Xeroderma pigmentosum in three consecutive siblings of a Nigerian family: observations on oculo-cutaneous manifestations in black African children

EDITOR,—Xeroderma pigmentosum (XP), a rare autosomal recessive disorder characterised by defective DNA repair leading to clinical and cellular hypersensitivity to ultraviolet radiation, manifesting mainly as intolerance of skin and eyes to light, has been described in all races, but is exceedingly rare in the negroid race, although some cases have been reported in both the American and African black people. We describe three consecutive siblings of a Nigerian, Fulani, family with the typical features of XP. We wish to draw attention to the clinical, phenotypic variations of this syndrome in black children of the same family living together in an area of high sunshine, and the difficulties in the management of XP patients with advanced disease and limited access to facilities in an environment where avoidance of skin exposure to intense ultraviolet rays is problematic. We believe the patients we have described constitute the first series on XP in black children in the west African subregion.

CASE REPORTS

Case 1

The proband, a 9 year old girl, was first seen at Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto (13.02°N, 5.14°E), Nigeria, in February 1999 with a history of the development of generalised erythematous rash associated with exposure to sunshine became obvious from the age of 1 week, on exposure to sunshine became obvious from the age of 4 years. The cutaneous tumours. The ocular lesions were hypopigmented atrophic roundish lesions. There were no ulcerations and no cutaneous tumours. The ocular lesions were less numerous. There were no ulcerations and no cutaneous tumours. The ocular lesions were also milder than in the proband. In the right eye the conjunctiva was more keratinised, although with occasional episodes of hyperkeratosis. The cornea was less keratotic and ulcerated fewer. The left eye showed total loss of lashes of the lower lid and hyperkeratotic papillae on the nasal half of the conjunctiva, with raising of its edge towards the limbus. The VA (6/60 in both eyes) was better than in the proband. The ocular and cutaneous lesions were compatible with xero-derma pigmentosum in the precancerous phase.

Case 2

This 7 year old boy, the brother of the proband, presented with milder symptoms of XP, with slower progression. Thus, the initial generalised erythematous rash associated with exposure to sunshine became obvious from the age of 3 months; worsening of vision developed from the age of 4 years. The cutaneous lesions, though similar to those in the proband, were less severe. The entire skin was also dry, covered with hyperpigmented and hypopigmented atrophic roundish lesions. The actinic keratotic lesions were less numerous. There were no ulcerations and no cutaneous tumours. The ocular lesions were also milder than in the proband. In the right eye the conjunctiva was keratinised, although with occasional episodes of keratinisation. The cornea was less keratotic and ulcerated fewer. The left eye showed total loss of lashes of the lower lid and hyperkeratotic papillae on the nasal half of the conjunctiva, with raising of its edge towards the limbus. The VA (6/60 in both eyes) was better than in the proband. The ocular and cutaneous lesions were compatible with xero-derma pigmentosum in the precancerous phase.

Figure 1 Left eye of the proband demonstrating the large pink, friable conjunctival lesion, a biopsy of which showed moderately differentiated squamous cell carcinoma. Note the scalloped nature of the surrounding facial skin with actinic keratotic lesions, hyperpigmented and hypopigmented areas and crusted ulceration of the nasal bridge, all typical cutaneous lesions in xeroderma pigmentosum.

Figure 2 Case 3, right eye showing vascular, fleshy conjunctival tissues, a biopsy of which revealed features consistent with moderately differentiated squamous cell carcinoma. The facial skin demonstrates actinic keratotic lesions typical of xeroderma pigmentosum.
conjonctiva covering the whole of the nasal area one third of the cornea, and also a small area of the cornea temporally at about 3 o'clock. The VA in the left eye was limited to hand movement only at 2 metres while in the right eye it was PL only. The severity of acinic keratotic lesions was midway between that of the proband and case 2. Although there were crusty skin ulcers of the upper lip, there were no obvious cutaneous tumours. On the basis of these oculocutaneous lesions, associated with sunshine hypersensitivity and the similarity of the symptomatology with that found in the other two siblings, the diagnosis of xeroderma pigmentosum was not in doubt. The disease in this patient had also advanced to the cancerous phase.

COMMENT

XP is generally regarded as a very serious disease and an early diagnosis is essential. In this patient had also advanced to the cancerous phase. The assertion that the severity of actinic keratosis is midway between that of Japanese xeroderma pigmentosum group A patients. The VA in the left eye was limited to hand movement. The partial recovery of MERG in our case despite full recovery of the right foveal peak. Visual field assessment was not performed.

Multifocal electroretinographic and angiographic changes in pre-eclampsia

EITTON,—Pre-eclampsia is characterised by hypertension, proteinuria and generalised oedema developed after 20 weeks’ gestation. We report serial changes in multifocal electroretinography (MERG), fluorescein angiography (FA), and indocyanine green angiography (ICGA) in a patient with pre-eclampsia who developed choroidal ischaemia and serous retinal detachment.

