LETTERS TO THE EDITOR

Central serous papillopathy

EDITOR,—Central serous retinopathy is a serous macular detachment that produces central visual loss in one eye. It may occur idiopathically or in conjunction with a pit or coloboma of the optic disc. In idiopathic cases, fluorescein angiography characteristically shows one or more leakage points through which choroidal fluid transgresses the retinal pigment epithelium to enter the subretinal space.1 This report describes a patient who developed a serous retinal detachment extending from the optic disc to the macula which was associated with a discrete angiographic area of capillary leakage within a non-excavated optic disc.

Fluorescein angiography disclosed no residual abnormality (Fig 2D).

CASE REPORT

A 32 year old man awoke with blurred vision in his left eye that had persisted over a 4 day period. He denied pain with eye movement or associated headache. He had a history of poor vision in the right eye since early childhood which had not improved with occlusion therapy. Except for a recent upper respiratory infection, he was otherwise healthy.

Visual acuity was hand movements in the right eye and 20/200 in the left eye. Pupillary examination showed a 1+ afferent pupillary defect on the right. Dilated slit lamp examination showed no vitreous cells or other evidence of intraocular inflammation. There was no significant refractive error in either eye. Retinal examination showed a heavily pigmented scar in the macula of the right eye. The retina appeared normal in the left eye. The optic disc in the left eye was normal in size but had a tilted configuration and a prominent temporal crescent (Fig 1). Peripheral corneal vascularisation was present. Complete blood counts, erythrocyte sedimentation rate, and serum glucose were normal. He was treated with 3 times a day course of intravenous Solumedrol (methylprednisolone, 250 mg, four times a day) for presumed retrobulbar neuritis, which produced no improvement in vision.

The patient returned 2 months later, complaining of persistent visual loss in the left eye. Retinal examination disclosed a shallow transparent retinal detachment extending from macula to the optic disc (Fig 1). Fluorescein angiography showed an abnormal area of hyperfluorescence deep within the temporal aspect of the optic disc, which increased in the mid phase and stained in the late phase (Fig 2). There was no additional retinal pigment epithelial leakage point beneath or surrounding the detachment. Ultrastructural examination of the optic disc disclosed no notching or depression within the optic disc.

Two years later, the patient returned and stated that his vision had slowly normalised in the left eye. Repeat examination showed a visual acuity of 20/20 in the left eye with a normal appearing optic disc and macula.

Fluorescein angiography disclosed no residual abnormality (Fig 2D).

The differential diagnosis of this patient’s disorder included occult optic pit, optic disc haemangioma, and a focal capillary leakage deep within the optic disc, with egression of fluid into the subretinal space. Occult optic pit and optic disc haemangioma were ruled out by clinical examination and by the complete resolution of the abnormal hyperfluorescence on fluorescein angiography, suggesting the presence of a focal capillary leakage within the optic disc which may have been inflammatory in origin. Abnormal capillary leakage deep within the optic disc may cause intraretinal fluid accumulation and formation of a macular star in the setting of neuroretinitis; however, transgression of fluid into the subretinal space is generally prohibited by the intermediary tissue of Kuhnt.1 In this patient, an anomalous peripapillary area may have disrupted the normal barrier function of the intermediary layer of Kuhnt, providing a non-physiological conduit between the optic disc and the subretinal space.

Supported in part by a grant from Research to Prevent Blindness, Inc.

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REFERENCES


Immunohistological findings in a patient with unusual late onset manifestation of ligneous conjunctivitis

EDITOR,—Ligneous conjunctivitis is a rare chronic membranous conjunctivitis with typical woody induration of the conjunctival tissue.1 It occurs most often bilaterally in female children and is of unknown aetiology.1,2 The disease process may involve other mucous membranes, such as the cervix and the trachea, occasionally leading to death by tracheal obstruction.3 Few patients with adult onset ligneous conjunctivitis have been seen.1,2 They generally experience a milder course and systemic involvement is less common. Autoimmune dysfunction, infection with an unidentified virus, and an inherited predisposition possibly combined with trauma have all been proposed as possible causes for the disease.1,2 Recent studies have found an inherited defect in the plasminogen system of affected children.1 Treatment of the condition is problematic and often unsuccessful.1

