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OCULAR ULTRASOUND IN EVALUATION OF POSTERIOR SEGMENT OF EYE

Radio-Diagnosis

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ABSTRACT

Ocular ultrasound is a fast and simple technique that can be performed at the bedside to help differentiate between various ophthalmologic emergencies. Ocular ultrasound, also known as ocular echography, "echo," or a B-scan, is a quick, non-invasive test routinely used in clinical practice to assess the structural integrity and pathology of the eye. **Method:** A Prospective study including 120 with suspected posterior segment pathology are included in study. **Results:** Majority of the patients were in 51-60 years age group. Most common finding was vitreous floaters(36 patients) followed by, posterior vitreous detachment(20patients),vitreous hemorrhage(13patients),asteroid hyalosis(2 patients), retinal detachment(30patients) and foreign body (3 patients), posterior staphyloma (1 patient), dropped nuclei(1 patient),choroidal detachment(8patients),opticnervedrusen(1patient),suprachoroidal hemorrhage(2 patients),silicone oil(1patient) **Conclusion:** Ultrasonography of the eye is a non-invasive investigation of choice to study the posterior segment.

KEYWORDS

Retinal detachment,posterior itreous detachment,vitreous floaters

INTRODUCTION

High frequency ocular sonography is the ideal method for imaging the eye and intraocular structures.The eye can be examied dynamically during eye movements which is of value in localising abnormalities.Two american ophthalmologist Mundt and Hughes, introduced ophthalmic ultrasoundin 1956.[1]

The benefits of sonography used in these cases include good patient tolerance,high daignostic accuracy,the use of non ionising radiation,portability,and cost effectiveness.[2]

MATERIALS AND METHODS

This is a prospective study carried out in the Department Of Radiodiagnosis,Govt Medical Colege,Miraj.This study comprises 120 patients of different age groups in whom there was clinical suspicion of posterior segment lesions.Instrument used was ultrasound and color dopplor system MindRay DC-60 with high frequency linear transducer with frequencies ranging from 7.5 to 12.5MHz.The study was carried out between JAN 2021 to DEC 2021 over a period of 12 months.

RESULTS

Majority of the patients presenting with lesions of posterior segment were found to be of age group 51-60 years(26 patients).The youngest patient in present study was 9yr and older patient was 80 yr (Table 1)

Table 1:Age distribution

Age Group In Years	No. Of Cases	Percentage
0-10	2	1.67
11-20	13	10.8
21-30	6	5
31-40	9	4.1
41-50	20	16.7
51-60	26	21.7
61-70	23	19.7
71-80	21	17.5
Total	120	100

There was bilateral lesons seen in 18 patients (15%) and unilateral in 102 patients (85%) (Table:2)

Table 2:Distribution OF patients having Unilateral and Bilateral lesions

Side	No.Of Cases	Percentage
Unilateral	102	85
Bilateral	18	15
Total	120	100

Table 3:Distribution Of posterir Segment Lesions.

Posterior segment Lesions On Ocular Ultrasound	No	Percentage
Vitreous Floaters	36	30
Asteroid Hyalosis	2	1.67
Vitreous Haemorrhage	13	10.83
Posterior Vitreous Detachment	20	16.67
Rhegmatogenous Retinal Detachment	9	7.5
Tractional Retinal detachment	13	10.83
Exudative Retinal Detachment	8	6.67
Choroidal Detachment	8	6.67
Suprachoroidal Haemorrhage	2	1.67
Intraocular Foreign Body	3	2.5
Dropped Nuclei	1	0.83
Silicone Oil	1	0.83
Macular Degeneration	2	1.67
Drusen Of optic Disc	1	0.83
Posterior Staphyloma	1	8.83
Total	120	100

The common lesion was vitreous floaters in 36 patients (30%); postrior vitreous detachment in 20 patients (16.67%);vitrous haemorrhage in 13 patients (10.83%),asteriod hyalosis in 2 patients (1.67%) among vitreous lesions.

