

exists about its metabolism and effects on development.³ Given the rarity of its use in children, performing a randomised control trial is unrealistic, but an alternative method would be to establish a central database that allows clinicians who use anti-vascular endothelial growth factor therapy in children to report results and complications.

Conflict of interest

The authors declare no conflict of interest.

References

- Brown DM, Kaiser PK, Michels M, Soubrane G, Heier JS, Kim RY et al. Ranibizumab versus verteporfin for neovascular age-related macular degeneration. N Engl J Med 2006; 355: 1432-1444.
- Rosenfeld PJ, Brown DM, Heier JS, Boyer DS, Kaiser PK, Chung CY et al. Ranibizumab for neovascular age-related macular degeneration. N Engl J Med 2006; 355: 1419-1431.
- Rosenstein JM, Krum JM. New roles for VEGF in nervous tissue—beyond blood vessels. Exp Neurol 2004; 187: 246-253.

DAM Lyall, BM Hutchison, A Gaskell and M Varikkara

Department of Ophthalmology, NHS Ayrshire and Arran, Ayr Hospital, Ayr, UK E-mail: douglas_am_lyall@hotmail.com

Case previously presented at the Edinburgh Macular Symposium, Royal College of Surgeons, Edinburgh, 5 June 2009.

Eye (2010) 24, 1730-1731; doi:10.1038/eye.2010.131; published online 8 October 2010

Sir, Methylmalonic aciduria and homocystinuria-associated maculopathy

Methylmalonic aciduria and homocystinuria is a rare inherited disorder resulting from impaired conversion of dietary vitamin B12 to its metabolically active forms, and has been associated with retinal findings. To the best of our knowledge, we report the first fluorescein angiographic study of this rare infantile maculopathy.

Case report

A 2-year-old boy was reported to develop nystagmus at 5 months of age. He was born without complication at 40 weeks gestation and weighed 6 pounds 11 ounces at birth. At the age of 1 month, he was evaluated for failure to thrive and found to have elevated urine levels of methylmalonic acid and homocysteine, and was diagnosed with methylmalonic aciduria and homocystinuria. He has since received regular intramuscular injections of hydroxycobalamin and betaine, and been maintained on a special diet.

Ophthalmic examination revealed the ability to fix and follow objects, and the presence of horizontal jerk nystagmus. Fundoscopic examination showed well-circumscribed, round, and relatively flat yellow lesions in both maculae, which were vitelliform in appearance. The lesion in the right eye appeared to be larger than the one in the left eye, which was ring-like, suggesting an early stage of development (Figure 1). Fluorescein angiography was performed under anaesthesia using the RetCam (Clarity Medical Systems, Pleasanton, CA, USA), and demonstrated normal vascular filling without evidence of leakage or staining of the vessels. The macular lesions were hyperfluorescent initially and stained in the late frames (Figure 2).

Comment

Methylmalonic aciduria with homocystinuria may be associated with ocular and other systemic findings. 1-5 Treatment involving increased levels of methionine may restore normal rod photoreceptor sensitivity; however, this has not been shown to reverse the maculopathy or fully rescue retinal responses.4

Ophthalmological referral is critical for these patients to ensure that their maximal visual potential is achieved. The maculopathy, as in this case, often bears resemblance to early stages of Best vitelliform macular dystrophy on fundoscopic examination. It appears from our experience in this case that the fluorescein angiographic findings are similar as well. It may be speculated that, similar to Best disease, the yellow material represents lipofuscin accumulation, in this case secondary to photoreceptor disruption from low methionine levels with accompanying retinal pigment epithelium degeneration. Although photoreceptor damage from methionine deficiency has not been established, it is known that taurine deficiency (of which methionine is a precursor) results in photoreceptor degradation.6 In cases that present early to the ophthalmologist, it is important that methylmalonic



Figure 1 Maculopathy of the right eye (left panel) and left eye (right panel).



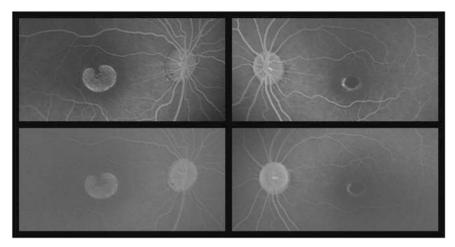


Figure 2 Fundus fluorescein angiogram of the right eye (upper left panel) and left eye (upper right panel) demonstrating early hyperfluorescence of macula lesion, and late staining of lesions in the right (lower left panel) and left (lower right panel) eyes.

aciduria and homocystinuria be remembered in the differential diagnosis of infantile maculopathy.

Conflict of interest

Dr Rosen is a member of the scientific advisor board of Clarity Medical Systems. The remaining authors declare no conflict of interest.

References

- 1 Ticho BH, Feist RM, Fishman GA. Nondetectable electroretinogram in combined methylmalonic aciduria and homocystinuria. *Ann Ophthalmol* 1992; **24**: 180–181.
- 2 Rosenblatt DS, Aspler AL, Shevell MI, Fenton WA, Seashore MR. Clinical heterogeneity and prognosis in combined methylmalonic aciduria and homocystinuria (cb1C). *J Inherit Metab Dis* 1997; 20: 528–538.
- 3 Gerth C, Morel CF, Feigenbaum A, Levin AV. Ocular phenotype in patients with methylmalonic aciduria and homocystinuria, cobalamin C type. J AAPOS 2003; 12: 591–596.
- 4 Tsina EK, Marsden DL, Hansen RM, Fulton AB. Maculopathy and retinal degeneration in Cobalamin C methylmalonic aciduria and homocystinuria. *Arch Ophthalmol* 2005; **123**: 1143–1146.
- 5 Ricci D, Pane M, Deodato F, Vasco G, Rando T, Caviglia S et al. Assessment of visual function in children with methylmalonic aciduria and homocystinuria. Neuropediatrics 2005; 36: 181–185.
- 6 Hayes KC, Carey RE, Schmidt SY. Retinal degeneration associated with taurine deficiency in the cat. *Science* 1975; 188(4191): 949–951.

JH Francis, L Rao and RB Rosen

Department of Ophthalmology, New York Eye and Ear Infirmary, New York, NY, USA E-mail: jfrancis@nyee.edu

Eye (2010) **24**, 1731–1732; doi:10.1038/eye.2010.115; published online 27 August 2010

Morning glory with serous macular detachment responds to oral acetazolamide

We report a case of morning glory optic disc with serous macular detachment in the left eye. The patient was treated with oral acetazolamide and followed up for a period of 3 years.

Case report

A 27-year-old lady presented in 2006 with onset of distortion in her left eye. Her visual acuity was 6/36 with a morning glory disc anomaly (Figure 1) and serous macular detachment (Figure 3). The central foveal thickness (CFT) was $928\,\mu\mathrm{m}$ in the left eye at baseline. With 1 month of oral slow-release acetazolamide $250\,\mathrm{mg}$ (Diamox) twice a day, her visual acuity improved to 6/18 and CFT was reduced to $553\,\mu\mathrm{m}$. The dosage of acetazolamide was gradually tapered to $62.5\,\mathrm{mg}$ once a day over a period of 7 months. Her visual acuity improved to 6/9 in the left eye and CFT reduced

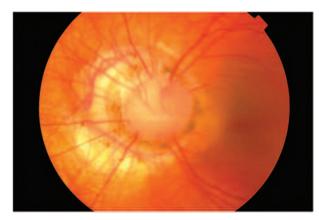


Figure 1 Left eye morning glory optic disc anomaly.