CASE REPORT

A 69 year old woman presented with recurrent unilateral conjunctivitis. She had dry eyes and foreign body sensation, but no visual impairment. Conjunctival injection with dense membranes and fibrosis of the lids was present (Fig 1). Periocular corneal vascularisation was...
Mutifocal electroretinography in patients with occult macular dystrophy

EDITOR,—Occult macular dystrophy (OMD), idiopathic photoreceptor dysfunction, or central cone dystrophy is an unusual form of macular dystrophy where a progressive decline of visual acuity occurs with an essentially normal fundus and normal fluorescein angiography (FA) findings. The topography of the electroretinographic responses in the central visual field in three patients with OMD was examined by means of the multifocal electroretinogram (m-ERG). To evaluate the retinal pigment epithelium (RPE) and the choroidal circulation in OMD, indocyanine green videoangiography (ICG-V) was performed.

CASE 1
A 77 year old pseudophakic woman presented with progressive decreased visual acuity bilaterally of 10 years’ duration. The best corrected Landolt visual acuity was 20/250 right eye and 20/300 left eye. Visual field testing revealed central scotomas in both eyes. Fundus photography (Fig 1A), FA, and ICG-V were normal. Photopic ERG showed borderline amplitudes while scotopic ERG was normal. The Farnsworth–Munsell 100 hue tests showed several errors without any specific axis. The m-ERG exhibited markedly diminished responses in a relatively small circumscribed area in the macula (Fig 2A).

CASE 2
A 68 year old patient had blurred visual acuity for 10 years. The best corrected visual acuity was 20/200 right eye and 20/600 left eye. Fundus photography (Fig 2A), FA, and ICG-V were normal. Photopic ERG showed borderline amplitudes while scotopic ERG was normal. The Farnsworth–Munsell 100 hue tests showed several errors without a specific axis. There were central scotomas in the visual fields bilaterally. The m-ERG revealed marked depression of responses only in the macula (Fig 2B).

Table 1
<table>
<thead>
<tr>
<th>Antigen</th>
<th>Specificity</th>
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<tbody>
<tr>
<td>CK-MNF</td>
<td>Pancytokeratin, epithelial tissue</td>
</tr>
<tr>
<td>Collagen type IV</td>
<td>Vimentin, basal membranes</td>
</tr>
<tr>
<td>CD 3</td>
<td>Cell surface antigen on all T cells</td>
</tr>
<tr>
<td>CD 4</td>
<td>Cell surface antigen on T helper cells and thymocytes; important for stabilisation of the T cell receptor-MHC II interaction</td>
</tr>
<tr>
<td>CD 8</td>
<td>Cell surface antigen expressed by cytotoxic T cells, intraepithelial lymphocytes, thymocytes, and some dendritic cells</td>
</tr>
<tr>
<td>CD 15</td>
<td>Marker for cell activation predominantly expressed by granulocytes and, to some extent, by macrophages</td>
</tr>
<tr>
<td>CD 20</td>
<td>Cell surface antigen found on nearly all B cells except pre-B cells and plasma cells. Represents a transmembrane ion channel protein and plays an important role in the activation and proliferation processes of the maturing B cell</td>
</tr>
<tr>
<td>CD 68</td>
<td>Cell surface antigen found on macrophages and monocytes</td>
</tr>
<tr>
<td>CD 79a</td>
<td>Cell surface antigen expressed early in the ontogenesis of B cells, persistent in plasma cells, but not co-expressed with CD20+</td>
</tr>
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</table>
COMMENT
Focal macular cone ERG is the key to the diagnosis of OMD. In our two patients, m-ERG activity was markedly diminished in a relatively small circumscribed area in the macula, suggesting limited functional defects in the fovea. Since no abnormality was found by ICG-V, or FA, the intact RPE and choroid may have a barrier effect to the underlying choroidal circulation.

