



EVALUTION OF POSTERIOR SEGMENT OF EYE ON B- SCAN USG

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ARTICLE INFO

Article History:

Received 17th February, 2017

Received in revised form 12th March, 2017

Accepted 2nd April, 2017

Published online 28th May, 2017

Key words:

Ultrasonography, B scan,
Ophthalmology.

ABSTRACT

Purpose: This study is done to evaluate the role of B-Scan in patients with corneal opacity, bullous keratopathy and anterior staphyloma. For knowing status of posterior segment in cases of traumatic hyphema, in case of dislocation of lens, in cases of occlusiopupillae, cataract and leukocoria via B Scan. For assessing cases of vitreous haemorrhage for diagnosing retinal detachment and intra ocular tumour. For accurate localization of intraocular foreign bodies. **Materials and Method:** This is prospective study of 50 cases of patients with posterior segment abnormalities on B-Scan. Ultrasonic tissue density is known by focusing an echo on screen and then gradually decreasing sensitivity control till that echo disappear. Mobility of ultrasound abnormality is tested by asking the patient to move eyes while the probe is held stationary. **Results:** Cases with Corneal Opacity showed RD, VH, Dislocated IOL, Endophthalmitis and CD. Cases of Anterior Staphyloma showed VH with RD and RD. Cases of Traumatic Hyphema showed VH, VH with PVD, VH with PVD with Aphakia and FB in vitreous cavity. Cases of Occlusio Pupillae showed VH and Endophthalmitis. **Conclusion:** As utilized in ophthalmology, ultrasound both complement and surpasses the capabilities of other diagnostic technique in the evaluation of abnormalities, particularly those produced by ocular and orbital tumours, vitreous hemorrhage, trauma and foreign bodies.

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INTRODUCTION

The medical use of ultrasound, in only a score of years, has reached the point where it is now universally regarded as an essential means of soft tissue examination in the eye. Within the last decade B Scan screening of the opaque ocular media, particularly in the eye with cataract and vitreous hemorrhage has constituted the two most common indication for ocular ultrasound examination. Furthermore the echo graphic examination of intraocular lesions even if they are clearly visible on funduscopy has become an essential component in the differentiation of many ocular disease such as intraocular tumors, leukocorias, macular lesion, optic disc abnormalities and choroidal folds. As utilized in ophthalmology, ultrasound both complement and surpasses the capabilities of other diagnostic technique in the evaluation of abnormalities, particularly those produced by ocular and orbital tumours, vitreous hemorrhage, trauma and foreign bodies. Ultrasound by providing this increased diagnostic potential, has modified the treatment of many ophthalmic problem.

MATERIALS AND METHODS

This is prospective study of 50 cases of patients with posterior segment abnormalities on B-Scan.

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The criteria of selection of patients were 1) Cases of Opaque media like corneal opacities, hyphaema, hypopyon, cataract and occlusio pupillae 2) Cases of Clear media like choroidal and retinal detachment, vitreous hemorrhage and suspected tumours 3) Blunt/Penetrating trauma to eye 4) Intraocular foreign body.

All the cases were studied on Sonoline 2 machine with 7.5 MHz probe or with 10 MHz probe. 1% methylcellulose is applied to the surface of the probe and gentle contact is made against the closed lids. The three basic probe orientations which were used are Axial, Transverse and Longitudinal. Routine examination include an axial length view of globe demonstrating posterior portion of lens and optic nerve. Rest of the examination is performed from a position behind the iris-lens diaphragm, thus avoiding the artifacts induced by lens.

Ultrasonic tissue density is known by focusing an echo on screen and then gradually decreasing sensitivity control till that echo disappear. Mobility of ultrasound abnormality is tested by asking the patient to move eyes while the probe is held stationary.

RESULTS AND ANALYSIS

Age Distribution of Cases

Years	Number	%
0-10	5	10
11-20	8	16
21-30	6	12
31-40	7	14
41-50	5	10
51-60	9	18
>60	10	20
Total	50	

As seen from above, there is no particular age group more likely to present for USG of eye

Clinical Presentation

Clinical feature	Number	%
Trauma	21	42
Diminision of vision	23	46
Pain	4	8
Deviation of eye	1	2
Floaters	1	2
Total	50	

In this series of study the most common form of presentation was dimness of vision. Next to this patients were presenting with the complain of trauma.

Distribution of Sonographic Lesion

Lesion	Number	%
Lens	6	12
Vitro-Retinal	38	76
Foreign bodies	3	6
Choroid	3	6
TOTAL	50	

As we see maximum number of patients were in group of vitreo-retinal lesion.

Distribution of Vitreoretinal Lesion

	Number	%
VH	10	26.31
VH with PVD	03	7.89
VH with RD with PVD	05	13.15
RD	12	31.57
RD with Fundal Coloboma	01	2.63
Retinoblastoma	03	7.89
Endophthlmitis	03	7.89
RD with CD	01	2.63
Total	38	

Distribution of Lens Lesion

	Number	%
Dislocation with vitreous bands	1	16.66
Dislocation with PVD	3	50
Aphakia with PVD with PCO	1	16.66
Aphakia with VH with PVD	1	16.66
TOTAL	6	

Analysis

In Patients with Corneal Opacity

B-Scan finding	NUMBER	%
RD	5	45.45
VH	2	18.18
Dislocated lens with PVD	1	9.09
Dislocated IOL	1	9.09
Endophthlmitis	1	9.09
CD	1	9.09
TOTAL	11	

