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Exudative retinal detachment occurring in a patient with pyogenic liver abscess

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Summary
This is a report of a rare case of bilateral exudative retinal detachment occurring in a young Nigerian male with pyogenic liver abscess. Detailed ocular and clinical examination with biochemical, haematological and microbiological studies of the blood and liver aspirate were done. Ocular and abdominal scan plus surgical drainage of abscess were also done. The main features were febrile illness with hepatomegaly and sudden loss of eyesight. Visual acuity was light perception in both eyes. The cardiovascular and renal systems were normal. Ocular scan showed bilateral bullous retinal detachment while abdominal ultrasound revealed multiple liver abscess cavities. HIV and HBsAg tests were negative. Pyogenic liver abscess should be regarded as possible cause of exudative retinal detachment and has a potential blinding complication.

Keywords: *Exudative, retinal pyogenic, liver, abscess ocular.*

Résumé
C'est un rapport d'un cas rare de dètachement retinal exudative et bilatèral observè chez une jeune adulte Nigèrian avec un abcèsss du foie pyogènique .L'examination occulaire et clinique detailèe, suivi des analyses biomèdicales, hèmatologiques et microbiologiques du sang et l'extrait du foie ètait faite. Les principaux charactèristiques etaient une faiblesse generalisèe avec l'hèpatomègalie et la perte de vision.L'acuite visuelle ètait d'une perception legere avec les deux yeux. Les systèmes cardiovasculaires et renale ètaient normales. Le scan occulaire montrait une bulble bilatèrale de dètachement retinal, cependant l'ultra scan de l'abdomen revelait multiple cavitès d'abcess hèpatiques .Les examens du VIH et HbsAg etaient negatifs. L'abcess du foie pyogènique pourrait etre regardè comme possible cause de dètachement exudative de la retine et potentiallement des complications comme l'aveuglement.

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Introduction

Exudative retinal detachment (RD) is not as common as rhegmatogenous retinal detachment. The latter is associated with retinal break or tear while the exudative RD often occurs in association with some systemic conditions. Exudative RD tends to resolve once the systemic problem is controlled [1].

Various reports have implicated Klebsiella liver abscess as a cause of exudative RD [2,5]. It is often associated with endophthalmitis, usually in the form of subretinal abscess, and the visual outcome is uniformly poor [3]. Bilateral serious detachment of the retina has been documented histologically in disseminated intravascular coagulopathy [6]. Idiopathic thrombocytopenia has also been reported to cause ocular complications like bilateral papilloedema, retinal oedema and bilateral exudative RD [3,4,7]. Bilateral exudative RD has also been reported following penicillamine therapy [8]. Other conditions that have been implicated in exudative RD include choroidal melanoma [9], cyoglobulinaemia [10], high-dose interferon therapy [11], systemic malignant lymphoma [12] and intravitreal or intracameral cysticercosis [13]. This case is being reported in view of the relative rarity of exudative RD in pyogenic liver abscess in this environment.

Case report

We examined A. K., a 25-year old male, Nigerian tailoring apprentice admitted into our institution on 21 July 1998 with a 4-month history of right upper abdominal painful swelling, 3-month history of generalised headache and inability to see of 6 weeks duration. He had low-grade fever that was intermittent. At the time of admission, the headache had subsided and there were no symptoms suggestive of diabetes mellitus, chronic renal insufficiency or cardiac decompensation. He drank 30-40 g of alcohol (0.6 – 0.8 litres of beer) per day and smoked 3-5 sticks of cigarettes in the last six years. He had no antecedent eye problem.

Ocular examination showed visual acuity was light perception in both eyes. Apart from bilateral dilated pupils, anterior segment was normal without any evidence of inflammation. Intra-ocular pressures were normal (15 mmHg). Fundal examination with a 78 Dioptres lens and

binocular indirect ophthalmoscopy revealed a clear media and a bilateral retinal detachment involving the inferior half of macular without retinal holes or breaks. The shifting fluid sign was positive. There was no peripheral retinal degeneration. There were cotton wool spots on the posterior pole. The optic nerve heads were pale but retinal arterioles were within normal limits.

