wide in thermally polluted streams, coastal and fresh water, dust, soil, and sewage, and heating, ventilating, and air conditioning units. Acanthamoebiasis is rare, except AK, and is mostly limited to the immunocompromised host. The mode of contamination to humans and animals is through breaks in the contaminated skin or through the upper respiratory tract by cysts carried by air. Acanthamoeba by haematogenous spread is responsible for central nervous system and other organ failures, including encephalitis, nasopharyngeal, cutaneous and disseminated infections. The most frequent acanthamoeba infection is keratitis. The incidence of AK was estimated to be in the United Kingdom 1.13–1.26/million adults and 17.53–21.14/million contact lens wear. More than 80% of the cases occurred in contact lens wearers. Diagnosis of AK infection is usually made by corneal scrapings or by cultures of contact lenses and disinfectant. Early diagnosis and treatment are necessary to improve the visual outcome.² Because of the diagnostic difficulties, the delay between the onset of symptoms and appropriate treatment is often more than 1 month. The presence of a hypopyon in AK is unusual and is often a late manifestation of the disease. In our case the hypopyon culture allowed us to reduce the diagnostic delay to 7 days, which allowed a prompt treatment and visual recovery for the patient.

Despite good results, this procedure has not gained much acceptance because of the isolated serious complications such as infectious keratitis in the paracentesis tract and purulent anterior segment endophthalmitis following paracentesis reported after the procedure. From a practical point of view, we suggest that the examination of the hypopyon should be performed in suspected cases, within the list of investigations, to diagnose or exclude AK.

To conclude, we report one case of ocular infection confined to the anterior segment in which anterior chamber tap was helpful in the diagnosis, management, and treatment. This procedure should be performed under strict aseptic conditions because of potentially disastrous infectious complications.

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Choriocarcinoma metastatic to the choroid

We present an unusual case of metastatic choriocarcinoma in a patient whose visual symptoms led to diagnosis and treatment of his underlying malignancy. He presented with vision loss and a visual field defect in his left eye, representing a choroidal mass and large exudative retinal detachment. In addition, metastatic investigation revealed abdominal, chest, and brain metastases. Metastatic choriocarcinoma was suspected because of an elevated β -human chorionic gonadotrophin (HCG), and the diagnosis was confirmed by fine needle aspiration of one pulmonary mass. A retroperitoneal mass was identified as the primary site, which is the first reported case of metastatic choriocarcinoma from the retroperitoneum.

Case report

A 34 year old man presented initially to his physician with complaints of back pain and pain with coughing for 2 years. Abdominal computed tomograph (CT) scan revealed a retroperitoneal mass with an elevated β -HCG level to 137 420. CT guided biopsy was performed but was inconclusive.

He returned 2 weeks later complaining of blurred vision with loss of his inferior visual field in the left eye. The patient was found to have a best corrected visual acuity of 20/25 in the right eye, 20/40 in the left eye with no afferent pupillary defect. The anterior segment and intraocular pressure were normal in both eyes. Confrontational visual fields demonstrated an inferior temporal field cut in the left eye. The left eye examination revealed an amelanotic choroidal mass superior to the disc with significant overlying haemorrhage. A large bullous exudative retinal detachment around the mass was noted with subretinal haemorrhage (fig 1A, B). On A-scan and B-scan echographic evaluation, the mass was multilobulated with moderate internal reflectivity. Early hypo-fluorescence with late leakage over the centre of the tumour was observed on fluorescein angiography.

A full metastatic examination was undertaken. Testicular ultrasound of the scrotum demonstrated microcalcifications but no

mass. Head CT showed multiple metastatic lesions including lesions in the right basal ganglia, the parietal and temporal lobes. Chest CT revealed multiple metastatic lung nodules. CT guided fine needle aspiration was performed of one of the pulmonary nodules, and microscopic examination revealed pleomorphic tumour cells with irregular large nuclei and large nucleoli (fig 1C). Immunohistochemical stains for β -HCG (fig 1D) and keratin (fig 1E) were positive, supporting the diagnosis of metastatic choriocarcinoma.

