Conjunctival tumour as the primary manifestation of infectious mononucleosis in a 12 year old girl

CASE REPORT

A previously healthy 12 year old girl with a 10 day history of a painless red left eye was treated with antibiotic eye drops. Despite these, a unilateral conjunctival swelling developed, and the girl was admitted for further ophthalmological consultation. On examination, a 5 × 5 mm red coloured mass in the upper nasal conjunctiva of the left eye was observed. The globe was not displaced, and the girl was admitted for further treatment with antibiotic eye drops. Despite this, the eye was painful, and there was a mild injection of the anterior chamber. The girl was observed. The globe was not displaced, and the girl was admitted for further treatment with antibiotic eye drops. Despite this, the eye was painful, and there was a mild injection of the anterior chamber. The girl was observed.

EDITOR—Infectious mononucleosis (IM), a common disease in childhood, is an acute lymphoproliferative disease caused by Epstein–Barr virus (EBV), a member of the herpes virus family. The association of EBV infection with benign and malignant lymphoproliferative diseases, as well as its role in the pathogenesis of nasopharyngeal carcinoma, is well known. The course of IM is usually self-limiting but can be extremely variable, ranging from asymptomatic to a fatal outcome. Fever, pharyngitis, lymphadenopathy, and hepatosplenomegaly are typical systemic manifestations. Essential for the diagnosis is an increase in relative and absolute numbers of lymphocytes and monocytes, including 20–40% atypical forms. Ocular involvement of IM is unusual and occurs often as a mild unilateral follicular conjunctivitis simultaneously with these other symptoms. We describe a girl with a conjunctival tumour as the first manifestation of IM; systemic symptoms of the disease occurred some days later.

Figure 1 Conjunctival tumour of the left eye (after incisional biopsy).

Figure 2 Epstein–Barr virus infection detected by antibodies against the latent membrane protein (C1–4) (APAAP, original magnification ×40).
iris naevus, essential iris atrophy, iris foreign body, peripheral anterior synechiae, and iris metastasis. An iris foreign body can occasionally pose a diagnostic challenge, especially in the absence of a history of ocular trauma. We present a case of an iris foreign body that resembled a melanoma, in which ultrasound biomicroscopy (UBM) was instrumental in the diagnosis.

CASE REPORT
In June 1999, a 70 year old man was found on routine examination to have a brown lesion in the inferior part of his left iris. Two months later the lesion showed a possible increase in size, prompting a referral to the oncology service of the Wills Eye Hospital to rule out iris melanoma. His visual acuity was 20/20 in both eyes and the intraocular pressures were normal. There was no melanocytosis, heterochromia, corneal pigmentation, corneal scar, endothelial defect, cells in the anterior chamber, or pupillary abnormalities. There was an irregular brown lesion in the left iris inferiorly, measuring 2 × 1 mm in diameter (Fig 1A). There were a few light brown refractile deposits on the surface of the lesion. Gonioscopy showed the lesion extending onto the trabecular meshwork without trabecular seeding but with adjacent peripheral anterior synechiae (Fig 1B). There was no intrinsic vascularity, feeder vessel, iris or angle neovascularisation, or pigment dusting. The lens was clear and the fundus in each eye was normal.

Although the lesion superficially resembled a melanoma, we felt it could be a foreign body based on the presence of focal brown deposits over the lesion, which resembled rust particles. On repeated specific questioning, the patient recalled trauma to the left eye over 50 years earlier, while hammering metal.

Ultrasound biomicroscopy demonstrated a highly reflective structure in the iris and anterior chamber angle, with absence of echoes posterior to the lesion, characteristic of a foreign body (Fig 2A). In addition, a defect in Descemet’s membrane was noted in the upper part of cornea just off the pupillary axis (Fig 2B). Subsequent slit lamp biomicroscopy with high magnification confirmed the minute defect in Descemet’s membrane. Electroretinography was not performed because there was no clinical evidence of siderosis.

