



MRI EVALUATION OF ORBITAL PATHOLOGIES

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ABSTRACT **Background:** Imaging plays an important role in the evaluation of orbital diseases especially neoplasms. USG and CT remained as primary imaging modalities for most of suspected orbital neoplasms. However, use of MRI is especially valuable for assessing its extent. Precise descriptions of lesion location, involved orbital compartments, spread to orbital apex, perineural and intracranial spread and also provide information beyond what can be seen by fundoscopy, thus facilitates appropriate treatment. **Materials And Methods:** The present study is a hospital based cross sectional study on 100 patients who were requested MRI for various signs and symptoms of orbital pathologies over 2 years' period. **Results:** Out of 100 patients, Maximum patients were found amongst the age group of 41 to 50 years with frequency 27 (27 %) while least number of cases recorded in age group >70 years was 3 (3 %). There was equal distribution of various orbital pathologies among both males(50%) and females(50%).Maximum (77%) cases were unilateral and (23%) cases were bilateral. Maximum patients 52(52%) had secondary orbital involvement while 48(48%) had primary orbital involvement. Maximum 65(65%) patients had orbital pathologies confined to single compartment and 35(35%) patients had multispatial involvement both of which were predominantly unilateral. Amongst unicompartamental pathologies maximum patients had exclusively extraconal involvement. Nature wise maximum cases were infective / inflammatory (52%) which were predominantly unilateral. Least cases were endocrine/ systemic and vascular in nature accounting (2%) each. **Conclusion:** MRI is an excellent imaging modality for comprehensive assessment of various orbital pathologies thereby, allowing the clinician regarding further management, prognosis & follow up.

KEYWORDS : orbital neoplasms, USG, CT, MRI.

INTRODUCTION

Imaging analysis of orbital diseases is facilitated by a compartmental approach that establishes differential diagnoses on basis of location of disease process within the orbit. General visual disturbances & or ophthalmoplegia may be caused by tumors, infections, inflammations and vascular disorders, which may be found at any location along the visual pathway from globe to the occipital lobes. Cross-sectional imaging plays a vital role in the diagnosis and management of these lesions. Though CT & MRI are regarded to be complementary in some circumstances as CT is useful in evaluating bony structures, MR imaging excels in evaluating soft tissues. Because of absence of radiation & utility of fat suppressed contrast enhanced images, MR imaging has emerged to be the procedure of choice for orbital disorders except for trauma & assessment of foreign bodies.[1]

MATERIALS AND METHODS

The present study titled "MRI EVALUATION OF ORBITAL NEOPLASMS" is a cross sectional observational study has been carried out in department of Radiodiagnosis at tertiary care center Government Medical College and Hospital, Auragabad over 100 patients in Wipro 3T Logica V2 GE machine and 1.5T Philips's machine. Gadolinium based intravenous contrast was administered, both pre and post contrast scans were performed after obtaining a written informed consent. Approval from institutional ethics committee was taken prior to the commencement of the study.

OBSERVATIONS AND RESULTS

Out of 100 patients, Maximum patients were found amongst the age group of 41 to 50 years with frequency 27 (27 %) while least number of cases recorded in age group >70 years was 3 (3 %). There was equal distribution of various orbital pathologies among both males(50%) and females(50%).Maximum (77%) cases were unilateral and (23%) cases were bilateral. Maximum patients 52(52%) had secondary orbital involvement while 48(48%) had primary orbital involvement. Maximum 65(65%) patients had orbital pathologies confined to single compartment and 35(35%) patients had multispatial involvement both of which were predominantly unilateral. Amongst unicompartamental pathologies maximum patients had exclusively extraconal involvement. Nature wise maximum cases were infective / inflammatory (52%) which were predominantly unilateral. Least cases were endocrine/ systemic and vascular in nature accounting (2%) each.

TABLES AND INFERENCES

Table No. 1: Distribution Of Cases According To Age

Age (Years)	Number of Cases (N)	Percentage (%)
0 to 10	7	7 %

10 to 20	11	11 %
21 to 30	7	7 %
31 to 40	17	17 %
41 to 50	27	27 %
51 to 60	13	13%
61 to 70	15	15%
More than 70	3	3%
Total	100	100 %

Table no. 1 shows the age distribution of patients with orbital pathologies on MRI. Maximum patients were found amongst the age group of 41 to 50 years with frequency 27 (27 %) while least number of cases recorded in age group >70 years was 3 (3 %).

Table No. 2: Distribution Of Cases According To Sex

Sex	Number of Cases (N)	Percentage (%)
Male	50	50%
Female	50	50%
Total	100	100%

Table No. 2 shows Distribution of MRI orbital pathologies according to Sex. Out of 100 patient's half no. of cases 50(50 %) were Males and another half were females 50 (50%).

Table No. 3: Distribution Of Orbital Pathologies As Per Laterality.

