uneventful birth history, with a full-term pregnancy and a normal vaginal birth. The child had no history of discharge since birth. He was the first child of the consanguineous parents. There was no family history of ocular malignancies in the family. A preceding episode of fever, flu, and chest infection contributed to an initial clinical suspicion of orbital cellulitis.

Examination under anaesthesia revealed that the right eye was normal, whereas the left eye exhibited proptosis, conjunctival chemosis, a hazy cornea with indistinct anterior segment details, and a white pupillary reflex as shown in Figure 1.

MRI of the brain and orbit demonstrated a hypo-intense retinal-based mass with periscleral and perioptic spread, strongly suggestive of retinoblastoma. Complementary CT imaging confirmed dense calcification with scleral involvement at the 4 o'clock position, with no evidence of optic nerve involvement (Figure 2).

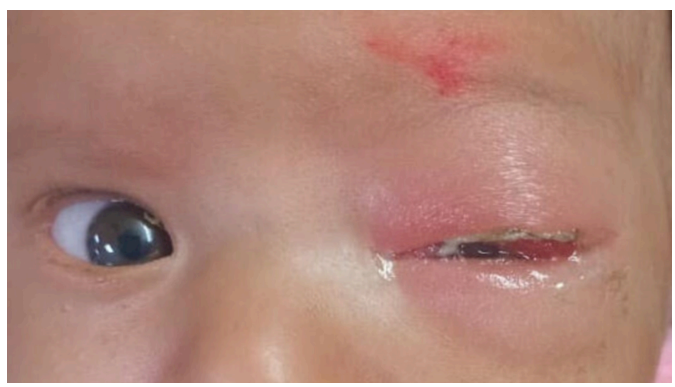

Figure 1: Image of the infant showing erythematous upper and lower eyelids with purulent discharge and matted eyelashes in the left eye, along with proptosis.

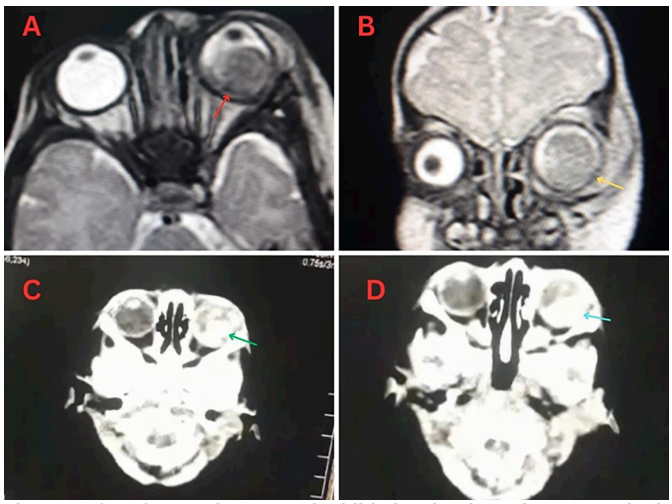

Figure 2: (A, B) MRI of a 2-month child showing hypo-intense retinal-based mass (red arrow) and scleral involvement at the 4 o'clock position (yellow arrow). (C, D) Show the CT scan of the same child with dense calcifications in the vitreous cavity (green arrows).

These combined findings established a diagnosis of left eye Group E retinoblastoma with scleral extension. The patient was scheduled for two cycles of chemotherapy with a plan for subsequent enucleation.

DISCUSSION

Retinoblastoma is typically recognised by the presence of leucorrhoea and strabismus; however, its occasional masquerade as orbital cellulitis can delay the correct diagnosis. In this case, the infant's presentation with left eyelid swelling and redness following a febrile illness initially suggested an infectious aetiology. Unlike cases described by Balmer and Munier,[1] where classical signs such as leucorrhoea were prominent at presentation, this patient lacked these features, complicating early recognition.

Pinto *et al*. have stressed that any instance of aseptic orbital inflammation in paediatric patients should raise suspicion for retinoblastoma.[2] Additionally, prior reports by Mullaney *et al*. have highlighted the challenges in diagnosing retinoblastoma when it mimics orbital cellulitis.[3] In the present patient, persistent ocular findings despite an apparent infectious prodrome necessitated advanced imaging, which revealed a retinal mass with periscleral and perioptic extension—findings similar to the inflammatory masquerade reported by Foster and Mukai.[4] Notably, the CT scan in this case demonstrated dense calcification with localised scleral involvement at the 4 o'clock position, without optic nerve involvement; this imaging profile helps differentiate this case from inflammatory conditions.

Although Chawla *et al*. demonstrated the diagnostic utility of intraocular fine needle aspiration cytology in ambiguous cases, the authors achieved diagnostic clarity using the noninvasive imaging techniques.[5] Agarwal *et al*. reported that advanced necrotic retinoblastoma with anterior segment involvement often presents clinically as orbital cellulitis.[6] They found extensive tumour necrosis in all cases, indicating that malignancy can mimic severe infection. This suggests that retinoblastoma should be included in the differential diagnosis of paediatric orbital cellulitis to avoid misdiagnosis. More recently, Reddy and Menon[7] described a case of bilateral retinoblastoma presenting with orbital cellulitis in a 20-month child, reinforcing the critical importance of excluding retinoblastoma in paediatric patients with orbital cellulitis to avoid misdiagnosis and potential delays in life-saving treatment.

This case highlights the diagnostic challenge posed by retinoblastoma mimicking orbital cellulitis in infants. Inflammatory signs following a recent febrile illness may obscure the underlying malignancy, leading to potential delays in life-saving treatment. A high index of suspicion and early imaging are essential in atypical paediatric ocular presentations. Prompt recognition and intervention can significantly impact prognosis, emphasising the need for thorough clinical evaluation even when an infectious aetiology initially appears likely.

PATIENT'S CONSENT:

Informed consent was obtained from the patient's guardian to publish the clinical details and accompanying images in this case report.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

NG: Conceptualisation, supervision, and manuscript review.
ST: Data collection, literature review, manuscript drafting, critical review, and proofreading.
MK: Conceptualisation, data collection, literature support, manuscript editing, critical review, and proofreading.
HM: Data collection, critical review, and proofreading.
FM: Proofreading, formatting, and referencing support.
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