



Sonographic Diagnosis of Retinal Detachment- A Case Report and Review of the Literature

Dr. Ayara, Charles Oshevire¹, Prof. T.T. Marchie², Dr. Ebubedike, Uzoamaka Rufina³

^{1,2,3} Department of Anatomy Faculty of Basic Medical Sciences Bingham University, Karu Nigeria.

Abstract: Retinal detachment occurs when the inner layer of the retina is separated from the underlying retinal pigment epithelium as result of trauma, inflammation or seepage of exudative fluid into the sub-retinal space. RD is one of the most time-critical and preventable eye emergencies ^[1- 3]. A case of retinal detachment following blunt trauma to the eye in a young adult has been presented. The role of real time B – mode ultrasound scan in early diagnosis especially when there is a coexisting cataract has been highlighted.

Key words: Retinal detachment, trauma, cataract, sonography.

I. INTRODUCTION

Retinal detachment (RD) refers to separation of the inner layer of the retina from the underlying retinal pigment epithelium (RPE). RD may be due to one of the following three basic mechanisms. Firstly, a hole, tear, or break in the neuronal layer may allow fluid from the vitreous cavity to seep in between and separate the sensory and RPE layers. Secondly, RD may arise from traction from inflammatory or vascular fibrous membranes on the retinal surface which tether to the vitreous. Thirdly, exudation of material into the sub retinal space from retinal vessels such as in hypertension, central venous occlusion, vasculitis or papilloedema may also cause RD. RD is one of the most time-critical and preventable eye emergencies ^[1-3].

The aim of ultrasound examination is to diagnose RD early, so that surgery may be carried out to seal the break by laser or cryotherapy and re – establish contact between RD and retinal base ^[1].

A patient who developed RD following blunt trauma to the right eye is presented to highlight the role of ultrasound in early diagnosis.

II. CASE REPORT

DE is a 24-year-old 400 Level Business Administration male student of University of Benin. He presented at the ophthalmology clinic on the 4th February 2008 with history of gradual and progressive blurring of vision in the right eye of about 4-week-duration.

His problem began when he was hit on the right eye by a sachet of “pure water” which another student threw at him during a fight with the student. There was no bleeding from the eye. He sought initial medical attention in a private eye clinic where some eye drops and tablets were prescribed. However, after taking the drugs without appreciable improvement he came to the Ophthalmology Department of the University of Benin Teaching Hospital.

Patient is the second of 5 five children; 3 males and 2 females in a monogamous family. He does not drink alcohol nor smoke cigarette. There is no history of eye problem among members of his family and he does not wear glasses.

Clinical examination showed an apparently healthy young man. He was afebrile, not pale and not jaundiced. He was fully oriented in time, place and person.

Ocular examination revealed a cataract in the right eye; hence fundoscopic examination was not possible. A working diagnosis of traumatic cataract of the right eye was made and also to exclude retinal detachment in the same eye. The left eye was essentially normal. The patient was referred to the Radiology department for ocular ultrasound scan.

Ultrasound scan of both eyes was done using a 6.5MHz (high frequency) curvilinear probe and it showed the following:

1. Sonographic features of a mature cataract in the right eye and a V-shaped echogenic strands in the vitreous humor extending from the ora- serrata anteriorly, with apex of the V tethered by the optic nerve head. (Fig. 1). The retro bulbar structures were normal.
2. The left eye globe and the retro bulbar structures were normal (Fig. 2).

A diagnosis of cataract of the right eye with complete retinal detachment was made.

III. DISCUSSION

Retinal detachment (RD) was first recognized in the early 1700s by de Saint – Yves, but clinical diagnosis remained elusive until Helmholtz invented the ophthalmoscope in 1851. Tragically, RD patients ended up with blindness until the 1920s when Jules Gonin pioneered the first repair of RDs in Lausanne, Switzerland. The incidence of RD is 1 in 15,000 of the population with a prevalence of 0.3% in the United States^[2]. Local values are not available from literature search as much work has not yet been done in this area.