CASE REPORT

A 28 year old Chinese woman, gravida II, para I, was hospitalised at 31 weeks’ gestation with blood pressure of 178/98 mm Hg, 4+ proteinuria and pretibial oedema. At 34 weeks’ gestation, emergency caesarean section was performed because of uncontrolled pre-eclampsia. Two days post partum, she complained of blurring of vision in the right eye. On examination, her visual acuity was right eye: 20/30, left eye: 20/15. There was no afferent pupillary defect. Anterior segment and intraocular pressure was normal. Fundus examination revealed bilateral greyish-yellow lesions at the level of retinal pigment epithelium (RPE), distributed mainly in peripapillary area and posterior pole. There was shallow inferior serous retinal detachment in the right eye. FA and ICGA of both eyes showed early patchy hypofluorescence with delayed filling of choroid around the discs and nasal maculae, suggestive of choroidal ischaemia. Late phase showed leakage with stippled staining (Fig 1).

MERG was performed 2 weeks post partum. Stimulation used was the 103 hexagons at a rate of 75 Hz using pseudorandom binary m-sequence with VERIS system (Electro Diagnostics Imaging, Inc, San Mateo, CA, USA). Three dimensional topography and trace array of the MERG showed decreased response amplitudes in both nasal maculae and the right fovea. There was also delayed N1 and P1 implicit times and diminished response density of the nasal macula compared with the temporal macula in both eyes (Fig 2).

Five weeks post partum, her visual acuity improved to 20/15 in both eyes. RPE changes corresponding to areas of delayed filling and leakage were found. FA and ICGA performed 3 months post partum were unremarkable. However, MERG showed persistent bilateral mild decrease in amplitude of the nasal macula compared with the temporal macula, despite full recovery of the right foveal peak. Visual field assessment was not performed.

COMMENT

In our patient, the area of decreased response amplitude and delayed latencies in MERG corresponded with the area of choroidal ischaemia detected by FA and ICGA. Additionally, it detected abnormal area in the right fovea that did not show up with FA or ICGA. When repeat FA and ICGA were unremarkable 3 months later, MERG still showed persistent abnormality in both nasal maculae. The partial recovery of MERG in our case supports the current concept of transient vasospasm in choroidal circulation in pre-eclampsia. However, the damage may not be completely reversible as previously reported.

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The signals of MERG are thought to be derived from the outer retinal layers of cones and also the inner retinal layer including the bipolar and Muller cells. Retinal response may be impaired secondary to RPE dysfunction and choroidal ischaemia. Similar MERG findings in central serous choriretinopathy were reported, in which the RPE abnormality is thought to be secondary to the underlying choroidal vascular disease. MERG has the advantage of being non-invasive and risk of breastfeeding after angiography can be avoided. It is more sensitive than FA and ICG in the evaluation of macular choroidal ischaemia. Similar MERG has the advantage of being non-invasive and risk of breastfeeding after angiography can be avoided. It is more sensitive than FA and ICG in the evaluation of macular choroidal ischaemia.

References:

Figure 1 The MRI scan displays diffuse tumour infiltration of the upper eyelid (arrows).

Figure 2 Multifocal electroretinogram (MERG) of right eye. (Left) At 2 weeks post partum, trace array and three dimensional MERG topography show decreased retinal response density in the fovea and nasal part of the macula. Average MERG responses of the temporal and nasal maculae showing prolonged N1 and P1 latencies as well as diminished response amplitude of the nasal macula compared with the temporal macula. Mean N1 and P1 latencies were 16.7 ms and 30.0 ms for the nasal macula, and 14.2 and 27.5 ms for the temporal macula, respectively. Mean P1 response amplitude for the nasal right macula is 70% of the temporal macula (18.0 nV/deg vs 26.3 nV/deg). (Right) At 3 months post partum, trace array and three dimensional MERG topography show recovery of the foveal response. Nevertheless, average MERG response shows persistent mild decrease in response amplitude in the nasal macula (19.2 nV/deg vs 23.4 nV/deg).

Figure 2 Signet ring cell carcinoma of the eccrine sweat gland in the eyelid, treated by radiotherapy alone.

COMMENT
In most cases of signet ring cell carcinoma described in the literature, upper and lower lids of one eye were involved. Three patients were initially treated by excision alone, all of them had a period of survival of at least 6 years. One of these patients...
developed a recurrence after 10 years, with preauricular lymph node metastasis, as a result of which he was treated with radiotherapy (50 Gy). He had at least 18 months of remission thereafter, but showed subclinical liver metastasis at necropsy; his death was not tumour related. Another patient was found to have pulmonary metastases from which he finally died.

Radiotherapy alone (35 Gy), as in our case, was applied to another patient. He showed infiltration of the lids and the anterior orbit, and had at least 6 years of remission. The only patient treated by orbital exenteration, radiotherapy, and tamoxifen died as a result of liver metastases within a period of less than 6 years after initial diagnosis. His pretreatment status, showing extensive orbital infiltration, was quite similar to that of the patient we are presenting here.