The pathology of OMD may involve the macular cone system without affecting the RPE and choroid. m-ERG can be useful for the differential diagnosis of OMD and can help map the topography of cone activity loss more precisely. m-ERG may aid in characterising the functional retinal topography in the near future.

Figure 1 Fundus photographs of cases 1 (A) and 2 (B) showing essentially normal findings.

Figure 2 m-ERG of cases 1 (A) and 2 (B) showing decreased amplitudes of the wave patterns in the central 8° and 12° of the macula, respectively.

Kimura's disease: no evidence of clonality

EDITOR—Kimura's disease is a chronic inflammatory disorder of unknown aetiology. Patients usually present with recurrent painless swellings in the subcutis of the head and neck region, increased serum IgE levels, and peripheral eosinophilia. The disease is described as reactive and data on clonality is absent. Here we describe a patient with Kimura's disease involving the orbits. Clonality studies were performed by polymerase chain reaction (PCR) for immunoglobulin heavy chain (IgH), T cell receptor gamma (TCR-γ), and delta (TCR-δ) gene rearrangements.

CASE REPORT
A 20 year old man presented with a 2 × 3 cm right eyelid swelling in 1986 with normal visual acuity and absence of diplopia. In 1993, he presented with progressive swelling in the right upper eyelid, which subsided with a short course of prednisolone (50 mg/day x 1 week). He was lost to follow up until May 1997 when he developed recurrent swelling of the right upper eyelid. Excision biopsy of the right upper eyelid mass showed changes consistent with Kimura's disease. DNA was extracted from lacrimal gland biopsy tissue.

Gene rearrangements for IgH gene, TCRγ, and TCRδ genes were tested by PCR and no clonal gene rearrangement was identified (Fig 1). In June 1998, he had recurrence of the right upper eyelid mass without any local or systemic symptoms (fever, night sweats, weight loss) and multiple left cervical lymph nodes measuring 1–2 cm in diameter. A complete blood examination showed haemoglobin 14.1 g/l, platelets 282 × 10⁹/l and leucocytes 18.4 × 10⁹/l (differential: eosinophils 3.68 × 10⁹/l, neutrophils 9.2 × 10⁹/l, lymphocytes 1.5 × 10⁹/l, and monocytes 4.02 × 10⁹/l) (normal range: leucocytes 4–11 × 10⁹/l; eosinophils 0.1–0.4 × 10⁹/l). The IgE level was 10 328 IU/ml (normal range: <100 IU/ml). IgG, A, and M levels were normal. Urea, creatinine, albumin, and transaminase levels were within normal limits. Serology for HIV was negative. Magnetic resonance imaging (MRI) showed an oval mass in the right lacrimal gland and thickening of the right superior rectus muscle (Fig 2). After 3 weeks of prednisolone (50 mg/day), there was almost complete resolution of the lacrimal mass and IgE level and eosinophil count went down to 2860 IU/ml and 1.2 × 10⁹/l respectively. Computed tomography scan of the abdomen revealed absence of intra-abdominal lymphadenopathy or organomegaly.

Figure 1 PCR amplification of TCRδ gene rearrangement in 6% polyacrylamide gel. Lanes: M-φX174, HaellIII digest; 1, reagent blank; 2, positive control (B cell lymphoma); 3, water only; 4, patient's lacrimal gland sample.

Figure 2 T1 weighted magnetic resonance image of the orbit showing a 2.5 cm diameter mass in the right lacrimal gland with thickening of the right superior rectus muscle.
clonal TCR and IgH gene rearrangements is consistent with the reactive nature of the disease. However, despite the relatively high sensitivity of these PCR based techniques to detect clonality, the finding should be confirmed by testing larger numbers of patients and Southern hybridisation with appropriate probes if DNA from fresh tissue is available.

In conclusion, our patient illustrates the typically indolent, recurring nature of the disease with lymphadenopathy and swelling confined to the head and neck region. The failure to demonstrate clonality is consistent with the reactive nature of the entity and the lack of report of malignant lymphoma transformation.

