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 fundoscopy 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 opacity, 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.

Ultrasound tissue density is known by focusing an echo on screen and then gradually decreasing sensitivity control till that echo disappear. Mobil 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 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.
RESULTS AND ANALYSIS

As we see maximum number of patients were in with the complain of trauma. It was dimness of vision.

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.

### 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     |     |

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

### Distribution of Sonographic Lesion

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

### Distribution of Vitreoretinal Lesion

| Number | %   |
|--------|-----|
| VH     | 10  |
| VH with PVD | 3    |
| VH with RD with PVD | 12   |
| RD     | 12  |
| RD with Fundal Coloboma | 1   |
| Retinoblastoma         | 3    |
| Endophthalmitis        | 3    |
| RD with CD             | 3    |
| **TOTAL**             | 38   |

### Distribution of Lens Lesion

| Number | %   |
|--------|-----|
| Dislocation with vitreous bands | 1     |
| Dislocation with PVD            | 3     |
| Aphakia with PVD with PCO       | 1     |
| Aphakia with VH with PVD        | 1     |
| **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   |
| Dislocated IOL  | 1     |
| Endophthalmitis | 1     |
| CD             | 1     |
| **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             | 1      | 25  |
| RD             | 1      | 25  |
| RD with PVD    | 1      | 25  |
| Aphakia with dense | 1   |
| PCO with PVD   | 1      | 25  |
| **TOTAL**      | 4      |

In Patients with Oculusio Pupillae

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

In Patients with Intraocular Mass

| B-Scan finding | Number | %   |
|----------------|--------|-----|
| RB             | 1      | 50  |
| **TOTAL**      | 2      |

DISCUSSION

In this study patients with VH, occlusio 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 to surgical 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 conservatively whereas those with hyphaema and IOFB were subjected to surgery. Simple cases with just VH were treated on conservatively 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 lesion of the vitreous are echogenic. Of the 50 patients in this studies, 47 had vitreo-retinal lesion. Out of 47 vitreo retinal lesion 80.85% were primary vitreo retinal lesion whereas in the rest of 19.14% cases 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 if which 23.80% patients had lesion in form of cataract, subluxation, post. Dislocation, lens absorption 61.90% of patients had vitreo retinal lesion 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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