From the cases reported in the literature, we conclude that this tumour possesses a low to intermediate grade of malignancy. To date, 14 months after radiotherapy, our patient still shows remission. Thus, for elderly patients with extensive infiltration of orbital and adnexal tissue by an eccrine sweat gland carcinoma, we consider this conservative treatment sufficient to achieve local control.

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Endonasal endoscopic dacryocystorhinostomy for dacryocystocele in a 4 month old infant

EDITOR,—Canalisation of the nasolacrimal apparatus usually occurs at the same time throughout its length. However, its distal end has been shown to be occluded by a membrane in 73% of otherwise normal stillborn fetuses at term.1

For typical dacryocystoceles, a regimen of warm compresses and massage, with regular endonasal endoscopic dacryocystorhinostomy (EEDCR), the patient was in one of her “silent phases”, without any clinical sign of acute exacerbation of the infection. Only moderate hemispheric bulging was seen in the medial canthal region.

We started the procedure by inserting two small, very thin (20 × 5 mm) gauze flakés, previous soaked in a 5% cocaine solution mixed with adrenaline (5:1 ratio) and then firmly squeezed, into the left nasal cavity. The flakés were removed after 5 minutes. A favourable vasoconstriction of the whole nasal mucosa was achieved. Then 0.5 ml of local anaesthetic (1% lignocaine with 1:100 000 adrenaline) was injected submucosally in the area just anterosuperior to the insertion of the middle turbinate. We used a paediatric endoscope of 2.7 mm in diameter and 30 degrees optics. The mucosa of this region was then removed by means of bipolar coagulation, and lacrimal bone was nicely exposed in an oval shape measuring up to 6 mm in longer diameter. The bone was drilled off and thinned out, so that the lacrimal sac became visible (the removal of the underlying lacrimal bone is more easily performed posteriorly, where it is thinner, but is more safely performed anteriorly to avoid the possibility of orbital disruption). The ophthalmological probe was inserted into the lacrimal canal and the sac itself, tenting it towards the nasal cavity. Then lacrimal sac manipulation was performed using otological microsurgical scissors and punches, and a large amount of turbid tears mixed with mucopurulent discharge was obtained.

A 6 cm long nasal thin gauze ribbon package with antibiotic ointment was placed in the operated region for 3 days. After 5 days, there was no sign of dacryocystocele or dacryocystitis on the girl’s face (Fig 2). Eight months after the surgery, she is feeling fine.

COMMENT

Since, after 16 weeks of life, the nasolacrimal duct obstruction and dacryocystoceles did not resolve spontaneously or after conservative treatment, we performed an endonasal endoscopic dacryocystorhinostomy. As far as we know, this was the youngest child ever operated by means of EEDCR. The small anatomical dimensions of the infant nose posed a technical challenge in performing EEDCR: during the use of Richard’s otological drill for bone removal, there was some difficulty in concomitant endoscopic visualisation and potential damage to the nasal mucosa from rotation of the drill shaft. We also performed a lacrimal opening of 6 mm with angled endoscopic biting forceps (the usual opening is about 4 mm).

In comparison with an external dacryocystorhinostomy, EEDCR avoids an external scar and offers very low morbidity in the immediate postoperative course. In spite of the technical problems, we think that
COMMENT
The role of EBV in ocular diseases is still not clear, because approximately 95% of adults are positive for EBV antigen and only a few suffer from ocular disease. Previously described cases of “EBV retinitis” only described inflammation of the posterior pole without scarring, which is not typical for viral retinitis. Proving an acute EBV infection usually is done with increased EBV titres. Such a constellation was found in our patient. The titres decreased during the following 12 weeks suggesting that EBV may play a part in this man’s retinitis. The reported patient showed all criteria of the American Uveitis Society for ARN.

However, it is not possible to rule out that other herpesviruses have caused the retinitis. This probably could only have been proved with a diagnostic vitrectomy or anterior chamber tap which was refused because of improvement with treatment. Serological findings showed no signs of other herpes infections.

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Transretinal “endoresection” was performed in July 1994. The procedure involved three port vitrectomy, retinectomy over the tumour, endodiathermy to bleeding points, endolaser photocoagulation applied to the margins and the bed of surgical coloboma and fluid-gas-silicone exchange. Histological examination showed the melanoma to be of mixed, spindle, and epithelioid cell type. In September 1994, the eye was settling well, except for an amelanotic choroidal swelling, which was noted adjacent to the inferonasal margin of the coloboma. This was believed to consist of a bubble of silicone oil in the suprachoroidal space although the possibility of recurrent melanoma could not be excluded clinically. There was also a localised tractional retinal detachment caused by vitreous bands.

Vitreoretinal surgery was performed, with release of the vitreous traction and excision of the retina and choroid over the swelling. This procedure confirmed that the tumour consisted of a bubble of silicone oil beneath the choroid. The procedure also included endolaser photocoagulation and silicone-gas exchange. The eye nevertheless developed retinal detachment with proliferative vitreoretinopathy and cataract. In December 1994, further surgery was performed, which consisted of phacoemulsification, removal of epiretinal membrane, 180 degree retinectomy, endolaser photocoagulation, and silicone oil fill.