Laterality	Number of Cases (N)	Percentage (%)
Unilateral	77	77%
Bilateral	23	23%
Total	100	100%

Inference: Maximum patients 77(77%) had unilateral involvement and 23(23%) had bilateral

Table No. 4: Distribution Of Orbital Pathologies According To Primary Versus Secondary Involvement.

Sex	Number of Cases (N)	Percentage (%)
Primary	48	48%
Secondary	52	52%
Total	100	100%

Inference: Maximum patients 52(52%) had secondary orbital involvement and only 48(48%) had primary orbital involvement.

Table No. 5: Distribution of Orbital Pathologies Confined to Single Orbital Versus Multispatial Involvement.

COMPARTMENT	UNILATERAL	BILATERAL	TOTAL
INTRACONAL	12	05	17

EXTRACONAL	15	04	19
CONAL	03	01	04
OCULAR	08	05	13
OTHERS (INCLUDING ORBITAL APPENDAGES AND PRESEPTAL COMPARTMENT)	10	02	12
MULTISPATIAL	26	09	35
TOTAL	74	26	100

Inference: Out of 100 patients maximum 65 patients had orbital pathologies confined to single compartment 35 patients had multispatial involvement both of which were predominantly unilateral. Amongst unicompartmental pathologies maximum patients had exclusively extraconal involvement.

Table No. 6: Distribution of Orbital Pathologies According to Nature of Pathology.

NATURE	UNILATERAL	BILATERAL	TOTAL
INFECTIVE / INFLAMMATORY	43	9	52
VASCULAR	2	0	2
TRAUMATIC	4	0	4
NEOPLASTIC (EXCLUDING VASCULAR)	16	2	18
CONGENITAL AND DEVELOPMENTAL	4	2	6
ENDOCRINE AND SYSTEMIC	0	2	2
MISCELLANEOUS	8	8	16
TOTAL	77	23	100

Inference: Maximum cases were infective / inflammatory (52%) which were predominantly unilateral followed by neoplastic conditions (18%). Least cases were endocrine/ systemic and vascular in nature accounting 2% each.

DISCUSSION

In **Table no. 1** we showed the age distribution of patients with orbital pathologies. Out of 100 cases maximum patients were found amongst the age group of 41 to 50 years with frequency 27 (27 %) followed by age group 31 -40 years with no. of cases. 17 (17 %). Least number of cases recorded in age group >70 was 3 (3 %).

In a similar study by **Aarti Patel et al [4]** showed maximum distribution of cases in the age group 21-30 years [24%].

In a study by **Nisha et al [2]** of 50 patients showed the maximum distribution of cases were in 39-58 years (34%) and least number of patients were <1 year (6%).

In **Table No. 2** we showed Distribution of MRI orbital pathologies according to Sex. Out of 100 patient's half no. of cases 50(50 %) were Males and another half were females 50 (50%).

In a similar study by **Nisha et al [2]** also there was equal distribution of cases in males [50%] and females [50%].

In a similar study by **Nilesh Chaudhari et al [6]** maximum number of cases were males [54.2%] and few cases were females [45.8%].

In **Table No. 3** we showed the distribution of orbital pathologies as per laterality where we found maximum (77%) cases were unilateral and only (23%) cases had bilateral involvement.

In **Table No. 4** we showed distribution of orbital pathologies as per primary versus secondary orbital involvement, Maximum patients 52(52%) had secondary orbital involvement and only 48(48%) had primary orbital involvement.

In **Table No. 5** we showed, out of 100 patients maximum 65 patients had orbital pathologies confined to single compartment and 35 patients had multispatial involvement both of which were predominantly unilateral. Amongst unicompartmental pathologies maximum patients had exclusively extraconal involvement

In **Table No. 6** we showed distribution of orbital pathologies according

to its nature. Maximum cases were infective / inflammatory (52%) which were predominantly unilateral followed by neoplastic conditions (18%). Least cases were endocrine/ systemic and vascular in nature accounting 2% each.

In a similar study by **Nisha et al [2]**, maximum cases (36%) were inflammatory followed by neoplastic and traumatic.

Another study by **Nilesh Chaudhari et al [6]**, maximum cases (31.4%) were inflammatory/ infective followed by neoplastic (20%). Least cases were congenital (2%).

In study by **Aarti Anand et al [4]**, maximum cases were inflammatory and infective (35%) followed by neoplastic (31%). Least cases were traumatic (4%).

In study by **Usha Kim et al [3]**, maximum cases (34.1%) were inflammatory and infective followed by systemic conditions (31%). Least cases were Vascular in nature (5.8%).

In a study by **Kennedy et al [5]**, maximum cases were neoplastic (40.4%) followed by Inflammatory and infective (23.9%).

CONCLUSIONS

MRI is an excellent imaging modality for lesion characterization, delineation of the anatomical extent, presents additional advantages including comprehensive screening of the rest of the neuraxis and repeatability due to lack of ionizing radiation. This allows the clinician to make a better-informed decision regarding further management, prognosis & follow up.

Abbreviations-

USG: ultrasonography, MRI(Magnetic resonance imaging), CT(Computed tomography)

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