Physical examination revealed an emaciated, anxious-looking young man who was pale but not febrile or jaundiced. The peripheral pulses were normal and the blood pressure ranged from 130/90 to 150/110mmHg. The praecordium was hyperactive but the apex beat, though thrusting was not displaced. Chest examination was normal. There was a prominent right hypochondrial swelling. The liver was palpable 4 cm below right costal margin with a span of 14 cm. It was firm and tender with a particularly prominent bulge close to the right xiphisternal angle. The spleen and the kidneys were not palpably enlarged and ascites was not demonstrated.

Haemogram showed PCV 13% (normal value 40–54), total white blood cell count 3.7 x 10^9/L (normal value 2.5 – 10.0 x 10^9/L) (neutrophils 56%, lymphocytes 40% and eosinophils 4%), platelet count 146 x 10^9/L (normal value 150 – 400 x 10^9/L), ESR 65mm/hr (normal value 0–9) and macrocytosis, microcytosis and nucleated red cells on blood film. Serum HBsAg, HIV-1 and HIV-2 tests were negative. Stool microscopy was negative for parasites. The serum biochemistry including the liver and renal function tests showed the following results: total bilirubin 8 mmol/L (normal value up to 20), conjugated bilirubin 3mmol/L (normal value up to 5), creatinine 88 mmol/L (normal value 50 – 130), biocarbonate 26 mmol/L (normal value 20 – 30), potassium 4.1 mmol/L (normal value 3 – 5), sodium 134 mmol/L (normal value 120 – 140), urea 5.1 mmol/L (normal value 2.5 – 5.8), random blood sugar 5.9 mmol/L (normal value 3.0 – 11.1), alanine transaminase 6 IU/L (normal value up 12) and aspartate transaminase 8 IU/L (normal value up to 12). Serum alkaline phosphatase could not be tested for as the appropriate laboratory reagent was not available throughout the period of patient's admission. There was no trophozoite of *E. histolytica* seen in the purulent liver aspirate and no organism was grown on culture but Gram positive cocci were seen on microscopy.

Echocardiogram (both M-mode & Doppler) showed normal heart findings. Valvular abnormalities and chamber deformities were not demonstrated. Abdominal ultrasound scan (USS) showed two thick-walled abscess cavities in the right lobe of the liver measuring 12.0 cm x 10.0 cm and 4.6 cm x 4.0 cm, respectively. Other abdominal viscera were normal. An assessment of pyogenic liver abscess was made, possibly complicated by bilateral exudative retinal detachment. The patient was treated with Gentamicin and Ampicillin/Cloxacillin injections and oral Metronidazole. The mild hypertension was controlled with Enalapril (2.5 mg daily) and Hydrochlorothiazide (25 mg on alternate days).

After 3 weeks of antibiotics, a repeat liver USS was done, which now showed a single, huge and well-encapsulated abscess cavity in the right lobe measuring 12.0 cm x 9.0 cm indicating that the previously demonstrated multiple abscess cavities may have become confluent (Fig. 1). Ocular USS also demonstrated bilateral bullous retinal detachment (Fig. 2). An ultrasound-guided percutaneous liver aspiration with a 18-G needle was attempted but only 30 ml of thick yellow pus could be obtained. Patient therefore underwent an open drainage of the hepatic abscess by exploratory laparotomy.

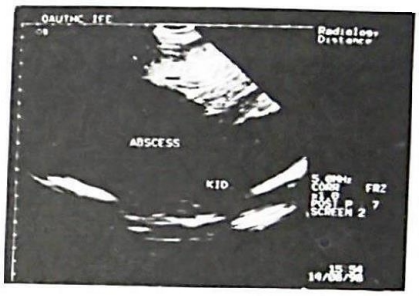

Fig. 1: Ultrasound scan of the right lobe of the liver A: Large rounded hypoechoic mass with tiny echogenic flecks due to abscess collection K: Right kidney.

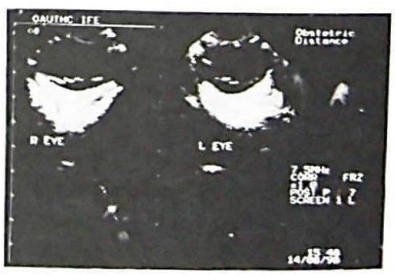

Fig. 2: Ultrasound scan of the orbits bilateral retinal detachment seen as horizontally arranged linear echogenic flecks deep in the posterior compartment.

