CASE REPORT

A Case Report: Vitreous Haemorrhage – A Rare Presentation Of Retinoblastoma

Siti Husna Hussein[1], Wan Haslina Wan Abdul Halim[1], C-Khai Loh[2], Jamalia Rahmat[3], Safinaz Mohd Khialdin[1]

[1] Department of Ophthalmology, University Kebangsaan Malaysia Medical Centre (UKMMC), Jalan Yaakob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia
[2] Department of Paediatrics Oncology, University Kebangsaan Malaysia Medical Centre (UKMMC), Jalan Yaakob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia
[3] Department of Ophthalmology, Hospital Kuala Lumpur, 50586, Jalan Pahang, WP Kuala Lumpur, Malaysia

ABSTRACT

Retinoblastoma very rarely presents as vitreous haemorrhage. We are presenting a case of atypical presentation of retinoblastoma in a 3-year-old girl. She initially came with right eye vitreous haemorrhage of unknown cause. B-mode ultrasound showed dense vitreous opacity without evidence of mass. Initial MRI Brain/Orbit was inconclusive. Diagnostic vitrectomy was performed and noted thickened abnormal retina which was suspicious for retinoblastoma. The parents refused for enucleation for diagnostic histopathological examination and opted for conservative management. Repeated MRI Brain/Orbit done six months later showed disease progression through optic nerve involvement and suggestive of retinoblastoma. The parents were re-counselled for enucleation however refused and defaulted. 2 months later, the child was brought back with proptosed and disorganized eye. This time, they agreed for intervention. The patient underwent three cycles of chemoreduction therapy before enucleation. After enucleation, she received six cycles of adjuvant chemotherapy. She was well with no disease recurrence at two-year post treatment.

Keywords: Retinoblastoma, atypical, vitreous haemorrhage

Corresponding Author:
Safinaz Mohd Khialdin, MMed
Email: drsafinaz_1978@yahoo.com.my
Tel: +603-91455982

INTRODUCTION

The most common intraocular malignancy in the paediatric is retinoblastoma. Worldwide, its incidence is at one case per 15 000- 20 000 live births, which correspond to 9000 new cases every year. In high birth rate countries such as Asia and Africa, this intraocular malignancy is the most prevalence. In such countries, the mortality rate is higher (40-70%) compared to in Europe, Canada and USA (3-5%).

CASE REPORT

A healthy 3-year-old girl initially presented with right eye redness, pain and associated with exotropia. There was no prior history or signs of previous ocular trauma. Anterior segment examination showed rubeosis iridis, dilated pupil and cataractous lens with no fundus view. B-mode ultrasound showed dense vitreous opacity without any evidence of mass or calcification. Diagnostic vitrectomy was performed and thickened abnormal retina was noted intraoperatively which was suspicious for infiltrative retinoblastoma. Vitreous sampling was sent, however no atypical malignant cell was reported. MRI Brain/Orbit was inconclusive without any calcification and only minimal post-contrast enhancement was observed. An anterior tubular vascular structure was seen, suspicious of the underlying vascular developmental anomaly with no definite mass (Figure 1). The parents were counselled for enucleation and diagnostic histopathological examination. However, they opted for conservative management.

The patient had been under close monitoring every two to three weeks interval. Throughout the follow up, she developed total hyphema in the right eye, which did not resolve. During this time, there was no proptosis seen. Serial B-mode ultrasounds however did not show any definite intraocular mass with no signs of hyperechoic spike. Unfortunately, a repeated MRI Brain/Orbit six months later showed a lesion involving the proximal optic nerve, highly suggestive of progressive retinoblastoma with meningeal enhancement (Figure 2). The parents were counselled again for enucleation with chemoreduction therapy. However, the parents refused and they defaulted.

Two months later, the parents decided for intervention when the child developed proptosis with a disorganised

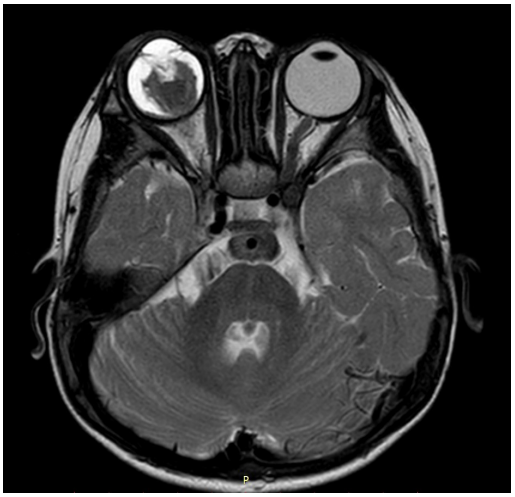

Figure 1: MRI Brain/Orbit after vitrectomy. There is an anterior tubular vascular structure suspicious of the underlying vascular developmental anomaly with no definite mass seen