Despite chemotherapy and whole brain irradiation with posterior ocular irradiation, the patient continued to lose vision in the left eye, and presented 1 month later with dense vitreous haemorrhage. He never regained vision and died from metastatic disease 18 months after initial presentation.

Comment

Metastatic tumours with distant primaries represent the most common uveal malignancy in adults.¹ Tumour cells are disseminated haematogenously and the choroid is the most common site of ocular involvement because of its rich vasculature. Approximately one third of patients have no history of a primary cancer upon diagnosis of ocular metastasis.²

Choriocarcinoma is an extremely rare cause of choroidal metastasis. Choriocarcinoma can be gestational, or it can be associated with testicular disease. A retroperitoneal primary for metastatic ocular choriocarcinoma has never been previously described.

A meta-analysis of the literature was performed using the search terms choriocarcinoma, uvea, ocular, eye, and metastases (table 1); 15 additional cases of testicular choriocarcinoma metastasising to the choroid have been reported^{3–8} along with one case of primary mediastinal choriocarcinoma in a male metastasizing to the choroid.⁹

Recently the expression of vascular endothelial growth factor (VEGF) mRNA has been demonstrated to be dramatically upregulated by hypoxia in choriocarcinoma cells.¹⁰ Our analysis of the literature shows that in patients with ocular findings, significant haemorrhage associated with this tumour was reported in 9/11 or 82% of patients. This finding is not typical of metastatic ocular disease in general and should raise suspicion for this primary.

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Figure 1 (A) Colour fundus photograph of the left eye showing an amelanotic mass with bullous exudative retinal detachment and subretinal haemorrhage. (B) Colour fundus photograph of the left eye showing mass with significant overlying haemorrhage. (C) Fine needle aspiration of metastatic lung nodule revealed pleomorphic tumour cells with irregular large nuclei and large nucleoli (D) Fine needle aspiration of metastatic lung nodule positive for β -HCG stain. (E) Fine needle aspiration of metastatic lung nodule positive for keratin stain.

Table 1 Meta-analysis of choriocarcinoma metastatic to the choroid in males: 16 cases (1936–2005)

Author (year)	Age	Primary symptoms*	Primary site (metastases)	Management	Follow up (survival after onset of visual symptoms)	Other described features
MacDonald (1936)	“young”	Decreased vision, groin pain, haemoptysis, epistaxis	Left testicle (skull, scalp, nasopharynx, lungs, liver, gallbladder, intestines, kidneys, brain, diaphragm, pleura, retroperitoneal tissue, subcutaneous tissue of groin)	Enucleation	23 days	Haemorrhagic tumour, vitreous/subretinal haemorrhage
Reichling (1938)	36	Not recorded	Right testicle (generalised)	None stated	2 months	Not recorded
Godtfredson (1944)	18	Scrotal swelling	Right testicle (cerebrum, lungs, liver, pancreas, small intestine, skin)	No treatment	2 weeks	Haemorrhagic tumour
Kambara (1949)	21	Decreased vision	Left testicle (cerebral cortex, lungs, heart, stomach, small intestine, kidney, liver, pancreas, adrenal, breast)	None stated	20 days	Haemorrhagic tumour, retinal detachment, retinal hole
Kulvin (1951)	22	Kidney/flank pain	Left testicle (lungs, liver, lymph nodes)	Radiation and enucleation	8 weeks	Retinal detachment, retinal haemorrhage
Chitwood (1953)	22	Decreased vision, ocular pain	Right testicle (generalised)	No treatment	5 weeks	Funduscopy exam “unsatisfactory.” Autopsy report: haemorrhagic tumour
Graether (1963)	25	Testicular swelling, gynecomastia	Left testicle (lungs, liver, spleen, pancreas, kidney, bowel, skin)	Enucleation and radiation. Nitrogen mustard injection	5 weeks	Haemorrhagic tumour, detached retina
Graether (1963)	31	Testicular swelling	Left testicle (abdominal lymph nodes, cerebellum, pituitary, pancreas, spleen, kidney, liver, lungs)	Radiation	<2 weeks	Funduscopy exam: retinal detachment. Autopsy: choroidal haemorrhage
Weisse (1964)	23	Shortness of breath, pleuritic chest pain	Not stated (lungs, liver, kidney, small bowel, adrenals, brain, subcutaneous tissue)	None	3 weeks	Haemorrhagic tumour
Dhir (1976)	40	Visual loss	Right testicle (lung)	Chemotherapy	None stated	Retinal haemorrhage, retinal detachment
Lahev (1978)	23	Back pain	Mediastinum (lungs, liver, brain, subpleura, mesocolon, kidney, thyroid, epicardium, skin)	Chemotherapy	Diagnosed at autopsy	Autopsy: peripheral retinal atrophy
Williamson (1994)	26	Chest pain, dyspnoea, visual loss	Most likely testicular, unconfirmed (lungs, liver, spleen, pancreas, kidneys, adrenals, thyroid, lumbar vertebral bodies, lymph nodes)	Chemotherapy, radiation	25 days	Haemorrhagic tumours, retinal detachments, subconjunctival haemorrhage (bilateral tumours)
Zech (1999)	21	Decreased vision	Right testicle (lung, brain)	Chemotherapy	Cured 5 years after onset of clinical symptoms	Retinal detachment
Osada (2004)	19	Visual loss	Right testicle (lungs, adrenal gland, retroperitoneal lymph nodes)	Chemotherapy	23 months	Retinal detachment
Nakajima (2004)	23	Visual disturbance, headache, vomiting	Right testicle (lung, brain)	Chemotherapy, radiation	Cured	Subretinal haemorrhage, retinal detachment
Kavanagh (2005)	34	Blurred vision	Retroperitoneum (brain, lung)	Chemotherapy, radiation	18 months	Retinal detachment, subretinal haemorrhage