Three basic mechanisms have been advanced for the occurrence of RD namely:

1. A hole, tear or break in the neuronal layer allowing fluid from the vitreous cavity to seep in between and separate sensory and RPE layers (i.e., rhegmatogenous RD).
2. Traction from inflammatory or vascular fibrous membrane on the surface of the retina, which tether to the vitreous.
3. Exudation of material into the sub retinal space from retinal vessels such as in hypertension, central retina venous occlusion, vasculitis or papilledema^[2].

The risk of developing RD is more frequent in the middle – aged or elderly population, following cataract surgery, in poorly controlled diabetic patients and in cases of trauma to the eye^[3,4], which was the identified factor in our patient. RD is commonly preceded by a posterior vitreous detachment which gives rise to symptoms of flashes of light (photopia), a sudden dramatic increase in the number of floaters and ultimately visual loss. The presented case experienced floaters and progressive blurring of vision. However, he did not seek appropriate treatment early enough with an ophthalmologist.

Ultrasound evaluation of the eye and orbit has become an essential component of clinical ophthalmology^[5,6], as its use has been found to be safe, non-invasive, inexpensive, atraumatic and accurate, without the use of ionizing radiation^[7-9]. RD may be seen as a V or Y shaped echogenic strands extending from the ora – serrata anteriorly with the apex of the V or Y tethered by the optic nerve filaments on ultrasound scan^[1].

Ukponmwan *et al*^[7], in a study on diagnosis of orbito – ocular diseases of 39 patients in Benin City, Nigeria, found that retinal detachment was the most common diagnosis accounting for 21 patients. In a United – Kingdom based study, Mowatt, Shun – Shin and Price^[10], observed that the incidence of RD increases with age and that females have a higher mean age than males while males, 89.5%, were more likely to suffer from traumatic detachments as was in this case.

Acute retinal detachment should be surgically repaired within 24 hours if at all possible^[2]. The objective of surgery is to identify and close the holes (tears) which have formed in the retina^[3]. The surgical repair

technique of RD is dependent on the type, location and size of the detachment. The various techniques include:

1. Laser therapy and cryotherapy
2. Pneumatic retinopexy which employs intraocular gas to tamponade the detachment.
3. Scleral buckling in which a silicone band indents the eye to approximate the retina and RPE.
4. Intraocular repair with pars planar vitrectomy may be necessary in complicated tractional and exudative detachments^[2].

IV. SUMMARY

A case of retinal detachment following blunt trauma to the eye in a young adult has been presented. The role of real time B – mode ultrasound scan in early diagnosis especially when there is a coexisting cataract has been highlighted.

