Retinal detachment in ocular trauma

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الخلاصة: انفصال الشبكية هو فصل الطبقة العصبية عن الطبقة الحرشفية الملونة للعين. وهو حالة خطيرة غالبا ما تؤدي الى العمى. للتشخيص والعلاج المبكرين دور هام في تحسين نتائج الرؤيا. الهدف من هذه الدراسة هو التأكيد على أهمية الفحص المتكامل حال وقوع أي اصابة للعين وبصورة دورية فيما بعد للتاكد من سلامة الشبكية.

تم تقييم ثلاثين حالة من حالات الأصابة في العين بصورة متكاملة متضمنة تقييم الشبكية، واللجوء الى الفحص بالموجات فوق الصوتية في حالة وجود أي عتمة تعيق فحص الشبكية بواسطة الناظور المباشر او غير المباشر.

تبين أن ثلاث عشرة حالة كانت تعاني من أنفصال الشبكية (٤٣,٣). معظمهم تم تشخيصهم بواسطة الموجات فوق الصوتية. كما ظهر ان تكيسات وتليفات الشبكية تزداد كلما تأخرت المعالجة. أكثر الفئات العمرية عرضة للأصابة بأنفصال الشبكية الناتج عن الحوادث هي (٢٠-٢٠) سنة.

Summary:

Retinal detachment is the separation of the sensory retina from retinal pigment epithelium, it is a serious blinding condition, early diagnosis and treatment have important role in the visual outcome.

Aim of the study: To ensure the importance of immediate and subsequent full ocular assessment for each patient with ocular trauma.

Patients & Methods: Thirty patients with uniocular trauma were included in this study. All were fully assessed including doing fundoscopy immediately and after primary repair in cases of penetrating injuries.Whenever there was media opacity obscuring the view with direct and indirect opthalmoscopy ultrasonography was done.

Results: Retinal detachment was a prevalent complication seen in (13)46% of cases after ocular trauma. It was found in (1)25% of patients with blunt trauma, (12)46% of patients with penetrating injuries. Most of eyes were with media opacities so just 4 of 13 cases were diagnosed by direct and indirect fundoscopy, others by B-scan ultrasonography. Cystic changes were more frequent in cases of long standing ocular trauma; more than one year. Higher frequency of traumatic retinal detachment was found in the 20-30 years age group.

Introduction

Retinal detachment (RD)is the separation of sensory retina from retinal pigment epithelium, which is a serious event and a blinding disorder if not treated promptly. Trauma is responsible for about 10% of all cases of RD and is the most common cause of retinal detachment in children.[1].[2].[3]

Types of RD:

1-Rhegmatogenous RD: due to rhegma " rent or fissure " then fluid from vitreous access through the break into the potential sub-retinal space.

2-Tractional RD:"non rhegmatogenous RD" which occurs due to pre retinal scaring that pulls the retina from its attachment, the commonest cause of tractional RD is diabetic retinopathy and trauma.

***Both types; rhegmatogenous and tractional may occur in ocular trauma.

3-Exudative and serous RD : which occur due to abnormalities across the retinal bed.

Retinal detachment may occur in open or closed ocular trauma; penetrating or perforating injuries causing retinal breaks or contusion or later on by fibro cellular proliferation and vitreous traction at the site of injury leading to subsequent detachment.[1]

Blunt trauma may cause retinal detachment by retinal break after direct contusion injury to the globe by coup phenomena adjacent to the point of trauma or counter coup opposite to the point of trauma. Most commonly traumatic breaks are multiple and located at the inferotemporal or superonasal quadrants. Tractional retinal detachmen is also possible, so rhegmatogenous and non rehgmatogenous RD may occur.[2]

Ultrasound (U.S.)examination has important role in the diagnosis of retinal detachment especially in eyes of any media opacities (severe corneal edema, total hyphema, occlusio pupillae, traumatic cataract, retained intraocular foreign body, vitreous hemorrhage, and traumatic endopthalmitis).[2]

The definition of ocular structures is better with ultrasound than with MRI or CT. In ophthalmic U.S. examination frequencies used lie mostly in the range (5MHZ-20MHZ). High frequency U.S. gives good resolutions, and can be used when few millimeters of soft tissue is to be examined such as imaging of the eye. B-scan present two dimensional cross section of the eye. Alphabetic "B" stands for "BRIGHTNESS", strong echoes are white , while weaker echoes are grey shades depending on their strength.[4][5]

Aim of the study: To ensure the importance of immediate and subsequent frequent assessment of posterior segment for each case of ocular trauma.