COMMENT
Several conditions can simulate iris melanoma. In a study from the Armed Forces Institute of Pathology, Ferry reported 24 pseudomelanomas among 69 eyes that wereenucleated for suspected iris melanoma, a diagnostic error of 35%. The lesions that most commonly simulated iris melanoma in his series included anterior staphyloma, inflammatory mass, iris stromal atrophy, and corneal perforation. Additionally, he noted one enucleated eye with a metallic foreign body misdiagnosed as an iris melanoma. In a clinical study of 200 patients referred for an iris lesion suspected to be melanoma, Shields and associates found that 76% were pseudomelanomas. Iris foreign body accounted for 4.5% of pseudomelanomas in that series, and in each instance, the patient was unaware of the foreign body and could not recall ocular trauma. However, a defect in Descemet’s membrane was detected on slit lamp biomicroscopy in each case.

Diagnosis of a foreign body may sometimes be difficult in the absence of a history of injury, especially when slit lamp biomicroscopy of the anterior segment does not reveal any sign of ocular trauma. Imaging modalities such as computed tomography and ultrasonography may help in such situations. However, magnetic resonance imaging is contraindicated in cases where a ferromagnetic foreign body is suspected. Standard B-scan ultrasonography has been replaced at many centres by UBM for the evaluation of anterior segment foreign bodies. We used UBM to confirm our clinical impression of an iris foreign body in this case. In addition to characterising the foreign body, UBM detected a subtle irregularity in Descemet’s membrane.

It is of interest that a seemingly metallic foreign body could remain inert for 50 years without causing ocular inflammation, siderosis or secondary glaucoma, which prompted us to observe this patient rather than to intervene surgically.

When the ophthalmologist is confronted with a dark iris lesion, an intraocular foreign body is a possibility, irrespective of a negative history of trauma. Slit lamp biomicroscopy coupled with gonioscopy provides excellent diagnostic clues. We believe that UBM is a sensitive imaging technique for confirmation of the diagnosis.

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Optical coherence tomography findings in early solar retinopathy

EDITOR,—Visual deterioration caused by watching a solar eclipse has been recognised from the time of Plato. The aetiology of solar retinopathy has been attributed to photochemical effects, which may be enhanced by elevated tissue temperature. Typically, a small yellow spot may be noted in the foveolar area immediately after exposure. Histopathological studies of solar retinal lesions revealed retinal pigment epithelium (RPE) and photoreceptor damage. We present two patients with acute, severe solar retinopathy after observation of the total eclipse on 11 August 1999. Fundusoscopic findings were accompanied by optical coherence tomography (OCT) investigation of the macula.

CASE REPORTS
Case 1
An 18 year old man presented 24 hours after watching the total eclipse without appropriate protection. Total exposure time was approximately 20 minutes. During direct viewing the patient kept his right eye closed. One hour after observation he noted blurred vision and a central scotoma on the left eye. Best corrected visual acuity was 0.8 in the right and 0.1 in the left eye. Fundus examination of the right eye did not show any pathology. Funduscopy of the left eye revealed a yellow lesion in the fovea, surrounded by a circular red area.

The area in the centre of the fovea was demonstrated in both eyes. Similar to case 1, all layers of the fovea were affected. Retinal thickness (110 µm ± 118 µm) was within the normal range.

**COMMENT**

Solar retinopathy is characterised by a yellow foveolar dot and a central scotoma. For the first time we describe OCT findings of patients suffering from solar retinopathy. The main finding was a hyperreflective area involving all foveal retinal layers without showing any sign of retinal oedema. It correlated in size and location with the characteristic funduscopically visible yellow dot. At present, the origin of this well delineated area of hyperreflectivity in solar retinopathy, histopathological analysis of solar retinopathy has demonstrated that mainly the pigment epithelium and outer segments of the photoreceptor layer are damaged. The OCT scan however showed pathological appearance of all retinal layers. In one patient we have been able to repeat OCT investigation 9 days after solar exposure, revealing that the retinal changes were reversing and developing increasing pathology in the RPE and choriocapillaris layer.

In addition, macular oedema, which has been described in the literature before, could not be demonstrated by OCT. On OCT examination, no significant increase in retinal thickness could be observed when comparing the affected and unaffected eye (case 1) or absolute values of both affected eyes (case 2). To the best of our knowledge, none of these OCT findings have been published before by other investigators.

The authors do not have any commercial or proprietary interest in any of the products mentioned in this article.