In April 1995, the retina was flat with an epiretinal membrane covering the inferior margin of the coloboma and a fibrovascular scar partially obscuring the optic disc. It was decided that the silicone oil should be left in place because of the high risk of retinal detachment. When reviewed in February 1999, the vision was hand movements and cataract. In December 1994, the eye was healthy. The tumour had broken through the sclera and caused optic neuropathy. On examination, the vision was 6/4 with each eye. The tumour was pigmented and located inferiorly, extending to within two disc diameters of the fovea and optic disc margin (Fig 1). Approximately 40% of the retina was detached. On ultrasonography, the tumour had basal dimensions of 12.0 mm by 11.7 mm and a thickness of 4.8 mm (Fig 2). The left eye was healthy. Full systemic assessment revealed no other disease.

CASE REPORT
A 40 year old man presented with a 6 month history of photopsia. He was found to have a choroidal melanoma in the right eye and referred for conservative treatment. On examination, the vision was 6/4 with each eye. The tumour was pigmented and located inferiorly, extending to within two disc diameters of the fovea and optic disc margin (Fig 1). Approximately 40% of the retina was detached. On ultrasonography, the tumour had basal dimensions of 12.0 mm by 11.7 mm and a thickness of 4.8 mm (Fig 2). The left eye was healthy. Full systemic assessment revealed no other disease.

Figure 1 Fundus photographs (A) preoperatively, showing an inferior choroidal melanoma extending close to optic disc and fovea, and (B) 2 months postoperatively, showing surgical coloboma.

Figure 2 Light micrographs of the enucleated eye. (A) Low power view showing intrascleral tumour recurrence close to optic disc and (B) high power view showing a ciliary nerve within the tumour.

Leucocoria as the presenting sign of a ciliary body melanoma in a child

EDITORS,—Uveal melanoma is a disease of adulthood.1 It has been reported that 0.6% to 1.6% of all uveal melanomas occur in patients under 20 years of age.2 In a review of 3706 consecutive patients with uveal melanoma, Shields and associates found that 1.1% were children and teenagers younger than 20 years of age, of whom only 0.3% had ciliary body melanomas.3

Patients with ciliary body melanoma usually are asymptomatic until the tumour impinges on the lens and causes visual distortion.4 Children with intraocular tumours generally have few visual symptoms and adapt to visual distortion without complaints.3 Leucocoria in childhood is the most frequent presenting sign of retinoblastoma, but it is generally not associated with uveal melanoma. We report an unusual case of a 9 year old child with a ciliary body melanoma who presented with leucocoria.

CASE REPORT
A 9 year old white girl was referred to Oncology Service at Wilks Eye Hospital with a 1 month history of leucocoria and strabismus in
her right eye (Fig 1A). She was otherwise healthy and her medical history was unremarkable.

Her visual acuity was hand movements in the right eye and 20/20 in the left eye. The intraocular pressure was 15 mm Hg in each eye. External examination revealed leukocoria in the right eye, 30 degrees of right exotropia, and prominent episcleral sentinel vessel inferotemporally. There was no melanocytosis. Slit lamp biomicroscopy disclosed shal.

Figure 1 Slit lamp photograph showing the inferonasal dark tumour, subluxing the cataractous lens, causing leucocoria (A). Gross pathology reveals the heavily pigmented ciliocorial mass moulding to the lens (B).

COMMENT

Uveal melanoma is very rare in children and adolescents. Shields and associates reported that approximately 1% of all uveal melanomas in patients are 20 years of age or younger at diagnosis. In no case has any of these young patients presented with leucocoria. Ciliary body melanoma in both children and adults is usually asymptomatic and can attain a large size before it is recognised clinically. The most common presenting manifestations of ciliary body melanoma include dilated episcleral vessels in the quadrant of tumour, secondary hypotony or glaucoma, and subluxation of lens with visual aberration and mild cataract. Leucocoria generally is not present because the patient usually seeks consultation before dense cataract or leucocoria develops. Cataract rarely develops in eyes with retino

Figure 2 Histopathology discloses large pleomorphic epithelioid melanoma cells. (A) Haematoxylin and eosin; (B) bleach, both original magnifications ×80.

Spontaneous extrusion of subconjunctival cysticercus cellulosae

EDITOR,—Cysticercus cellulosae, the larval form of Taenia solium (tapeworm), often affects the human eye. Human infection occurs on eating raw or inadequately cooked infected pork, consuming food or water contaminated with faecal matter containing the ova, or as a result of autoinfection. Sommering first reported a case of ocular cysticercosis. The parasite’s most favoured site in the eye is vitreous and subretinal space followed by the subconjunctival space and orbit is uncommon. We report a case of subconjunctival cysticercus cellulosae in which there occurred spontaneous extrusion.