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Correction of the inadequate lower fornix in the anophthalmic socket

**Editor—**A well formed inferior fornix in the anophthalmic socket requires an adequate amount of conjunctival tissue and a deep recess. Obliteration of the fornix might occur either secondary to conjunctival shrinkage or as a result of obliteration of the inferior recess and inadequate fixation of the abundant conjunctiva. In the latter condition, the subject of this report, prolapse of the fornical conjunctiva will result in anterior rotation of the inferior edge of the prosthesis and secondary laxity of the lower lid. This report presents a modification of the technique described previously by Neuhaus and Hawes for the correction of the above condition.

CASE REPORT

Twenty patients with an inadequate inferior fornix and sufficient amount of conjunctival tissue who presented over a period of 5 years were managed. They all complained of easy prolapso of the lower edge of the prosthesis and sagging of the lower lid.

The procedure was done under local anaesthesia except in the two patients who, in addition, underwent secondary insertion of an orbital implant. A canthotomy and cantholysis were performed. An infratarsal conjunctival incision was carried out along the length of the lower lid. Dissection was then performed in the retro-orbicular plane till the orbital rim was reached (Fig 1A). The posterior edge of the conjunctival incision was fixed to the periosteum about 5 mm posterior to the inferior orbital rim with interrupted 5-0 Vicryl sutures. The posterior surface of the lower lid was left to heal by secondary intention (Fig 1B).

A prosthesis was fitted at about the second postoperative month. The follow up period ranged from 3 months to 3 years. Nineteen patients had a satisfactory result with adequate retention of the prosthesis, and good lower lid level. Inspection of the lower fornix revealed a deep recess with a well epithelialised inner lower lid surface, and no evidence of symblepharon (Fig 2). One patient had loosening of the tarsal strip suture noted at the 1 week postoperative follow up and was later corrected. However, the final lid level remained unsatisfactory.

**COMMENT**

Adequate retention of the prosthesis in the anophthalmic socket requires a well formed inferior fornix, which in turn requires sufficient conjunctival length and a deep recess. Obliteration of the inferior fornix might occur despite having a good amount of conjunctival tissue. This occurs possibly because of dehiscence of lower lid retractors, or development of scar tissue in the inferior recess that ultimately results in prolapse of the fornical conjunctiva and anterior rotation of the lower edge of the prosthesis. The long term effect exerted by the weight and pressure of an improperly accommodated prosthesis will result in secondary laxity of the lower lid.

The traditional solution to the above condition consisted of a lateral canthal tendon tightening and a fornix reformation using an externalised suturing technique in addition to alloplastic stenting material. Skin erosion and infection necessitated early removal of the externalised sutures and increased the risk of recurrence.

Another method of repair was described by Neuhaus and Hawes for the correction of the inadequate inferior cul de sac. It consisted of a transconjunctival inferior fornix incision used to gain direct exposure of the periosteum of the inferior orbital rim. Direct suture fixation of the edges of the conjunctival incision to the periosteum is then achieved. Externalised sutures and stents were not required. Out of 12 patients reported in the above paper, two developed mild lower lid retraction and two developed mild lower lid entropion. This is because the vertical length of the conjunctival tissue is not always sufficient to allow for fixation of both edges of the incision down to the periosteum. Lower lid retraction or entropion occurs whenever the anterior edge of the incision is forced down and sutured under tension.

The technique described in this report makes the conjunctival incision just at the infratarsal border so as to save the maximum length of conjunctiva for the posterior flap. By this, the inner lid surface is left to heal by secondary intention. The tarsal strip procedure performed during the surgery aims to eradicate the lower lid laxity and sag.

In conclusion, this modified technique allows the use of internal fixation to correct the lower fornix while minimising the risk of lower lid retraction or entropion.

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Lymphocytoma cutis with conjunctival lesions

COMMENT

Lymphocytoma cutis is a reactive lymphoid hyperplasia which typically occurs over the head and neck. We report a case of lymphocytoma cutis with conjunctival lesions; only one other case with lesions affecting the conjunctiva has previously been reported.