In Patients with Anterior Staphyloma

B-Scan finding	Number	%
VH and RD	1	33.33
RD	2	66.66
Total	3	

In Patients with Hyphaema

B-Scan finding	Number	%
VH	3	42.85
VH with PVD	1	14.48
VH with PND with Ahakia	1	14.28
VH with IOFB	1	14.28
IOFD	1	14.28
Total	7	

In Patients with Cataract

B-Scan finding	Number	%
VH	1	25
RD	1	25
RD with PVD	1	25
Aphakia with dense PCO with PVD	1	25
TOTAL	4	

In Patients with Oculusio Pupillae

B-Scan finding	Number	%
VH	1	33.33
Endophthalmitis	2	66.66
TOTAL	3	

In Patients with Intraocular Mass

B-Scan finding	Number	%
RB	1	50
Choroidal melanoma with RD	1	50
TOTAL	2	

DISCUSSION

In this study patients with VH, oculusio pupillae, RD, anteriorstaphyloma, cornealopacity, traumatic hyphaema, cataract, CD, leukocoria and mass which were diagnosed on gross examination were subjected to B-Scanning. The aim of sonography was to rule out the possibility of associated poor segment abnormality. Ruling out posterior segment abnormality is a must prior tosurgical intervention for anterior segment pathology as removing the anterior segment pathology alone would not give vision to the patient.

All the patients with anterior staphyloma studied had Post. Segment abnormality in form of RD and VH. So, staphylectomy with keratoplasty was indicated in these patients only for cosmetic purpose.

In patients with corneal opacity with RD conservative line of management was done whereas in those with corneal opacity and subluxated lens and IOL, lens removal with keratoplasty at a later date or in same sitting was indicated. In patients with corneal opacity and VH, conservative line of management was adopted.

Patents with cataract and fresh RD were indicated for cataract extraction followed by RD surgery whereas those with long standing RD were contraindicated for surgery. Patents with hyphaema and VH were treated conservativelywhereas those with hyphaema and IOFB were subjected to surgery. Simple cases with just VH were treated on servatively whereas those having RD/IOFB were subjected for surgery. Sonography

plays a very important role in study of VITREO-RETINAL status. The echo poor vitreous is a great boon to the sinologist as all lesions of the vitreous are echogenic. Of the 50 patients in this study, 47 had vitreo-retinal lesion. Out of 47 vitreo-retinal lesions 80.85% were primary vitreo-retinal lesions whereas in the rest of 19.14% cases the main site of lesion was somewhere else. 12.76% had main lesion in lens, 4.25% had main lesion in form of IOFB whereas 2.12% had main lesion in the form of choroidal melanoma. In one study carried out by Coleman of 100 patients, he found that the largest group comprising of 37 patients was that of RD [3]. In this study of 50 patients, 20 had RD.

Patients with RD were subjected to B-Scanning for 2 principal reasons; 1) Eye was not visualized due to opaque media. 2) Question of tumours behind RD in patients with clear media the earliest detachment to be recognized is the total RD. In case of localized RD it may be difficult to discern from choroidal elevation, thickened PVD and small melanomas.

Another common condition seen in the vitreous is VITREOUS HAEMORRHAGE. B scan in case of VH is mainly indicated to rule out presence of RD, tumours, FB, and dislocated lens behind the hemorrhage. Sonography however can identify certain aspects of hemorrhage. In this study a total of 44% cases had VH out of which 9.09% had IOFB, 13.63% had RD, 13.63% had RD with PVD, 13.63% had PVD, and 4.54 had Aphakia with VH with PVD while 45.4% had just VH.

The common INTRAOCULAR TUMOURS are choroidal melanoma, retinoblastoma, secondaries and hemangiomas. These can be differentiated on the basis of tissue characterization and amplitude pattern. Due to high reliability of ultrasonography in detecting and identifying intraocular tumours and the noninvasive nature of sonography, USG is recommended in all patients with suspected tumours. In this study 8% cases had intraocular tumours out of which 75% had RB and 25% had choroidal melanoma.

IN TRAUMA, USG is used to assess ocular damage if the media are opaque after blunt or penetrating injury. In eyes with retained foreign material, USG may also be used to aid localization of the foreign body. In our study 42% of patients were post-traumatic, out of which 23.80% patients had lesions in form of cataract, subluxation, post-dislocation, lens absorption. 61.90% of patients had vitreo-retinal lesions in form of VH, PVD, RD and 14.28% of patients had IOFB.

CONCLUSION

Ultrasonography is very useful for knowing;

1. Status of posterior segment in anterior segment pathologies.
2. For knowing status of retina in cases of vitreous hemorrhages.
3. In cases of retinal detachment to know the etiology of retinal detachment (primary or secondary)
4. For diagnosis of intraocular mass
5. For accurate localization of IOFB

Ultrasonography in the pathologies of vitreous and retina scores over all other modalities. It has a unique role in patients with trauma. It helps to know status of vitreous and retina and helps in accurate localization of IOFB. Ultrasonography is superior to X-rays in detecting IOFB in a way that X-rays detect radiopaque FB whereas USG detects any FB. Ultrasonography is very helpful in differentiation of intraocular tumour.

The unique dynamic quality of ultrasound imaging allows the depiction of vascular and pulsatile lesions and the effect of ocular movements on normal and abnormal orbital structures.

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How to cite this article:

Pawan N. Jarwal *et al* (2017) 'Evaluation Of Posterior Segment Of Eye On B- Scan Usg', *International Journal of Current Advanced Research*, 06(05), pp. 3604-3606.
DOI: <http://dx.doi.org/10.24327/ijcar.2017.3606.0328>