**Case 2**

A 26 year old woman complained of blurred vision and central scotoma after watching the eclipse without eye protection. Total exposure time was 5 minutes. Forty eight hours after exposure visual acuity was 1.0 in the right and 0.8 in the left eye. Fundus examination showed a small yellow round lesion in the fovea of both eyes. On OCT, a hyperreflective area was seen in both eyes. Visual acuity increased from 0.1 to 0.16. Still no change in retinal thickness occurred.

![Figure 2](A) OCT examination of the same eye 48 hours after exposure revealed a hyperreflective area in the fovea affecting all retinal layers. No increase in retinal thickness could be demonstrated. The location of the OCT scan is shown on the corresponding fundus photograph (Fig. 1). (B) OCT examination 9 days after exposure. The hyperreflective area in the fovea was no longer visible, whereas an increasing alteration of the RPE and choriocapillaris layer could be demonstrated. Visual acuity increased from 0.1 to 0.16. Still no change in retinal thickness occurred.

**Figure 2** (A) OCT examination of the same eye 48 hours after exposure revealed a hyperreflective area in the fovea affecting all retinal layers. No increase in retinal thickness could be demonstrated. The location of the OCT scan is shown on the corresponding fundus photograph (Fig. 1). (B) OCT examination 9 days after exposure. The hyperreflective area in the fovea was no longer visible, whereas an increasing alteration of the RPE and choriocapillaris layer could be demonstrated. Visual acuity increased from 0.1 to 0.16. Still no change in retinal thickness occurred.
COMMENT
In PBC, CREST, and uveitis abnormalities of the humoral and cellular immune systems are common. These include increased levels of serum immunoglobulins, the presence of circulating autoantibodies, increased turnover of complement, the presence of activated T and B cells in the peripheral blood, and impaired T cell regulation. Despite the high frequency of these immunological abnormalities, a definite immunopathogenic mechanism has not yet been clearly established for any of these disorders. Furthermore, no single mechanism seems to provide a link between these clinical entities. A mouse model for the development of liver damage through the intrahepatic inoculation of mycoplasma-like organisms, which cause human chronic uveitis, has recently been developed, but it remains a hypothetical concept. Our case report illustrates an association between ocular and hepatic diseases, which may be entirely coincidental but could, nevertheless, encourage further investigation for a common immunological pathway.

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Vitreous basket sign in dislocation of the lens
EDITOR.—We describe a new ultrasonographic sign dubbed “vitreous basket sign” (looks like a basketball caught at the bottom of a basket) found in eyes with posteriorly dislocated lenses. Identifying this pattern can contribute to the diagnosis and differential diagnosis of dislocated lenses.

We used the Acuson 128x p/o linear array 7 MHz probe instrument.

CASE REPORT
The patient was 65 years old white woman with a painful traumatic blind eye and a large leucoma adherens. Ultrasonographic examination demonstrated a hyperechogenic mass on the retina at the posterior pole, with a posteriorly dragged anterior vitreous face, creating a hypoechogenic central tunnel (Fig 1A). The mass and tunnel changed location with ocular movements.

COMMENT
A similar ultrasonographic pattern has been seen in seven eyes of six patients. Dislocated lens or nucleus should always be in the differential diagnosis of an intracapsular cataract. Ahw et al1 described three cases of pseudophakic patients with dropped nuclei during extracapsular cataract extraction suspected to be choroidal melanomas later.

There are several ultrasonographic signs cited as characteristic of dislocated lenses: a hyperechogenic mass with an oval shape, which can become highly reflective as cataract develops, and vitreal strands adherent to the mass which is mobile and changes location with eye movements.

We believe this particular ultrasonographic sign can be ascribed to the following process. The lens detaches, encounters the anterior vitreous face, and pushes it posteriorly by its weight towards the retina. The anterior vitreous face, vitreous gel, and collagen fibres within the vitreous are pushed back by the lens creating the wall of an aqueous filled tunnel with the lens at its bottom (Fig 1B).

In most cases this sign is easy to demonstrate, and we recommend it as a useful new clue to the ultrasonographic diagnosis of dislocation of the lens.