CASE REPORT

A young 7 year boy presented with redness and swelling in the right eye. General physical and systemic examination revealed no abnormality. The right eye had a smooth, pinkish, hemispherical, subconjunctival, cystic swelling of approximately 8 × 8 mm size near the inner canthus (Fig 1). It was loosely adherent to the eyeball, non-reducible, and was mildly tender. The conjunctival vessels over and around it were mildly congested. The left eye was normal. An ultrasound of the right eye done with a waterbath revealed a subconjunctival...
A subconjunctival cyst at the inner canthus of the right eye.

Figure 1

A 76 year old man with a long history of chronic schizophrenia. We were not empowered to detain him for treatment against his will. He discharged himself from hospital with an untreated fungating BCC.

COMMENT

This patient had a neglected BCC which had caused destruction of soft tissue and bone, with orbital invasion and was threatening the vision in his remaining eye.

Where advanced scalp cancer displays deep invasion, radical excision and reconstruction are indicated. Some authors suggest that aggressive surgical management of advanced skin neoplasia is the only treatment to produce long term survival. In malignant cutaneous tumours involving the anterior skull base, invasion of the dura mater significantly affects survival. In particular, spread along the medial orbital wall can lead to meningeal infiltration by direct invasion. As with squamous cell carcinoma, large basal cell carcinomas can invade the central nervous system by

Figure 2

Ultrasound showing a cystic mass in the subconjunctival region in the lateral aspect of the eyeball with a central echogenic nodule suggestive of a cysticercus cellulosae. (Fig 2).

Massive basal cell carcinoma in a schizophrenic patient: treatment options and constraints

Editor,—Basal cell carcinoma (BCC) is the most common malignant tumour of the eyelids and face. Factors which increase the chance of orbital invasion include a medial canthal location, slow indolent growth, morpheiform growth pattern, surgical recurrence, advanced presentation, and neglect. Orbital invasion predisposes to intracranial involvement by direct or perineural spread. Management of orbital invasion is difficult and requires a multidisciplinary team approach for radical surgery and/or radiotherapy.

We present a 76 year old Ukrainian man with a neglected tumour on his forehead which had spread over several years to involve the upper eyelids, anterior orbit, and ethmoid sinuses.

CASE REPORT

A 76 year old man with a long history of untreated forehead BCC complained of deteriorating vision in his right eye and ocular discharge. He had been admitted by the care of the elderly unit, for social reasons. He was a known paranoid schizophrenic treated with psychotropic drugs. Four years previously his physician had measured the lesion as being 2 cm × 4 cm and recommended plastic surgery, which was declined.

There was a massive, fungating lesion of the forehead, superior orbits, and nasal bridge, at least 15 cm × 17 cm (Fig 1). The right uncorrected visual acuity was 6/24 and left only light perception (unable to use a pin hole). There was fixed ptosis and right lower eyelid involucrotional ectropion. There was an opaque left cornea. The right fundus was normal. He did not permit intraocular pressure measurement.

Figure 3

Computed tomograph scan shows destruction of the left nasal bone, frontal sinus, and bilateral anterior ethmoid involvement, bilateral anterior orbital extracranial involvement, as well as extensive soft tissue destruction.
perineural spread. Our patient risks spread of the tumour along the supraorbital and supra-trochlear nerves.

When local surgical therapy fails to prevent recurrence or definitive surgical resection is not possible, as in this case, alternative therapies must be considered. Opinions vary on the roles and efficacy of radiation therapy and chemotherapy for extensive lesions. Cisplatin and doxorubicin have been reported to achieve complete remission of recurrent invasive BCC of the medial canthus and orbit at 5 years. Using adjunctive radiotherapy, large BCCs of the head showed partial to complete response but no cures achieved. A complete response was defined as disappearance of all measurable lesions (but cancer cells are still present microscopically) and a partial response was 50% reduction in all lesions.

Patients with large or aggressive skin cancer are fortunately uncommon and management should be individualised following discussion with both the patient and his/her family. The options include a combination of surgery, radiotherapy, and chemotherapy with every effort made to preserve vision.

Our elderly, schizophrenic patient declined treatment and in these circumstances symptoms present that can be offered. Legal issues prevent forced treatment.

Informed consent includes providing adequate information about the treatment to make a reasoned decision. Obtaining consent must be free of coercion or threats, which would affect the patient’s decision. The patient must be presumed competent unless shown otherwise. Psychiatric assessment confirmed that this patient was competent to make his own decisions. Exceptions include if immediate surgery is needed and the patient is unable to provide it (in coma or insufficient time to obtain it), the patient is legally incompetent to make a treatment decision, or decides to waive the right to be fully informed.

Untreated, the outlook for this patient is grim.

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Comment

This case report describes the support of the orbital floor was presumably lost secondary to blockage of osteomeatal complex and subsequent inflammatory changes and/or pressure changes within the antrum. Previous reports have advocated the surgical reconstruction of the orbital floor at an early stage. Maxillary sinusitis is frequently a self resolving disease, as occurred in this case. Resolution of maxillary sinusitis, inflammatory and pressure components that produced the displacement of eyeball appears to have taken place. In the absence of negative pressure in the maxillary antrum and with orbital floor periosteum intact, new bone was laid down to reform the orbital floor with subsequent repositioning of the globe.