CASE REPORT

A 30 year old woman presented with a 10 year history of multiple erythematous papules over her nose, cheeks, and forehead. The papules were more numerous in the summer and the use of sun screens reduced the number of new lesions.

The patient was referred to us 5 years earlier she had developed discrete pink conjunctival lesions. There was no previous history of trauma to the eyes. The lesions were asymptomatic and did not affect her vision. They were surgically excised for cosmetic reasons but reappeared within 2 months.

Examination revealed multiple 1–2 mm erythematous papules over her nose and cheeks. Three flesh coloured lesions were present on the right conjunctiva in the interpalpebral fissure, two medially and one laterally (Fig 1), and one on the left interpalpebral fissure. There was no lymphadenopathy or hepatosplenomegaly and a full blood count, biochemistry profile, and immunoglobulin profile were normal. Borrelia burgdorferi antibodies were not detected.

The histology of a papule from both the nose and conjunctiva was similar showing a discrete lymphoid aggregate with germinal centre formation, prominent tingible body macrophages, and a surrounding mantle zone. Immunohistochemical studies of these lesions demonstrated CD20, CD79a, and CD21 positivity; CD23 and CD10 positivity within the germinal centres; and CD5, bcl-2, and cyclin D, negativity. There was no evidence of light chain restriction and immunoglobulin gene rearrangement studies were polyclonal on both cutaneous and conjunctival lesions using polymerase chain reaction (PCR) based techniques.

These histological, immunotypical, and genotypic studies are fully consistent with a diagnosis of lymphocytoma cutis.

The number of cutaneous lesions and prominence of conjunctival lesions increases during the summer and there has been some benefit in reducing the number of new cutaneous lesions with the use of sunscreens.

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made. B-scan ultrasonography of the right eye revealed vitreous opacities, a tractional retinal detachment temporarily, thickened ocular walls, and a mass lesion in the posterior orbit. An emergent computed tomograph scan confirmed the presence of an infiltrating orbital mass (Fig 2) and an urgent canthotomy, cantholysis, and orbital biopsy were performed. The biopsy demonstrated evidence of focal aggregates of mononuclear cells with cleaved nuclei consistent with leukemic infiltrate. With a presumptive diagnosis of orbital leukemic infiltrate, the patient underwent orbital irradiation in conjunction with systemic broad spectrum antibiotics. He responded rapidly with a decrease of lid swelling, proptosis, and the rapid response to irradiation, and the pattern of intraocular as well as retrobulbar hemorrhage, or orbital cellulitis.

Although the diagnosis of leukaemic infiltrate was not immunohistochemically confirmed, it was later documented on B-scan ultrasonography of the right eye. The delay in the diagnosis of acute myeloid leukemia is rare. In our patient, the initial presentation with anterior uveitis over the past 3 years, five cases were secondary to intraocular tumors, and only the present case was associated with an acute leukemia. This low incidence argues against the use of a CBC for screening of previously healthy adults with typical anterior uveitis. However, in cases of worsening inflammation despite frequent topical steroids a CBC with smear may be recommended.

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COMMENT

Although uveitis is commonly reported in children with relapsing acute leukemias, it rarely is the first presentation of AML. Leukemic retinopathy, including hemorrhages, cotton wool spots, and retinochoroidal abnormalities are the most common ophthalmic manifestations in patients with AML. Anterior segment and vitreous findings are rarely described in these patients. In a prospective study of 56 patients with AML, 53% of the patients had ocular manifestations at the time of diagnosis, but none had anterior segment or vitreous involvement.

In our patient, the initial presentation with anterior iridocyclitis did not raise suspicion of malignancy. However, the recent medical history of anal and mouth abscesses in a previously healthy young man was suggestive of an immunocompromised host. The worsening of anterior chamber inflammation despite aggressive topical application of steroid was followed in several days by signs of rapid orbital involvement. Posterior segment involvement was not seen at the time of presentation because of a dense pupillary membrane, but was later documented on B-scan ultrasonography. The diagnosis of retinal vasculitis by the ophthalmologist most likely represented leukemic retinopathy secondary to perivascular infiltration by the leukemic cells. The orbital involvement in this patient may have been due to leukemic infiltration, orbital haemorrhage, or orbital cellulitis. Although the diagnosis of leukemic infiltrate was not immunohistochemically confirmed, the rapid response to irradiation, and the pattern of intraocular as well as retrobulbar involvement pointed towards this diagnosis.

