



## CHARACTERISATION OF RING ENHANCING LESIONS IN BRAIN WITH MRI AT TERTIARY CARE HOSPITAL RAJASTHAN.

Naima Mannan<sup>1</sup>, Rajkumar Yadav<sup>2</sup>, Usha Jaipal<sup>3</sup>, G.L.Meena<sup>4</sup>

<sup>1</sup> Professor, <sup>2</sup> Assistant Professor, <sup>3</sup> Senior Professor, <sup>4</sup> Senior Professor & Head.

<sup>1-3</sup> Department of Radiodiagnosis and Modern Imaging, SMS Medical College, RUHS, Jaipur.

<sup>4</sup> Department of Radiodiagnosis, SP Medical College, RUHS, Bikaner.

### ABSTRACT:

Background- Ring enhancing lesions are one of the most common neuroimaging abnormalities encountered by the radiologists.

Methods-This study was a prospective observational study. The study included 120 patients referred to the department of Radiodiagnosis in SMS medical college, Jaipur with clinically suspected ring enhancing lesions or those detected on contrast enhanced CT scan in the period of 1yrs.

Results- Out of the 120 patients that we evaluated, tuberculomas (42.5%) was the most common pathology followed by NCC (33.33 %), Abscesses (10%), metastasis (10.8%), and toxoplasma infection (1.67%).

Conclusion- MRI being non invasive and nonradiating is an ideal imaging modality. Multiplanar capability of MRI was helpful in identifying precise anatomical location and the exact extent of lesions.

Keywords: MRI, Ring Enhancing Lesions, Tuberculoma.

### INTRODUCTION:

Ring enhancing lesions are one of the most common neuroimaging abnormalities encountered by the radiologists. Various imaging modalities, like computed tomography (CT) and magnetic resonance imaging (MRI) are used to detect these lesions. A wide range of etiologies may present as cerebral multiple ring-enhancing lesion<sup>1</sup>. Clinically, they present as visual impairment, focal neurological deficit, recurrent seizures, and raised intracranial pressure (severe headache, vomiting and papilledema). If vasogenic edema is severe, patients may develop loss of sensorium and posturing of limbs because of transtentorial brain herniation. Intractable headache, focal neurological deficits and vision loss are the long-term sequelae<sup>2</sup>.

Cysticercosis is the most common parasitic infection of the human CNS world wide. Imaging finding in neurocysticercosis are quite often characteristic. Imaging findings in each stage reflect underlying 3 changes in the disease process and host response . Cysts are common at the gray and white matter junction but are also seen in the basal ganglia, cerebellum, and brainstem. The cyst wall is thin and smooth, and a 2- to 4-mm scolex is identified within the cyst.

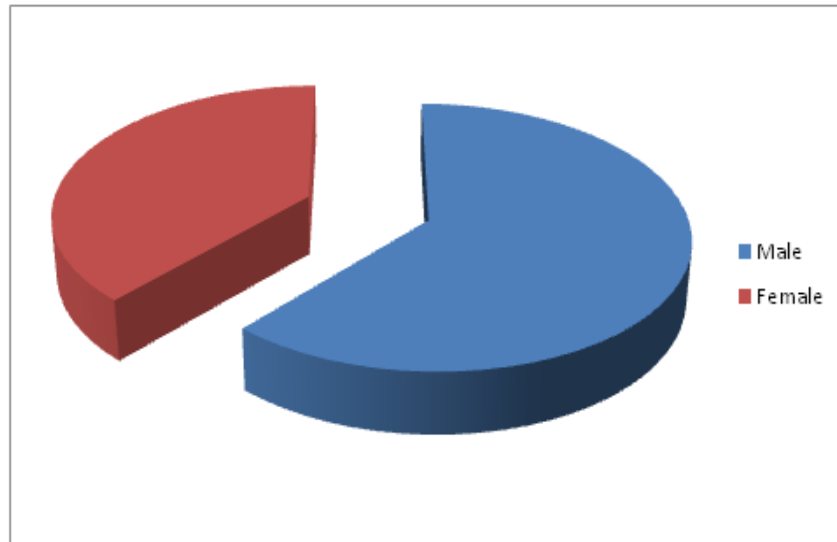
### MATERIAL AND METHODS

This study was a prospective observational study. The study included 120 patients referred to the department of Radiodiagnosis in SMS medical college, Jaipur with clinically suspected ring enhancing lesions or those detected on contrast enhanced CT scan in the period of 1yrs. MRI was done on Philips achieva series 3T machine using phase array brain coil. Contrast study was done

(by intravenously injecting gadolinium based contrast agent) according to body weight (0.1mmol / kg). Routine sequences like T1, T2, FLAIR, DWI were taken along with 2D PRESS with TE of 35 and 144.