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Combined central retinal vein occlusion and cilioretinal artery occlusion in a patient on hormone replacement therapy
EDITOR.—Combined occlusion of the central retinal vein and the central retinal artery or a cilioretinal artery is unusual. There have been many previously reported systemic and ocular associations. The pathogenesis of this condition, however, is not established and remains controversial. Whether the venous obstruction or the arterial blockage acts as the initiating event is unknown. We describe a patient with combined central retinal vein occlusion (CVO) and cilioretinal artery occlusion occurring 6 weeks after starting hormone replacement therapy (HRT). We observed the evolution of the arterial occlusion. This suggests that the initiating event was the RVO.

CASE REPORT
A 46 year old patient presented with a 2 day history of decreased vision in the left eye noticed on waking. She reported no previous visual disturbances. She had been started on cyclical combined HRT 6 weeks before presentation. She was taking no other medication and had previously used the combined oral contraceptive pill with no adverse effects. She was a non-smoker. There was no past or family history of venous thromboembolism.

Visual acuities were right eye 6/5 and left eye 6/60. Right intracocular pressure (IOP) was elevated (22 mm Hg). There was a left relative afferent pupillary defect. Gonioscopy showed open angles. Blood pressure was 140/90 mm...
Hg. Pulse rate was 72 beats per minute and regular. There was no cardiac murmur and no cardiac bruit. On the right there was pathological cupping of the optic disc and venous dilatation (Fig 1). Examination of the left fundus showed dilated, tortuous retinal veins in all four quadrants, with scattered retinal haemorrhages and a swollen, haemorrhagic optic disc. There was retinal whitening in the territory of a cilioretinal artery. No intraarterial embolus was seen (Figs 1 and 2). She was diagnosed, on clinical grounds, with left combined central retinal vein and cilioretinal artery occlusion and right primary open angle glaucoma.

One week later, the cilioretinal artery had become narrow and irregular in calibre, with fragmentation of the blood column (Fig 2). Two months after presentation, the pe rivenous haemorrhages and optic disc swelling had resolved, the calibre of the cilioretinal artery had returned to normal (Fig 2), and visual acuity had improved to 6/12. She had no identifiable risk factors for venous thromboembolism. Laboratory studies consisting of full blood count, erythrocyte sedimentation rate, blood glucose, urea and electrolytes, liver function tests, serum protein, serum protein electrophoresis, serum lipids, angiotensin converting enzyme, rheumatoid factor, double stranded DNA, antinuclear antibody, antimitochondrial antibody, anti-smooth muscle antibody, antineutrophil cytoplasmic antibody, antineutrophil factor, antidi lidiolin antibody, lupus anticoagulant, syphilis, optic neuritis, and various causes of retinal vasculitis. Relevant investigations excluded any of these as an underlying cause. Elevated IOP probably plays some part in the development of some central RVOs. Left IOP was normal at presentation but elevated IOP may have preceded the RVO. RVO has been reported in association with the oral contraceptive pill. In one study, five of 588 patients who had sustained RVOs were HRT users, but four of the five had other potential risk factors. With the ever increasing use of HRT, it is important that any possible adverse effects be reported. To the best of our knowledge, this is the first report of combined retinal arterial and venous obstruction associated with HRT.

**RESERCHER,**—Macular degeneration is the leading cause of blindness in the older population, and it is becoming more and more prevalent.1 At present there is no treatment for the dry type of macular degeneration; for treatment of the wet form, several medical and surgical therapies have been tried, with varying results.2–6 Photodynamic therapy with verteporfin had a significant treatment benefit in predominantly classic choroidal neovascularisation (CNV) lesions.7 Surgical removal of the subretinal membrane is a promising method.8 But in many cases the visual acuity does not improve. A new technique has been proposed by Machemer and Steinhorst, where after surgical removal of the subretinal membrane the fovea is translocated to an area with healthier pigment epithelium, Bruch’s membrane, and chorioid.9,10 Variants have been described where only the temporal part of the retina was detached, or the retinal detachment was created in the temporal side through the sclera, without retinotomy. Here the scleral resection will ultimately shift the relation of the pigment epithelium to the fovea.

**CASE REPORT**

In this case we performed a macular translocation using the Machemer and Steinhorst technique, with some modifications from Eckardt (personal communication, 24 October 1997), and from our experience. After surgery usually we see a retinal fold starting from the optic disc and extending to the periphery, but this fold usually disappears after 5–7 days.