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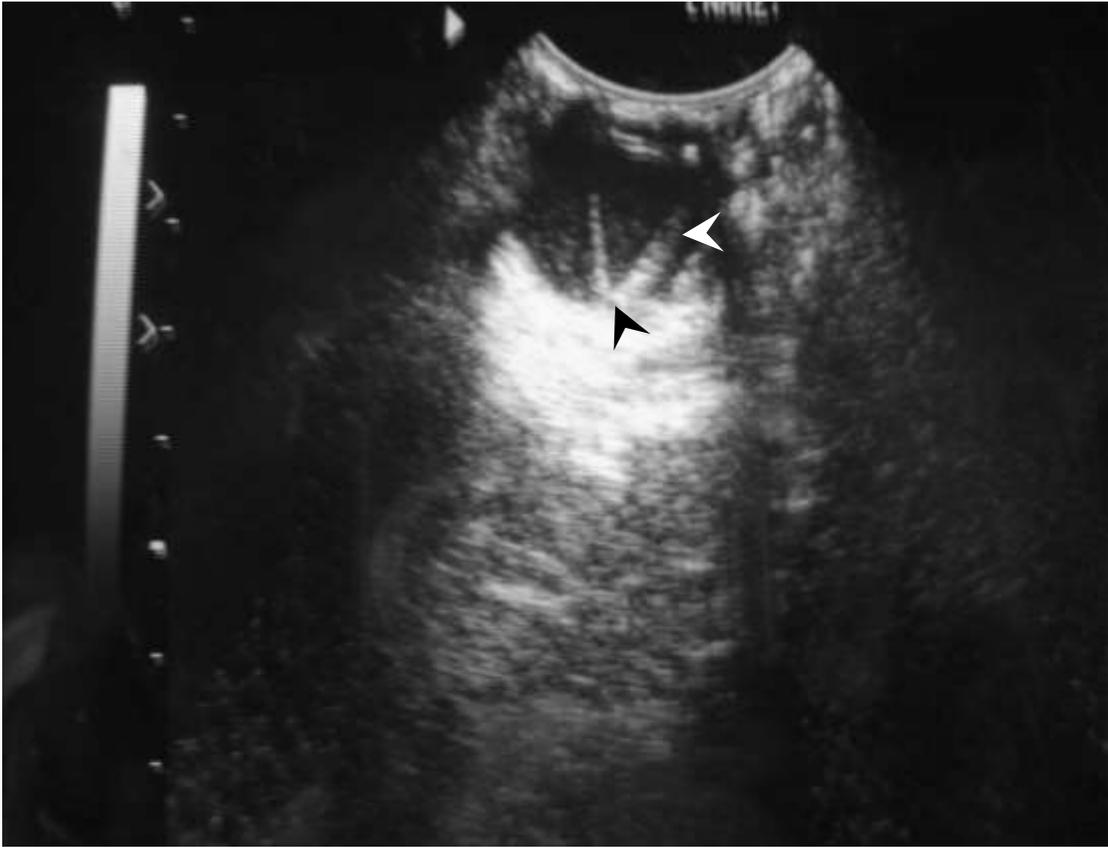


Fig. 1: Sonogram of a right eye showing a V-shaped echogenic strands (white arrow head) extending from the ora-serrata anteriorly, with the apex of the V tethered by the optic nerve head (black arrow head).

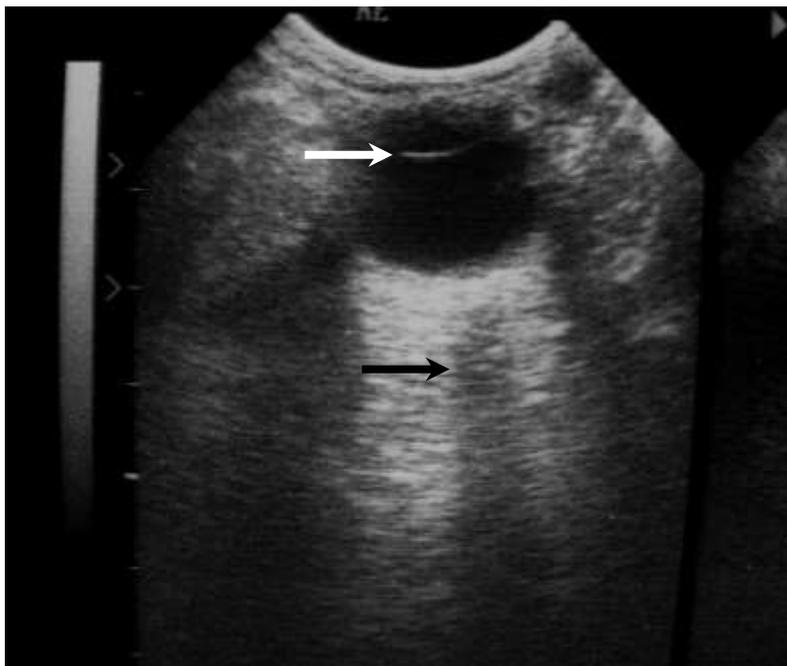


Fig. 2. Sonogram of normal left eye. White arrow showing normal lens and black arrow showing optic nerve