Patients & Methods: The current study is a descriptive study conducted on thirty patients (22 males and 8 females) attending an out patients ophthalmic clinic in Al Diwaniyah Teaching Hospital), from July 2007 to Feb. 2009 . A detailed history was taken regarding the onset of trauma, and its mechanism (blunt or penetrating). All cases of systemic and previous eye diseases were excluded from this study, cases of negative light perception were also excluded.

Both eyes of the traumatized patients were subjected to full ophthalmologic assessment including; best corrected visual acuity, anterior segment examination by slit lamp biomicroscopy, tonometry, and for assessment of posterior segment a dilated fundus examination by direct and indirect opthalmoscopes for eyes with clear media or mild to moderate media opacities, while for those with moderate to severe media opacities (corneal opacity, total hyphema, severe uvietis, cataract, &vitreous hemorrhage), assessment was completed by ultrasonography (using Tomey UD-1000

A/B scanner).In penetrating injuries full assessment was completed after primary repair. Analysis of the results was done by percentage and frequency.

Results:

Among 30 patients 13 (43%) were diagnosed having retinal detachment, 9 of them were diagnosed by ultrasonic examination because of one or more of the previously mentioned media opacities.

Regarding the type of trauma retinal detachment is more common in penetrating trauma, as shown in (table1)

Type of trauma	No. of patients with R.D.	Percentage
Blunt (4)	1	25%
Penetrating (26)	12	46.2%
Total (30)	13	43.3%

Table(1):prevalence of retinal detachment in blunt and penetrating ocular trauma.

Regarding the appearance of the detached retinae ,most of cases (38.5% of our patients) presented with history of trauma more than one year developed retinal cystic changes (fig.2), no such changes were observed in a newly developed retinal detachment(fig.1).Pre retinal fibrosis was found in 23% of the detached retinae and all the patients gave history of truma at least one month earlier.Table (2)



Fig.1: total retinal detachment.

Fig.2: old retinal detachment

Post	R.D.with	R.D.with	R.D. without	Total
traumatic	cystic	preretinal	any changes	
period	changes	fibrosis		
1-7days	0	0	4(30.7%)	4(30.7%)
8-30 days	0	0	1(7.7%)	1(7.7%)
31-days-	0	2(15%)	0	2(15.3%)
1 year				
>1year	5(38.5%)	1(7.7%)	0	6(46.2%)
Total	5(38.5%)	3(23%)	5(38.5%)	13(100%)

Table(2):Relationship between the post traumatic period and retinal Changes.

7months to 58year of age was the range of patients age diagnosed as cases of R.D., table(3). 20-30years old age group has the higher frequency followed by less than one year age group.

Age	No. of patients	Percentage
-1year	3	23%
1-10 years	1	7.7%
10-20 years	1	7.7%
20-30 years	5	38.5%
30-40 years	2	15.4%
> 40 years	1	7.7%
Total	13	100%

Table(3): frequency distribution of traumatic R.D. in age groups.

Discussion:

Retinal detachment is a blinding ocular condition that may develop either immediately or at any time post traumatically.Despite the fact that some patients following ocular or head trauma might present with no complaint regarding their vision early,retinal insults remain one of the most important cause of their poor visual outcome.Immediate and frequent posterior segment assessment is a mandatory item in the management of a traumatized eye.Of 30 eyes in our study, 13 were diagnosed to have retinal detachment (43.3%); while it was (63%) by Amjaad [6], (33.5%) by Puodziuviene...et al[7], and (52 %) by Stephen j.[8]

Penetrating trauma has a higher prevalence of retinal detachment (46.2%) than blunt trauma (25%). Ganguli in India[9] found that 35.2% of eyes with blunt trauma have R.D.

Cystic changes were the most frequent retinal changes in the old traumatic retinal detachment cases ,especially in more than one year post traumatic period (38.5%), and this is in agreement with that found by Amjaad [6], Chugh... *et al*[10], and

Dawood[11].Retinal appearance within the first few days of the trauma showed no specific changes ,as time goes on fibrotic elements start showing preretinaly whether localized or wide spread and one of the expected long term sequale would be the cystic changes clearly demonstrated by the B scan ultrasonography.

The most frequently affected age group by post traumatic R.D.is 20-30years old which go with that found by the above mentioned researchers in addition to Yorston[12] and Desaipe[13]. This is mostly explained by exposure to the work hazards in such age group, so the injuries are more serious. In our study we found that there is another group in risk of serious injuries; those below one year old.

Conclusions and recommendations:

In view of the high rate of R.D. following ocular trauma whether as an immediate or late sequale we recommend that

1- Retinal detachment may be a late consequence of ocular taruma so subsequent frequent ocular assessment is mandatory for each patient with ocular trauma.

2- Every patient with ocular trauma should have a full posterior segment assessment as early as possible by fundoscopy, or by ultrasonography if there is any media opacity.

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