Our patient died (from intracranial haemorrhage) on the fifth day after the operation, and it was possible to examine the operated eye pathologically.

At gross examination we found that rotation had been achieved through an angle of 25–30 degrees. The next step was to perform

**Histological examination of the pigment epithelium-Bruch membrane-chori ocapillaris complex after macular translocation**

**EDITOR,**—Macular degeneration is the leading cause of blindness in the older population, and it is becoming more and more prevalent.1 At present there is no treatment for the dry type of macular degeneration; for treatment of the wet form, several medical and surgical therapies have been tried, with varying results.2–6 Photodynamic therapy with verteporfin had a significant treatment benefit in predominantly classic choroidal neovascularisation (CNV) lesions.7 Surgical removal of the subretinal membrane is a promising method.8 But in many cases the visual acuity does not improve. A new technique has been proposed by Machemer and Steinhorst, where after surgical removal of the subretinal membrane the fovea is translocated to an area with healthier pigment epithelium, Bruch’s membrane, and choroid.9,10 Variants have been described where only the temporal part of the retina was detached, or the retinal detachment was created in the temporal side through the sclera, without retinotomy. Here the scleral resection will ultimately shift the relation of the pigment epithelium to the fovea.

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At gross examination we found that rotation had been achieved through an angle of 25–30 degrees. The next step was to perform
sections of the translocated macula and in the region of the former subretinal membrane, and our findings are discussed below.

COMMENT

As we expected we found a thickened Bruch’s membrane, several points of calcification, some remnants from the surgically removed subretinal membrane, and our findings are discussed below.

We know that in some cases after surgery the attachment of the pigment epithelium this will not occur. We think that more research is needed to discover if there is any connection between the type of membrane, related to the condition of the pigment epithelium, and the apparent stronger adhesion between the pigment epithelium and retina (or relatively weaker adhesion to the Bruch’s membrane).

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Optic neuropathy as the presenting feature of HIV infection: recovery of vision with highly active antiretroviral therapy

EDITOR,—We describe a rare case of bilateral optic neuropathy caused by HIV which responded to highly active antiretroviral therapy (HAART).

CASE REPORT

In March 1996, a 52 year old man presented with a 6 month history of slowly deteriorating vision in both eyes. He had worked for many years as a teacher and had diabetes. He was heterosexual. His only risk factor for HIV transmission was a single encounter with an African woman in the mid 1980s. In 1988 he had dengue fever and malaria. The latter was treated in the UK with quinine and fansidar.

He had an encounter with an African woman in the mid 1980s. In 1988 he had dengue fever and malaria, and was treated in the UK with quinine and fansidar. In 1995 he was treated in Botswana for a pneumonia. He was known to be hypertensive and was taking high blood pressure medication. He also had a history of smoking and drinking.

On examination his visual acuities were 6/12 and 6/36 in the right and left eye respectively. There was marked optic disc atrophy bilaterally with relative afferent pupillary defects. The remainder of the ocular examination was unremarkable.

He was started on highly active antiretroviral therapy (HAART) and within 4 weeks his vision had improved to 6/12 in both eyes. The vision has remained stable for more than 2 years after a gradual improvement in visual acuity.
CSF protein was 0.73 g/l (normal <0.4 g/l) and glucose of 2.5 mmol/l (plasma 5.5 mmol/l). No organisms were detected. CSF cryptococcal antigen test (latex agglutination) was negative.

The lymphocyte subsets showed a T helper cell count (CD4) of 100 cells ×10⁶ (normal 700–1100) and T suppressor cell count of 2232 cells ×10⁶ (normal 500–900). In view of his history he was counselled and consented to HIV testing. HIV-1 antibody test was positive.

He was commenced on triple therapy zidovudine 200 mg three times daily, lamivudine 150 mg twice daily, indinavir 800 mg three times daily (HAART or highly active antiretroviral therapy) with co-trimoxazole prophylaxis for *Pneumocystis carinii*. He responded well clinically and on review at 6 months his vision had improved to 6/9 and 6/6 in his right and left eyes respectively with a concomitant improvement in his visual fields at 24 months (Fig 1B). His CD4 count rose to 170 cells ×10⁶ (normal 500–9000) after 6 months.

The remainder of the neurological examination was normal.

