was chosen instead of fine needle aspiration biopsy to assure an adequate tissue sample for histologic evaluation.

The histological and immunohistological features disclosed an extranodal marginal zone B-cell lymphoma (Figure 2). This diagnosis was confirmed using PCR for both the heavy and light immunoglobulin chains.

Staging investigations—for example, brain MRI, CT chest, abdomen, iliac crest, and spinal tap—were negative for malignancy. The patient received a low dose external beam radiotherapy (EBR) to the right eye over 12 days. On review 3 months later, the tumour had regressed completely. At the 6-months follow-up, there were no signs of tumour, while the visual acuity of the affected eye was 6/48 as the result of a moderate cataract.

### Comment

The majority of reported cases of B-cell uveal NHL were either mainly choroidal or iridal tumours, with secondary involvement of the CB.<sup>1</sup> In 2004, Ahmed *et al*<sup>1</sup> reported a case of  $360^{\circ}$  iris-CB B-cell lymphoma masquerading as post-cataract uveitis. However, there was significant involvement of the iris, which would actually suggest that the iris was the primary site of the tumour. In 2012, Mashayekhi *et al*<sup>2</sup> reported three cases of primary iris-CB B-cell lymphoma. One case had significant choroidal involvement, whereas in the other two cases histological analysis revealed a high-grade large B-cell NHL, in contrast to the tumour in our patient.

In conclusion, the differential diagnosis of a CB tumour should include lymphoma even in the absence of significant iris and/or choroidal involvement. Ultrasound shows low acoustic reflectivity. Biopsy with histomorphological examination is necessary to establish the diagnosis. EBR may induce rapid and complete regression.

#### **Conflict of interest**

The authors declare no conflict of interest.

#### References

- Ahmed M, Androudi S, Brazitikos P, Paredes I, Foster CS. 360 degrees iris-ciliary body B-cell lymphoma masquerading as post-cataract uveitis. *Semin Ophthalmol* 2004; 19(3-4): 127–129.
- 2 Mashayekhi A, Shields CL, Shields JA. Iris involvement by lymphoma: a review of 13 cases. *Clin Experiment Ophthalmol* 2013; 41(1): 19–26.
- 3 Yamada K, Hirata A, Kimura A, Tanihara H. A case of primary B-cell type non-Hodgkin lymphoma originating in the iris. *Am J Ophthalmol* 2003; **136**(2): 380–382.
- 4 Raju VK, Green WR. Reticulum cell sarcoma of the uvea. Ann Ophthalmol 1982; 14(6): 555–560.
- 5 Coupland SE, Damato B. Understanding intraocular lymphomas. *Clin Experiment Ophthalmol* 2008; 36(6): 564–578.

L Konstantinidis<sup>1</sup>, M Angi<sup>2</sup>, SE Coupland<sup>2</sup> and B Damato<sup>3</sup>

<sup>1</sup>Liverpool Ocular Oncology Centre, Royal Liverpool University Hospital, Liverpool, UK <sup>2</sup>Department of Molecular and Clinical Cancer Medicine, University of Liverpool, Liverpool, UK <sup>3</sup>Ocular Oncology Service, University of California, San Francisco, CA, USA E-mail: DamatoB@Vision.UCSF.edu

*Eye* (2014) **28**, 355–356; doi:10.1038/eye.2013.282; published online 20 December 2013

#### Sir

# Enhanced depth imaging as an adjunctive tool in the diagnosis of decalcified choroidal osteoma

Choroidal osteoma is a rare benign osseous tumor of the choroid, typically affecting healthy eyes of young female subjects.<sup>1</sup> It is a clinical diagnosis, classically confirmed by the presence of high reflectivity and acoustic shadowing on B-scan ultrasonography (B-scan) and/or hyperdense plaques at the level of the choroid on computerized tomography scan.<sup>1</sup> Here we report a case of a predominantly decalcified choroidal osteoma and the use of enhanced depth imaging optical coherence tomography (EDI-OCT) to confirm the diagnosis.

#### Case report

A 16-year-old girl presented with a 1 year history of flashing lights in her right eye associated with a yellow-white lesion in the superior juxtapapillary region (Figure 1). B-scan of the lesion showed nonspecific, mild choroidal thickening with no hyper-reflective areas or posterior shadowing (Figure 2). EDI-OCT revealed a small area of subretinal fluid superior to the optic nerve and a discrete choroidal mass measuring  $387 \,\mu$ m in thickness, with variable intrinsic reflectivity adjacent to areas of



Figure 1 Right fundus photograph showing large superior juxtapapillary choroidal lesion.





Figure 2 B-scan showing mild thickening but no hyperreflectivity or posterior acoustic shadow.