Rhegmatogenous retinal detachmentin 9 patients (7.52%);tractional retinal detachment in 13 patients(10.83%), exudative retinal detachment in 8 patients(6.67%) were retinal lesions.

Choroidal detachment in 8 paients(6.67%);suprachoroidal haemorrhage in 2 patients(1.67%) were lesions of choroid.

Intraocular foreign body in 3 patients (2.5%) seen in ocular trauma.Dropped nuclei in one patient(0.83%),silicone oil in one patient (0.83%) seen in postoperative status.

Macular degeneration in 2 patients (1.67%) in lesins of macula. Congenital lesions as drusen of optic disc and posterior staphyloma were seen in one patient(0.83%) each respectively.(Table:3)

DISCUSSION

In our study majority of patients were in 51-60 years. The most common lesion was vitreous floaters in 36 patients (30%).Vitreous floater are seen as few scattered low density echoes uniformally distributed in the vitreous cavity.[3,4] Posterior vitreous detachment is an-age related phenomenon in which the posterior vitreous capsule or

hyaloid detaches from the underlying retina. On dynamic US examination, the posterior detached vitreous is seen as an undulating membrane that moves freely and should swirl away from the region of the optic disc in cases of complete posterior vitreous detachment. Posterior vitreous detachment is not always associated with symptoms, and is sometimes encountered as an incidental finding.[5]

Vitreous haemorrhage may occur in vasoproliferative diseases, posterior vitreous detachment ,macular degeneration, and trauma. As the haemorrhage matures and organizes, fibrinous vitreous membranes may develop. The membranes may retract a tractional retinal detachment may occur.[2]

Retinal detachments are classified into three types, depending on the underlying mechanism: rhegmatogenous retinal detachment results from a retinal tear; tractional retinal detachment results from vitreoretinal traction due to contracting membranes; and exudative retinal detachment results from blood, exudative fluid.[6]

On US, a total retinal detachment appears as a "V" shape in the vitreous cavity, because the retina remains firmly attached to the ora serrata anteriorly and to the optic nerve head posteriorly.[4]

Asteroid hyalosis is a degenerative condition of the eye of unknown origin; it is characterized by minute opacities due to fatty calcium soap deposits in the vitreous body. At US, multiple small hyperechoic mobile echoes are seen in the vitreous. The deposits produce a sparkling appearance on real-time US.[7]

Choroidal detachment, is less common than retinal detachment, and is caused by the accumulation of fluid in the potential space located between the choroid and the sclera. At US, the choroid balloons into the eye and protrudes convexly into the vitreous.[5]

Optic disc drusen are calcified hyaline-like deposits in the optic nerve head. US is useful in these cases, demonstrating an echogenic focus of variable size at the optic disc. If strongly calcified, they can have posterior shadowing.[8]

Macular degeneration may demonstrate an elevated mass on the posterior wall at the macular area.[5]

CONCLUSION

Ultrasonography of the eye is a non invasive investigation of choice to study the posterior segment in opaque media.The other common indications are ocular trauma and proptosis.

Ocular ultrasound produces a real time two dimensional image by moving the probe in horizontal,vertical and transverse planes.The most important advantage is the ability to study the real time movement of various lesions within posrior segment.

Images:

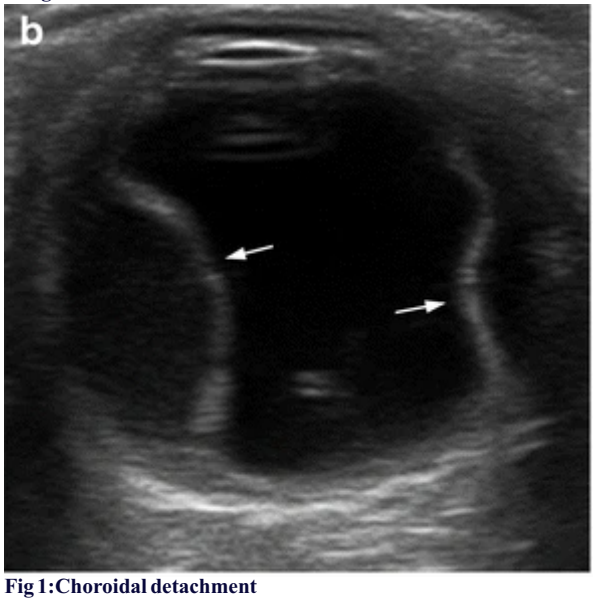

Fig 1:Choroidal detachment

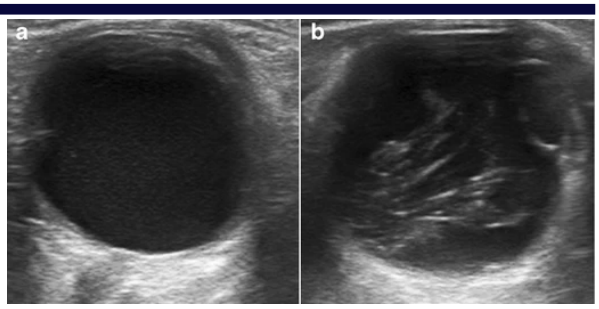

Fig 2: Acute and chronic vitreous haemorrhage

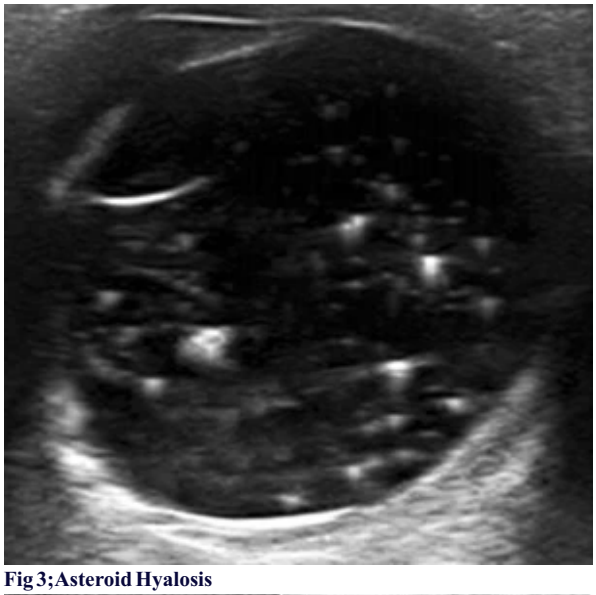

Fig 3;Asteroid Hyalosis

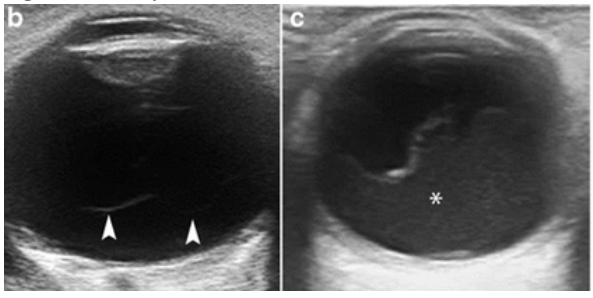

Fig 4:Posterior Vitreous Detachment in two patients

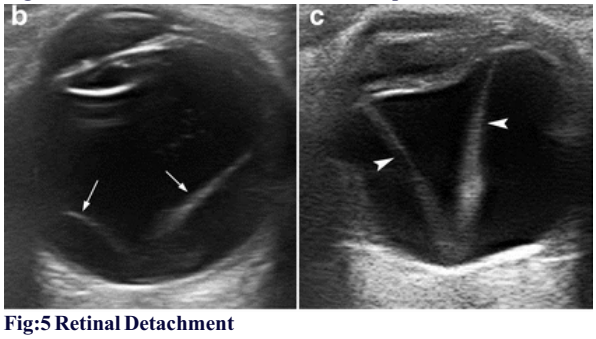

Fig:5 Retinal Detachment

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