This case raises the question as to whether surgical intervention is required in these cases if the maxillary sinus disease can be treated or resolves of its own accord. Should medical or conservative management be inadequate then it can be hypothesised that a simple middle meatal antrostomy may be enough, following which the orbital floor might reform without need for reconstruction. The authors suggest this as a hypothesis extrapolating from the events that occurred in this patient.

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Spontaneous resolution of eyeball displacement caused by maxillary sinusitis

Editor—Spontaneous displacement of the eyeball caused by maxillary sinusitis is rare but well documented. Different treatments have been suggested but all are surgical. Spontaneous enophthalmos due to maxillary sinusitis was first described by MontgomerY; there have since been a series of reports describing this condition. The mechanism appears to arise from obstruction of the osteomeatal complex which impairs sinus ventilation. The resorption of retained secretions within the sinus produces a negative pressure which results in erosion of the thin orbital floor. In the absence of trauma the triad of obstructive sinus disease, diminished antral volume, and enophthalmos has been thought to be caused by inflammatory resorption and inferior displacement of the orbital floor. The globe is also displaced downwards and backwards such that the patient will have a narrow palpebral fissure and a deep superior sulcus above the eye.

CASE REPORT

A 29 year old white male presented to the ophthalmology clinic having noticed that his right eye had been at a lower level than left one for the previous 2 years. There was no history of trauma. There were no nasal complaints or past history of sinusitis. On examination, the right globe was displaced inferiorly by 5–6 mm. Ophthalmic examination, including a visual acuity cover test and ocular movements were otherwise normal. A computed tomograph (CT) scan showed an opaque right maxillary antrum which was hypoplastic. The floor of the orbit was eroded and the right eyeball had sunk into the antrum (Fig 1).

He was seen in the ENT clinic and listed for an endoscopic middle meatal antrostomy and repair of the orbital floor. The patient changed his address and we were unable to contact him. Three years later, he contacted the ENT department to inquire about his appointment. We advised him that a further review might be beneficial. When reviewed the right eye was noted to be in a normal position. A repeat scan was undertaken which showed a well aerated right maxillary sinus which was larger than on the previous CT scan. The right orbital floor appeared well ossified and at a higher level than before (Fig 2). In view of these findings, it was decided that no further management was required.

COMMENT

In this case report the support of the orbital floor was presumably lost secondary to blockage of osteomeatal complex and subsequent inflammatory changes and/or pressure changes within the antrum. Previous reports have advocated the surgical reconstruction of the orbital floor at an early stage. Maxillary sinusitis is frequently a self resolving disease, as occurred in this case. Resolution of maxillary sinusitis, inflammatory and pressure components that produced the displacement of eyeball appears to have taken place. In the absence of negative pressure in the maxillary antrum and with orbital floor periosteum intact, new bone was laid down to reform the orbital floor with subsequent repositioning of the globe.

This case raises the question as to whether surgical intervention is required in these cases if the maxillary sinus disease can be treated or resolves of its own accord. Should medical or conservative management be inadequate then it can be hypothesised that a simple middle meatal antrostomy may be enough, following which the orbital floor might reform without need for reconstruction. The authors suggest this as a hypothesis extrapolating from the events that occurred in this patient.

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Familial thrombophilia and normal tension glaucoma

Editor—The aetiology of normal tension glaucoma (NTG) is still debatable. Abnormal blood flow, systemic hypertension, abnormal blood coagulability, and other factors associated with cerebrovascular disease may have a causative role in NTG. A study was designed to look at the prevalence of familial thrombophilia in cases of NTG.
CASE REPORT
Seventy two patients were identified from opthalmological database records with the diagnosis of NTG (defined as intraocular pressure <21 mm Hg, open drainage angle on gonioscopy, absence of any secondary cause). Seventy two patients were identified from the medical records. Absence of any secondary cause led to the diagnosis of NTG (defined as intraocular pressure <21 mm Hg). Strict criteria were used for entry into the study. Patients with NTG had to be under the age of 70 years with normal computerised tomography and normal day time intraocular pressure phasing. Forty five patients did not fullfil these criteria and so were excluded. Twenty seven patients formed the study group. None of these patients were on any medication which would be expected to have altered the values of the prothrombotic factors measured. The control group comprised 90 blood donors used by the regional thrombophilia laboratory as their control values of thrombophilic markers. The control group had an equal male:female ratio, an age range of 18–60 years, and no donor was on any medication or suffering from a medical illness. This gave a good control prevalence of the prothrombotic factors tested for in the study which are not altered by age variation. If any abnormality was found a repeat screen was performed for the patient and control groups, and the non-significant prevalence of factor V Leiden mutation, prothrombin G20210A allele, anti- phospholipid antibodies, and hyperhomocysteinaemia was taken for investigation. Informed consent was obtained and ethical approval had been given.