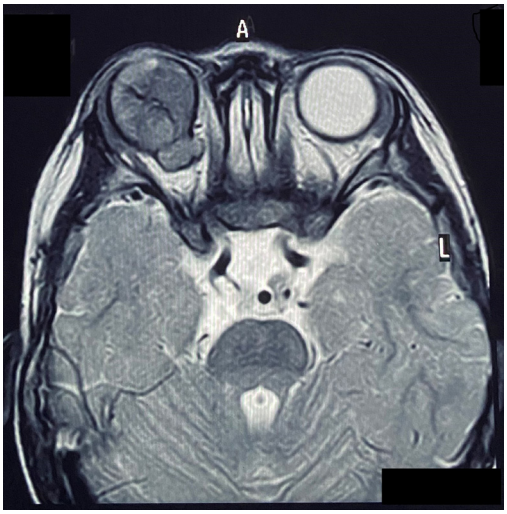

Figure 2: Repeated MRI Brain/Orbit six months later showed a lesion involving the proximal optic nerve, highly suggestive of progressive retinoblastoma

right eye (Figure 3). Computed tomography scan was done and showed an enhancing right orbital mass with multiple foci of calcification. She was started on chemotherapy under Children's Cancer and Leukemia Group (CCLG) protocol and the agents given were intravenous vincristine, carboplatin and etoposide. She underwent 3 cycles of chemotherapy prior to enucleation. The histopathological report of right eye ball confirmed the diagnosis of retinoblastoma with infiltration of malignant cells in the whole vitreous cavity. Fortunately, the prelaminar area of optic nerve, optic nerve margin and sclera were clear and only focal involvement of the choroid. (Figure 4).

After enucleation, she has completed another 6 cycles of chemotherapy under similar protocol. At two year follow up after completed chemotherapy, she was doing well with no local recurrence or systemic metastases. Her latest MRI Brain/Orbit showed no more meningeal enhancement.

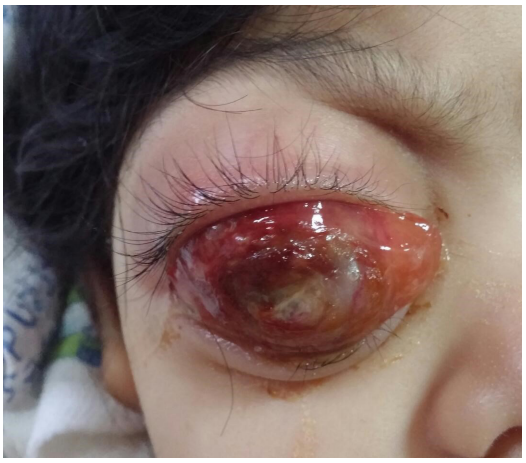

Figure 3: The patient developed proptosis with disorganized right eye after defaulted follow up

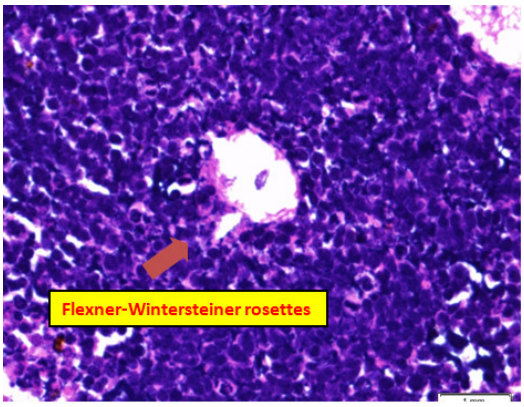

Figure 4: The histopathological specimen of right eye ball

DISCUSSION

Retinoblastoma typically presented with leukocoria, followed by proptosis and strabismus. Most studies have reported similar clinical presentation of retinoblastoma in developing countries (1,2). Unfortunately, during presentation, most of them had Reese- Ellsworth grade V which represent advanced disease. Our case however, did not follow this trend of common presentation of retinoblastoma.

Some local studies concluded that in developing country like Malaysia, majority of cases presented with extraocular disease due to late presentation (1,2). Furthermore, it is not only associated with late presentation and extraocular disease but also frequent abandonment of treatment from the parents. This is evidenced in our case where the parents only brought the patient back with advance disease after defaulted follow up.

Atypical presentations of retinoblastoma are rare and when presented, it is usually at advanced stage (2). Examples of such presentation include endophthalmitis, secondary glaucoma, uveitis, hyphema, orbital cellulitis and pseudohypopyon (2). A broad range of atypical

presentation of retinoblastoma will definitely create a diagnostic dilemma. They may be misdiagnosed as Coats disease, uveitis, endophthalmitis and leukemic infiltration based on different type of presentation (3). However, the possibility of ocular tumor should be entertained if there is atypical presentation but not responsive to the usual therapy. If these patients presented with some vision, anterior chamber paracentesis for cytology, neuron specific enolase essay and toxocariasis marker as well as vitreous aspirate and biopsy could have been performed (3). Nevertheless, this procedure should only be considered in exceptional situations, as it carries a risk of tumor dissemination and extraocular spread along the needle track.