**Figure 3** (a) EDI-OCT section illustrating choroidal mass with variable intrinsic reflectivity. Note the intrinsic hyper-reflective dots (red arrow) and isoreflective areas and well-defined scalloped posterior border. Adjacent to this mass is atrophic choroid (white arrow). (b) EDI-OCT section below Figure 3a illustrating thickened outer retina (black arrow) and underlying subretinal fluid. Note that there is increased transmission of light through the atrophic choroid.

choroidal atrophy (Figures 3a and b). These findings are consistent with a predominantly decalcified choroidal osteoma.

#### Comment

Classically described by Gass *et al* in 1978,<sup>1</sup> choroidal osteoma is typically a unilateral, well-demarcated yellow-white to orange juxtapapillary or macula lesion located within the choroid. Using spectral domain OCT, Navajas *et al* described a distinctive lattice work pattern of reflectivity in some choroidal osteomas,<sup>2</sup> similar to the intratumoral channels described histopathologically by Gass.<sup>1</sup> However, choroidal osteoma change over time and can undergo decalcification,<sup>3</sup> losing their typical appearance on B-scan. Decalcification is often

associated with shrinkage of the tumor, resulting in RPE and choriocapillaris atrophy.<sup>3</sup> In our case, the residual tumor measured only  $387 \,\mu\text{m}$  in thickness on EDI-OCT, making it undetectable by B-scan. The characteristic features of the residual tumor, demonstrated on EDI-OCT, confirmed the clinical suspicion of choroidal osteoma, albeit predominantly decalcified.

EDI-OCT has recently emerged as a noninvasive technique to visualize the choroid in greater detail,<sup>4</sup> capable of measuring choroidal tumors up to 1 mm in thickness.<sup>5</sup> This technique can serve as an adjunctive modality to distinguish predominantly decalcified choroidal osteomas from other choroidal lesions and enable assessment of the overlying retina and future monitoring.

### Conflict of interest

The authors declare no conflict of interest.

#### References

358

- 1 Gass JD, Guerry RK, Jack RL, Harry G. Choroidal osteoma. Arch Ophthalmol 1978; **96**(3): 428–435.
- 2 Navajas EV, Costa RA, Calucci D, Hammoudi DS, Simpson ER, Altomare F. Multimodal fundus imaging in choroidal osteoma. *Am J Ophthalmol* 2012; **153**: 890–895.
- 3 Shields CL, Sun H, Demirci H, Shields JA. Factors predictive of tumor growth, tumor decalcification, choroidal neovascularization and visual outcome in 74 eyes with choroidal osteoma. *Arch Ophthamol* 2005; **123**(12): 1658–1666.
- 4 Spaide RF, Koizumi H, Pozzoni MC. Enhanced depth imaging spectral domain optical coherence tomography. *Am J Ophthalmol* 2008; **146**: 496–500.
- 5 Torres VL, Brugnoni N, Kaiser PK, Singh AD. Optical coherence tomography enhanced depth imaging of choroidal tumors. *Am J Ophthamol* 2011; **151**: 586–593.
- C Dinah and T Sandinha

Sunderland Eye Infirmary, Sunderland, UK E-mail: cdinah@doctors.org.uk

*Eye* (2014) **28**, 356–358; doi:10.1038/eye.2013.272; published online 10 January 2014

#### Sir,

## Capsular neovascularisation: case report and review of literature

A unique case of neovascularization of the lens capsule (NVC) in a phakic eye without neovascularization of the iris (NVI) or angle is described.

#### Case report

A 30 year old male presented with pain OD since 1 month. He gave a history of post-traumatic glaucoma

13 years back for which trabeculectomy was performed. Ten years later, he presented again with chronically raised intraocular pressure (IOP), vision of light perception only, and advanced glaucomatous cupping. 360° cyclo-crotherapy was administered at this time. At present, he had lost light perception, and had low IOP (6 mm Hg) OD. Slit-lamp biomicroscopy showed a mydriatic pupil with multiple sphincter tears, absence of NVI, a mature cataract with sparse capsular pseudoexfoliation, and a fine circumferential radiating spoke like net of anterior capsular vessels (Figures 1a and b). Gonioscopy showed obscuration of the anterior chamber. Anterior segment optical coherence tomograpy (Visante, Carl Zeiss Meditec Inc., Dublin, CA, USA) and ultrasound biomicroscopy (Sonomed Escalon, Wayne, PA, USA) confirmed peripheral anterior synechiae (Figures 2a and b) and ruled out the presence of any retro-iridial proliferative membrane (Figure 2b). Fluorescein angiography demonstrated a diffuse fluorescein leakage persisting till late phase with absence







**Figure 1** (a) Figure shows complicated cataract with overlying pseudoexfoliation material; pupil is mydriatic with multiple large sphincter tears. (b) Higher magnification shows a fine net of vessels growing onto the lens capsule centripetally.