Full blood count, electrolytes, glucose, B₁₂, folate and folate levels were all normal. Autoantibody screen and syphilis serology were negative. *Haemophilus influenzae* was grown from his sputum but neither acid fast bacilli nor *Pneumocystis carinii* were detected. Toxoplasma serology showed no significant titre. Other viral serology including cytomegalovirus (CMV) antibody, hepatitis B surface antigen, and hepatitis C antibody were negative.

Visual deterioration in HIV is a common problem. Ocular manifestations of HIV include retinal microangiopathy, opportunistic retinal infections, Kaposi's sarcoma of the conjunctiva and eyelids, and herpes zoster ophthalmicus. Retinal disease occurs frequently, sometimes in association with optic nerve disease. Occasionally the optic nerve is selectively involved. The commonest aetiology is opportunistic infection. Most case reports have focused on the role of opportunistic infections such as syphilitic optic perineuritis, CMV papillitis, varicella zoster optic neuritis, or cryptococcal retrobulbar neuritis. Other causes include toxoplasmosis and tuberculosis. Indeed, a search for these aetiological agents is the priority when faced with an HIV positive patient with an optic neuropathy. However, sometimes no opportunistic infection is found and the HIV virus itself is assumed to be causing the optic neuropathy.
In our case funduscopy excluded CMV and toxoplasma retinopathy. The other infective aetiologies were excluded by serological testing. Magnetic resonance imaging excluded a compressive lesion. It is possible that our patient had idiopathic bilateral optic neuropathy with spontaneous improvement. However, it is exceedingly rare for simultaneous, rather than stepwise, bilateral visual deterioration to occur with progressive deterioration for months and then a slow delayed recovery. One of the best series of bilateral optic neuropathy remains that by Hierons and Lyle in 1959. They reported 47 cases of bilateral optic neuritis, seven of which developed simultaneous bilateral visual disturbance. Two of these seven patients regained their vision over 6–12 months. Therefore, given the rarity of such an idiopathic presentation and the temporal relation of the improvement to HAART it is very likely that our patient had a primary HIV related optic neuropathy.

Primary HIV infection is well known to cause neurological disease. However, there has only been one case report of bilateral retrobulbar optic neuropathy in whom the presumed aetiology was the HIV virus itself. Newman and Lessell reported two patients who were already known to be HIV positive. The first patient was a 39 year old man who awoke with bilateral blurred vision and slight retrobulbar pain. His vision continued to deteriorate to 5/200 right eye and hand movement perception in the left eye. Funduscopy was normal. Four weeks into his illness he was commenced on AZT. Within 10 days his vision was beginning to improve. Eight months later his acuity was 20/70 right eye and 20/40 left eye. He was left with bilateral optic atrophy. The second patient did not improve with AZT but did show improvement with prednisolone. The only other case of optic neuropathy due to primary HIV infection was of a man with sudden monocular blindness. This was clinically due to an anterior ischaemic optic neuropathy, presumed to be secondary to an optic nerve microangiopathy.

What is the mechanism of the optic neuropathy? There is a significant loss of cortical neurons and optic nerve axons in patients with AIDS. Also far fewer AIDS patients have ocular signs than have ocular lesions discovered on post mortem. Therefore, it is not surprising that changes were noted in the optic nerves of eight AIDS patients who did not have visual signs or symptoms before death as well as those who did. Patchy axonal degeneration, oligodendrocyte, and myelin degeneration were noted in association with mononuclear cell infiltration, suggesting that optic nerve degeneration may be mediated by HIV infected macrophages. The HIV virus infects mononuclear phagocytic cells rather than neurons or oligodendrocytes so the neuronal losses must occur through a secondary mechanism. A more recent study has shown that optic nerve astrocytes in four patients with primary HIV related optic neuropathy stain strongly for tumour necrosis factor α (TNFα). No comparable staining was seen in control optic nerves. TNFα, an immunomodulatory agent, thus appears to be a major player in HIV induced neuronal apoptosis.

In conclusion, HIV may directly cause an optic neuropathy. The improvement of our patient’s vision with HAART is suggestive that much of the optic nerve failure is due to a reversible dysfunction of the optic neurons rather than their death.
Ultrasound biomicroscopy in the diagnosis of a foreign body simulating iris melanoma

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