*Primary symptoms leading to hospital visit.

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Spontaneous resolution of retinoschisis and consequent development of retinal detachment in highly myopic eye

Optical coherence tomography (OCT) has indicated that myopic foveoschisis (MF) is not uncommon in highly myopic eyes.¹ MF is often accompanied by a macular hole (MH),^{2,3} while a MH often complicates a retinal detachment (MHRD) in highly myopic eyes. MHRD is believed to result from MF at least in some cases, however, the detail of the process is unknown. We have documented the process of spontaneous resolution of MF and development of RD over a few months.

Case 1

A 65 year old man with high myopia was referred to our clinic with bilateral visual loss and metamorphopsia of 3 months' duration. OCT revealed MF without MH in his right eye and MF with MH in his left eye (fig 1A and C). His right eye underwent vitrectomy, but the left eye was observed. The initial best corrected visual acuity (BCVA) in his left eye was 20/50 and the axial length was 28.42 mm.

Six months later, OCT showed MHMF (fig 1D) and the BCVA decreased to 20/100 in his left eye. Eight months later, MF was resolved and developed MHRD instead (fig 1B and E), although the involved area seemed to be similar. The BCVA was 20/70. However, he refused surgery because he was asymptomatic. At the last visit (16 months after the

Figure 1 Case 1. A fundus photograph (A) and optical coherence tomography (OCT) image (C) at the first patient visit show myopic foveoschisis with a macular hole (MHMF) in the left eye. The best corrected visual acuity (BCVA) at the time was 20/50. An OCT image 6 months after the first visit (D) shows MHMF. A fundus photograph (B) and OCT image 8 months after the first visit (E) show MH and retinal detachment. The BCVA at the time has decreased to 20/70, but the patient is asymptomatic.

Figure 2 Case 2. A fundus photograph (A) and optical coherence tomography (OCT) image at the first patient visit (C) show myopic foveoschisis with a macular hole (MHMF) in the left eye. The best corrected visual acuity (BCVA) at the time was 20/70. One month later, OCT (D) shows a MH and retinal detachment (MHRD). The BCVA has decreased to 20/100. Two months after the first visit, the fundus photograph (B) and OCT (E) show MHRD. The extent of the RD has increased, and the patient opted to undergo vitrectomy.