The study group was made up of 16 females and 11 males (ratio 1.5:1). The mean age of diagnosis was 60 years (range 43–69). Table 1 shows the patient details. Twenty three patients had a normal thrombophilia screen. Two patients had moderate hyperhomocysteinaemia (7%, controls 6% p>0.5), one was heterozygous for the factor V Leiden mutation (4%, controls 5% p>0.5) and another had a low titre of antiphospholipid antibodies (4%, controls 3% p>0.5). No patient had the prothrombin G20210A variant.

**Table 1 Patient details**

<table>
<thead>
<tr>
<th>Patient No</th>
<th>Age</th>
<th>Sex</th>
<th>Thrombophilia screen</th>
<th>Possible risk factors</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>48</td>
<td>M</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>2</td>
<td>61</td>
<td>F</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
<td>M</td>
<td>Mild raised homocysteine</td>
<td>Migraine</td>
</tr>
<tr>
<td>4</td>
<td>65</td>
<td>F</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>5</td>
<td>69</td>
<td>M</td>
<td>Raised homocysteine</td>
<td>Migraine</td>
</tr>
<tr>
<td>6</td>
<td>62</td>
<td>M</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>7</td>
<td>59</td>
<td>F</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>8</td>
<td>57</td>
<td>F</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>9</td>
<td>51</td>
<td>F</td>
<td>Negative</td>
<td>CVA</td>
</tr>
<tr>
<td>10</td>
<td>66</td>
<td>M</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>11</td>
<td>62</td>
<td>F</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>12</td>
<td>67</td>
<td>F</td>
<td>Negative</td>
<td>CVA</td>
</tr>
<tr>
<td>13</td>
<td>63</td>
<td>F</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
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<td>Negative</td>
<td>Nil</td>
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<td>F</td>
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<td>Nil</td>
</tr>
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<td>M</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
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<td>57</td>
<td>M</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>18</td>
<td>57</td>
<td>M</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>19</td>
<td>54</td>
<td>M</td>
<td>Low titre antiphospholipid antibodies</td>
<td>Nil</td>
</tr>
<tr>
<td>20</td>
<td>43</td>
<td>F</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>21</td>
<td>68</td>
<td>M</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>22</td>
<td>52</td>
<td>F</td>
<td>Heterozygous factor V Leiden</td>
<td>Smoker DVT</td>
</tr>
<tr>
<td>23</td>
<td>51</td>
<td>F</td>
<td>Negative</td>
<td>Nil</td>
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<tr>
<td>24</td>
<td>59</td>
<td>F</td>
<td>Negative</td>
<td>Nil</td>
</tr>
<tr>
<td>25</td>
<td>69</td>
<td>M</td>
<td>Negative</td>
<td>DVT increased cholesterol</td>
</tr>
<tr>
<td>26</td>
<td>65</td>
<td>F</td>
<td>Negative</td>
<td>MI increased cholesterol</td>
</tr>
</tbody>
</table>

COMMENT
In trying to discover the aetiology of NTG, some studies have suggested that these patients may have altered rheology producing a greater tendency to thrombosis.1 2 There is also evidence of activation of the coagulation cascade and fibrinolytic pathway but there is no conclusive evidence of a general vascular aetiology in the causation of NTG.3 4

The factor V Leiden mutation is a common hereditary abnormality with a 1–8% prevalence of heterozygous carriers depending on geographic location and accounts for the majority of activated protein C resistance. It is known that familial thrombophilia greatly increases the risk of venous thrombosis but it must be stressed that the most people with the Leiden mutation will not experience a thrombotic event.7 The prothrombin G20210A variant is another common abnormality with a carrier prevalence of 1–4% being more common in Southern Europe and, like the Leiden mutation, rare in people from Asian or African descent. An association of the prothrombin variant and the factor V Leiden mutation with arterial disease has not been demonstrated convincingly8 and this therefore questions the role of these prothrombotic factors in the causation of ocular abnormalities.6 It gives us to conclude that the heterozygous state of factor V Leiden in patient 23 did not have a causative role in her glaucoma though may have contributed to her deep vein thrombosis.

Retinal artery and vein occlusions have been documented with hyperhomocysteinaemia7 9. A raised homocysteine level has many causes and the haematological and vascular abnormalities associated with hyperhomocysteinaemia lead to a proatherogenic and prothrombotic metabolic environment.10 Levels can be easily reduced with dietary folate acid supplementation, with or without vitamin B12 but it is unknown if this reduces the risk of vascular disease. It is also unknown if the strong link of hyperhomocysteinaemia and cardiovascular events is actually causal. Both patients in the study with hyperhomocysteinaemia were commenced on folic acid and subsequent levels of homocysteine were in the normal range.