A right antero-lateral hepatic abscess cavity containing 500 ml of purulent fluid was seen at surgery. This was successfully drained and the post-operative period was uneventful. He received two pints of blood and continued the antibiotics. A repeat liver USS after surgery confirmed an abscess-free liver.

There was no improvement in visual acuity beyond the light perception that he presented with even though there was a reduction in the height of the detached area of retina. Patient was discharged after 45 days on admission and has not reported for follow-up since then.

Discussion

Retinal detachment (RD) is the separation between neurosensory retina and retinal pigment epithelium by subretinal fluid. Exudative RD is due to accumulation of fluid bulk beneath it. It is not associated with retinal tear but secondary to the causal lesion. If the lesion can be controlled the fluid is reabsorbed and the retina reapposes itself spontaneously. The prognosis is good and no specific ocular treatment is indicated [1].

Contrary to the concept of prompt recovery after the treatment of the primary condition, there was no visual recovery in our patient up to the time he was lost to follow-up. This is similar to the findings in other published cases in which the visual prognosis was worse despite aggressive therapy [3-5]. Subretinal abscess due to *Klebsiella* tends to be worse [3]. Even though *Klebsiella* and other agents that have been implicated in exudative RD could not be demonstrated in our patient, this does not exclude an infective cause because patients like ours tend to indulge in self-medication with antibiotics, which may prevent bacterial growth on culture.

Subretinal aspiration of the exudate was not done in our patient because the media was clear which would be unlikely in full-blown endophthalmitis. Also, the possibility that endophthalmitis might be precipitated did not allow us to do an aspiration. We feel strongly that the liver disease in our patient was of infective origin in spite of the absence of leucocytisis and growth on culture. It may be possible for the subretinal aspirate to yield a better growth, but this was not contemplated in our patient for ethical reasons.

Other organisms that have been isolated in subretinal abscess include *Norcadia*, typically seen in patients with underlying immunosuppression, *Pseudomonas aeruginosa* and *Streptococcus viridans* [4, 14–15]. Non-bacterial causes of exudative RD such as diffuse metastatic candida infection and aspergillus have also been identified, but we do not think our patient has a non-bacterial cause as there were no typical ocular features which include pseudohypopyon in the subretinal space [15–17]. Apart from this, there was no evidence of an underlying immunocompromise, pulmonary disease and intravenous drug abuse or other conditions predisposing to fungaemia.Some other conditions have been found to be associated with exudative RD.

These include scleritis, leukaemia, hypertension with renal failure, toxaemia of pregnancy and choroidal tumour [1]. None of these conditions was present in our patient except for mild hypertension. The hypertension was probably stress-related as there was no evidence of renal damage or dysfunction and it was rapidly brought under control with low-dose, short-term ACE inhibitor and thiazide therapy. There was neither ocular pain nor inflammation and the ocular scan did not show any evidence of a choroidal mass.

Exudative RD has been reported in a patient with spontaneous carotid carvenous fistula [18]. It has also been reported in a young patient with endophthalmitis and subretinal fluid [3]. There were no signs of endophthalmitis in our patient. Pyogenic liver abscess is rarely mentioned as a cause of exudative RD and there has not been a report of a similar case in a Nigerian patient to our knowledge though there have been various reports from other countries especially from Taiwan [3]. The association between liver abscess and exudative RD could be as a result of haematogenous spread of infection from the choroid with subsequent spread of organisms along bruch membrane and the retinal pigment epithelium. Venous congestion secondary to bacterial toxin coupled with anaemia in our patient may be contributory to the development of the retinal detachment.

The implication of this finding is that a patient with pyogenic liver abscess should be considered to have a potentially sight-threatening condition which demands aggressive management. Ultrasound guided or open surgical drainage should be considered early if they are seen before any ophthalmic complication sets in.

The rarity of the association informed this report and to highlight a potential ocular complication of pyogenic liver abscess. The treatment of the primary condition is the mainstay of management of exudative RD. However, the ocular condition in this patient did not improve appreciably despite complete resolution of the primary condition after surgery.

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