The delay in the diagnosis of acute myeloid leukemia in our patient was minimised by the rapid progression of the disease, quickly leading to further investigations. However, the question arises whether an initial CBC should be performed on all patients with anterior iridocyclitis. In our institution, of 534 adult patients treated for uveitis over the past 3 years, five cases were secondary to intraocular tumours, and only the present case was associated with an acute leukemia. This low incidence argues against the use of a CBC for screening of previously healthy adults with typical anterior uveitis. However, in cases of worsening inflammation despite frequent

Over the next 2 years, the patient lost a total of 54 lb (24.5 kg), and took no new medications. On follow up examination, she reported normal vision and no further headaches. Her visual function was stable, and fundus examination showed near complete resolution of the subretinal haemorrhages (Fig 2).

Subretinal haemorrhage in idiopathic intracranial hypertension

EDITOR,—Haemorrhage into the various spaces and potential spaces of the eye is a not uncommon finding in idiopathic intracranial hypertension (IIH), especially nerve fibre layer haemorrhages, a nearly constant feature of fully developed papilloedema. Less frequently reported are vitreous, subhyaloid, and subretinal haemorrhages. We present a patient with bilateral peripapillary subretinal haemorrhages as the prominent manifestation of IIH, whose haemorrhages resolved as her IIH improved.

CASE REPORT

A 41 year old obese woman was evaluated because of an unusual optic disc appearance bilaterally. One year before evaluation, she developed severe, diffuse headaches which would wake her from sleep. There were no associated visual symptoms. Brain computed tomography (CT) was normal. The headaches resolved spontaneously, only to recur months later, this time accompanied by blurred vision. She was seen by an optometrist, who noted “retinal bleeding”.

On examination she was obese but appeared well with a blood pressure of 130/90. Corrected visual acuity was 20/20 in both eyes, and colour vision was normal. Pupils were briskly reactive with no relative afferent pupillary defect. Ocular motility was normal. Automated perimetry revealed enlarged blind spots. There was minimal bilateral disc oedema with prominent surrounding subretinal haemorrhages (Fig 1). The haemorrhages spared the inferotemporal disc in the right eye and the temporal disc in the left. The maculas, periphery, and vessels were normal.

B-scan ultrasonography revealed no evidence of optic nerve drusen. Fluorescein angiogram did not demonstrate neovascularisation. Magnetic resonance imaging (MRI) of the brain and orbits, with and without gadolinium, was normal. Lumbar puncture demonstrated an opening pressure of 280 mm CSF with normal contents. A diagnosis of IIH was made.

Figure 1 Fundus photographs demonstrating minimal disc oedema with prominent surrounding subretinal haemorrhages.

Figure 2 Fundus photographs demonstrating near complete resolution of subretinal haemorrhages.
Ocular haemorrhages are common in cases of aneurysmal subarachnoid haemorrhage, occurring in 17% of cases. The haemorrhages may be subretinal, retinal, preretinal, or intravitreal. When subretinal, the haemorrhages are frequently peripapillary. It is now well accepted that the ocular haemorrhages seen in patients with aneurysmal subarachnoid haemorrhage are caused by acute elevations in the intracranial pressure with subsequent retinal venous hypertension. Acute increases in intracranial pressure induce a venous stasis retinopathy, which may result in intraretinal bleeding.