Our case presented with one of the atypical presentations which is vitreous haemorrhage. Most studies have reported majority of vitreous haemorrhage in paediatrics group are trauma related and the incidence of vitreous haemorrhage secondary to retinoblastoma is less than 2% (4). In India, Pukhraj R et al had reviewed 261 eyes with vitreous haemorrhages in children and adolescent (4). Majority of vitreous haemorrhage (68.5%) is trauma related and only 1 eye is found to be retinoblastoma.

Unfortunately, atypical presentation of this tumor can also lead to inappropriate management to the patients. A series of case written by Sharon McCaffery have resulted in diagnostic dilemmas and diagnosis of retinoblastoma was eventually confirmed via histopathological examination (3). In atypical presentation, the treating ophthalmologist has options either enucleation or keeping the child on close monitoring with a wait-and-watch approach if the parents refused for enucleation. In these instances, FNAC may be beneficial to determine further steps of management.

In our patient, we lost the initial time because the early investigations were inconclusive without any definite mass or calcification. However, the thickened abnormal retina was noted intraoperatively which is suspicious for infiltrative retinoblastoma. This rare type of RB is used to describe a form of tumor in which there is flat infiltration of retina by tumor cells but without any well-defined endophytic or exophytic mass. In infiltrative RB, the calcification is usually absent and commonly seen later in the course due to the development of subretinal hematoma. In contrast with other type of retinoblastoma, where calcification is commonly observed.

Our case was diagnosed to have extraocular retinoblastoma (EORB). EORB or orbital retinoblastoma is diagnosed when there is clinical, radiological or histological evidence of the extension of retinoblastoma outside the eye's confines. Hanovar et al had described the spectrum of orbital retinoblastoma which consists of primary, secondary, inadvertent, overt and microscopic orbital retinoblastoma (5). Based on this spectrum, our case was believed to initially started as inadvertent EORB, which then progresses as clinical orbital RB with proptosis. She had inadvertent EORB because of previous vitrectomy done for vitreous haemorrhage. Any accidental perforation during the intraocular surgery may cause the remaining viable cells to turn into an orbital tumor.

Secondly, based on her clinical presentation of the proptosis. She presented with an orbital extension of intraocular retinoblastoma after defaulting treatment, manifesting with gross proptosis of right eye and presence of an orbital mass on computed tomography scan. She may have proptosis because of the progression of the disease anteriorly due to weak area postoperatively. Even though her histopathological report does not show any extraocular involvement, the neoadjuvant chemotherapy received before enucleation may actually downgrade the final result.

In this type of cases, neoadjuvant chemotherapy is beneficial to reduce the tumor burden by reducing its size first. Then, the treatment continues with surgical debulking and post-operative chemoradiation therapy. This standard regime of EORB was also commenced in our patient, where she received 3 cycles of neoadjuvant chemotherapy followed by enucleation and another 6 cycles of postoperative chemotherapy.

CONCLUSION

In summary, this case shows that retinoblastoma can present with various ocular manifestations such as vitreous haemorrhage. More importantly, the atypical presentation can lead to a diagnostic dilemma and eventually results in advance presentation. The overall survival rate, eye salvage, and visual potential mainly rely on the disease stage when it first presented. Unfortunately, the mortality rate is still high, especially in developing countries mainly because of late presentation. This may be attributed by lack of awareness of the caretakers and the inaccessibility of essential treatment facilities. Thus, early diagnosis, multidisciplinary approach, active doctor caretaker involvement and genetic counselling are the essential key points in managing retinoblastoma.

ACKNOWLEDGEMENTS

We wish to thank Dr. Lizawati binti Rasul Hamidi, medical officer from the Pathology Department at UKM Medical Centre for her assistance in the sharing of histopathological slides.

REFERENCES

1. Menon BS, Alagaratnam J, Juraida E, et al. Late Presentation of Retinoblastoma in Malaysia. Pediatr Blood Cancer 2009;52:215–217 (4)
2. R. Jamalia, R. Sunder, J. Alagaratnam, P. P. Goh. Retinoblastoma Registry report--Hospital Kuala

Lumpur experience. Med J Malaysia. 2010 Jun; 65 (Suppl A): 128–130.
3. McCaffery S, Wieland MR, O'Brien JM, Cooper KL, Wendel RT. Atypical Retinoblastoma Presentations: A Challenge for the Treating Ophthalmologist. Arch Ophthalmol. 2002;120(9):1222–1225.
4. Rishi, Pukhraj, Rishi Ekta, Gupta Aditi, Swaminathan Meenakshi, Chhablani Jay. Vitreous hemorrhage in children and adolescents in India. Journal of American Association for Pediatric Ophthalmology and Strabismus {JAAPOS}. 2013;17(1): 64 – 69
5. Honavar SG, Manjandavida FP, Reddy VP. Orbital retinoblastoma: An update. Indian J Ophthalmol 2017;65:435-42.