Other hereditary thrombophilic conditions, such as protein C and protein S deficiency, and antiphospholipid antibodies have been reported in association with ocular vascular pathology and a combination of these factors may further increase the risk of hypercoagulability. The low levels of antithrombin and antithrombic markers in patient 20 are thought not to be prothrombotic.

It is unlikely that familial thrombophilia plays a significant aetiological role in NTG.

A larger study is needed to confirm our findings.

On the available evidence, thrombophilia screening in patients with NTG is not indicated.

Previous poster presentation at the Royal College of Ophthalmologists' annual congress, Harrogate 2000.

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The wide field multifocal ERG reveals a retinal defect caused by vigabatrin toxicity?

EDITOR,—Vigabatrin is an effective drug for controlling chronic epilepsy and is taken more commonly in conjunction with additional antiepileptic drugs. There has been increasing subjective evidence that this drug may be associated with visual field defects.1 2 We report here the interesting results we found from wide field multifocal ERGs performed on a patient taking vigabatrin.

CASE REPORT
A 52 year old white man was referred to the eye clinic with a 6 month history of bumping into objects. His optician reported a bilateral inferior and nasal field defect. On examination his visual acuity was 6/6, N5 with correction, Ishihara 17/17 in each eye and intraocular pressures were 19 mm Hg. He had a full range of ocular movements and pupil reactions were normal. There was a mild pallor to both optic discs.
discs and a spontaneous venous pulsation was present. Both maculae were healthy. Humphrey central 30-2 threshold visual fields recorded peripheral constriction within 10° of fixation. Blood pressure was 162/88 and urinalysis was negative. There was no significant family history nor did he have any history of night blindness. His medical history included epilepsy, for which he commenced anticonvulsant treatment in 1966. Despite a variety of drug regimens he never had adequate control of his symptoms until February 1999, when 1000 mg twice daily of vigabatrin was added to a regimen of carbamazepine 300 mg three times daily and sodium valproate 500 mg three times daily. Attempts were made to replace vigabatrin with gabapentin and then lamotrigine but neither proved to be successful; therefore, he returned to using vigabatrin.

At the time of examination treatment included vigabatrin, carbamazepine, sodium valproate, and propranolol. Although the patient has been informed of the associated risk of visual field loss; he has elected to remain on vigabatrin treatment.

In November 1999 he was referred for conventional electrophysiological investigations, including electro-oculogram (EOG), visual evoked cortical potentials (VECP), and electroretinograms (ERG). All tests were performed in accordance with current ISCEV international standards. Findings were similar to other reports in that VEPs were normal, his ERGs were deemed to be equivocal in that the Arden index was >1.7 but <1.9. There was a small reduction in cone and maximal response of the left eye in the ERG and a significant reduction of oscillatory potentials in both eyes (Table 1).

**COMMENT**

Advances in electrophysiological techniques have enabled topographical maps of retinal function to be constructed. Wide field (90 degree) multifocal stimulation of the retina was performed using a custom built system with a 61 hexagonal display digitally back projected onto a polysilicon screen.

Multifocal electroretinograms were performed in June 2000, showed good correlation with visual fields in determining the area of visual loss. Normal retinal function was recorded in the central 40° of both eyes. However, a delay in implicit timings occurred with eccentricity; more importantly there were marked reductions in peripheral b-wave amplitudes which may be suggestive of retinal toxicity. These results were consistent in both eyes. Figure 1 depicts MFERG responses of the patients left eye in comparison with the left eye of a normal subject.

The wide field multifocal ERG technique is the only objective tool for assessing the effect of vigabatrin toxicity on the peripheral retina. Currently, a larger clinical study utilising this technique is underway. We are confident that this technique will help to answer many of the unresolved issues associated with this form of treatment.

Table 1 Conventional electrophysiology findings

<table>
<thead>
<tr>
<th>Normal range</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOG</td>
<td>&gt;1.9</td>
<td>1.7</td>
</tr>
<tr>
<td>VEP (µV):</td>
<td>&gt;1.7&lt;1.9</td>
<td></td>
</tr>
<tr>
<td>60' check</td>
<td>85–109</td>
<td>104</td>
</tr>
<tr>
<td>15' check</td>
<td>89–116</td>
<td>105</td>
</tr>
<tr>
<td>ERG (µV):</td>
<td>72–367</td>
<td>109</td>
</tr>
<tr>
<td>Red response</td>
<td>241–709</td>
<td>253</td>
</tr>
<tr>
<td>Maximal response</td>
<td>36–112</td>
<td>8</td>
</tr>
<tr>
<td>Oscillatory potentials</td>
<td>68–222</td>
<td>75</td>
</tr>
<tr>
<td>30 Hz flicker</td>
<td>25–150</td>
<td>57</td>
</tr>
</tbody>
</table>

Figure 1 Left eye wide field multifocal ERG results from patient taking vigabatrin shown against results from a normal patient with no ocular pathology. (A) Multifocal waveforms show reduction in peripheral b-wave amplitudes. (B) Normal multifocal waveforms. (C, D) Topographical maps of retinal function. (E, F) Plan view topographical maps.

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