Given that the mechanism of disc oedema in IIH is raised intracranial pressure, it would follow that retinal haemorrhages should be common in this disorder. Large vitreous bleeds, however, are very rare in IHI, as are subretinal haemorrhages, probably because of the chronicity and lack of sudden pressure elevation in IHI. Pre-existing communicating vessels between the retinal and choroidal circulations probably dilate in response to long-standing papilloedema, creating opticociliary shunt vessels of varying sizes. Perhaps, these shunts unload the increased vitreous pressure on the retinal circulation, reducing the incidence of large intraocular haemorrhages from venous stasis retinopathy. An acute elevation in intracranial pressure in a patient with IHI may occur with coughing or other variants of theValsalva manoeuvre. Such a precipitous rise in pressure could produce ocular haemorrhages of the type seen in our patient.

We believe our patient’s elevated intracranial pressure probably caused prominent peripapillary subretinal haemorrhages with only mild disc oedema. The decrease in subsequent venous blood loss probably resulted in normalisation of her intracranial pressure, as it paralleled the resolution of her disc oedema as well as her headaches and visual complaints. Near complete resolution of the peripapillary haemorrhages accompanied the improvement in her symptoms. This case serves as yet another confirmation of the proposed mechanism of peripapillary subretinal haemorrhage as occurring secondary to raised intracranial pressure.

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Accidental instillation of N-butyl cyanoacrylate into the anterior chamber

EDITOR,—Cyanoacrylate adhesive, a relatively inert material, may be very useful in sealing small corneal perforations. We report a case where accidental injection of N-butyl cyanoacrylate (tissue adhesive) through the corneal perforation into the anterior chamber resulted in complications and required surgical removal.

CASE REPORT
A 64 year old man with a history of left sided Bell’s palsy of 6 months’ duration had difficulty with left eyelid closure, requiring a suture tarsorrhaphy and placement of a gold weight in the upper lid. He went on to develop a descemetocele of the left cornea which eventually perforated. N-butyl cyanoacrylate was applied using a cannula to the corneal perforation site and a bandage contact lens was placed. After noting that the adhesive had entered into the anterior chamber, he was referred.

On initial examination, best corrected visual acuity was right eye 20/25 and left eye hand movements. On slit lamp examination, the left cornea showed a central perforation with overlying cyanoacrylate adhesive which had extended down into the anterior chamber. The central iris was covered with adhesive (Fig 1), creating pupillary block. The patient was given preoperative intravenous mannitol and a penetrating keratoplasty was performed. At the time of surgery, the cyanoacrylate adhesive was firmly adherent to both the corneal endothelium and iris. After trephination, the adhesive was gently stripped off the iris (blunt dissection) using forceps. The lens had spontaneously expelled from the eye along with vitreous. After removing cortical remnants and performing an open sky anterior vitrectomy, a donor cornea was sutured in place. Eight months after surgery, visual acuity is 20/80 and the graft remains clear.

COMMENT
Tissue adhesives are relatively inert polymers which were first used in 1969 to seal a corneal perforation, thus eliminating the need for ocular surgery. In addition, tissue adhesives have been used in the ophthalmic setting for tarsorrhaphy, punctal occlusion, ptosis, retinal holes, and scleral thinning. With corneal perforations, the adhesive creates an inflammatory reaction and host fibrous tissue grows behind the adhesive filling in the gap. The adhesive should only be applied to perforations that are less than 1.5 mm in diameter and should not be used if there is prolapse of intraocular contents. For flat anterior chambers, air or viscoelastic should be used first.

In animal experiments, small amounts of tissue adhesive injected into the anterior chamber created conjunctival vascular engorgement, mild self limited keratitis/uveitis, and localised corneal scarring; however, there was minimal ocular toxicity after 1 year. If injected in larger amounts, intense inflammation, corneal neovascularisation and necrosis, were seen. Other reported problems with the use of tissue adhesive include synechiae, giant papillary conjunctivitis, and retinal toxicity. In our case, the tissue adhesive created pupillary block. Because of the corneal perforation, intraocular pressure readings were unobtainable. After surgical intervention (penetrating keratoplasty, dissection of adhesive off the iris, self expulsion of lens, open sky vitrectomy), the patient remains comfortable with a clear corneal graft and a good chance of achieving excellent visual acuity. While accidental injection of tissue adhesive into the anterior chamber may be tolerated well with minimum complications, larger amounts should be removed first.

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