**RESULTS**

120 patients were evaluated, whose age group ranged from 2 to 70 years. The highest incidence of these ring enhancing lesions were found in 21 – 30 years age group accounting for 36 cases and least was seen in age group of > 61 years constituting 13 cases.



**Fig. 1: Sex wise distribution of various ring enhancing lesions. 61.66% cases were male and 38.33% cases were female.**

Table 1: Incidence of Ring Enhancing lesions

Lesions	No. of cases	Percentage
Neurocysticercosis	40	33.33
Tuberculoma	51	42.5
Abscess	12	10.0
Metastasis	13	10.8
Pilocytic astrocytoma	2	1.67
Tumefactive demyelination	2	1.67

Out of the 120 patients that we evaluated, tuberculomas (42.5%) was the most common pathology followed by NCC (33.33 %), Abscesses (10%), metastasis (10.8%), and toxoplasma infection (1.67%).

**Table 2: Comparison of Incidence of Neoplastic and Non-Neoplastic Lesions**

Neoplastic Lesions	No. of cases	Non-Neoplastic Lesions	No. of cases
Metastasis	13	Neurocysticercosis	40
Pilocytic astrocytoma	2	Tuberculoma	51
		Abscess	12
		Tumefactive demyelination	2
Total	15	Total	105

Out of 120 cases 15 cases were neoplastic and 105 cases were non-neoplastic.

## DISCUSSION

Magnetic resonance imaging is a noninvasive, multiplanar and highly accurate method with better inherent contrast that demonstrates the lesion accurately. MRI provides an accurate assessment of the brain changes in various ring enhancing lesions, for accurate diagnosis and introduction of immediate treatment.

120 patients were evaluated, whose age group ranged from 2 to 70 years. The highest incidence of these ring enhancing lesions were found in 21 – 30 years age group accounting for 36 cases and least was seen in age group of > 61 years constituting 13 cases.

Out of the 12 patients that we evaluated, tuberculomas (42.5%) was the most common pathology followed by NCC (33.33 %), Abscesses (10%), metastasis (10.8%), and toxoplasma infection (1.67%). Tuberculomas were seen as conglomerate lesions which were iso to hypointense on both T1 and T2. On T1 weighted images they showed iso to hyperintense ring which was seen in 26 cases in our study. All our cases presented with ring like enhancement. All cases of neurocysticercosis presented with multiple lesions.

Abscesses appeared hypointense on T1 weighted images with a hyperintense rim in 12 patients, whereas all of them appeared hyperintense on

T2WI showing complete or partial diffusion restriction and MRS showed Lactate peak in all 12 cases. Also observed same result in many studies.<sup>3,4</sup>

## CONCLUSION

MRI being non invasive and nonradiating is an ideal imaging modality. Multiplanar capability of MRI was helpful in identifying precise anatomical location and the exact extent of lesions.

## REFERENCES

1. Omuro AM, Leite CC, Mokhtari K, Delattre JY. Pitfalls in the diagnosis of brain tumours. *Lancet Neurol* 2006;5:937-48.
2. Cunliffe CH, Fischer I, Monoky D, Law M, Revercomb C, Elrich S, et al. Intracranial lesions mimicking neoplasms. *Arch Pathol Lab Med* 2009;133:101-23.
3. Kim YJ, Chang KH, Song IC, et al. Brain abscess and necrotic or cystic brain tumor: discrimination with signal intensity on diffusion-weighted MR imaging. *AJR Am J Roentgenol* 1998;171:1487-1490.
4. Dev R, Gupta RK, Poptani H, et al. Role of in vivo proton magnetic resonance spectroscopy in the diagnosis and management of brain abscesses. *Neurosurgery* 1998;42:37-42