ORIGINAL ARTICLE

Diagnostic Features of MRI in Evaluation of Primary Central Nervous System Lymphoma at Presentation

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ABSTRACT

Aim: To analyze the value of diagnostic features of magnetic resonance imaging (MRI) in doubtful cases for the detection of primary central nervous system lymphoma.
Methodology: A historical cross-sectional study was performed with information gathered from radiological department of General Hospital, Lahore. Records from September 2019 to February 2020 were reviewed to identify patients of PCNSLs on MRI presenting with specific signs and symptoms.
Results: From September 2019 to February 2020, 35 patients were undergone MRI. Almost all patients were confirmed with this modality. The sensitivity and specificity of MRI in this study was 100%. Almost all patients were presented by lesions (mostly in region of cerebral hemisphere 44%) and contrast enhancement. Oedema is also seen in 20% Patients. Necrosis is seen in 4%.
Conclusion: MRI is the best choice for diagnosis of PCNSLs due to its specific imaging features which are suggestive of this disease and 100% specificity.
Keywords: PCNSLs (Primary Central Nervous System Lymphoma), MRI , EBV(Epstein Bar Virus).

INTRODUCTION

Lymphoma in CNS system is a type of Hodgkin lymphoma present in the brain, spine, CSF and eyes. In this lymphoma, cancer cells generate in lymph tissues of brain and spinal cord. It has the best response to chemotherapy and radiotherapy[1]**.** In spite of a high chemo- and radio sensitivity, results are not good because the blood brain-barrier restricts the approach of most medicines to the CNS[2]. It occurs 0.43 per 100,000 people and incidence is increased in patients with age and mostly occurs in older patients. It is more common in men than women[3,4.]

B cell lymphoma is mostly appearing in patients with immune compromised patients e.g. AIDS and HIV etc[5]. The medical prospect for immune compromised patients is not good, immune compromised patients are those not having any immunodeficiency; there may be a chance of association with EBV (Epstein Bar Virus) or other DNA viruses[6].On the other side, in immune competent patients PCNSL s mostly occurs in patients with age >50 yrs. The ratio of immune competent patients has increased 10 folds with PCNSLs. The exact cause is not known, but immunodeficiency is main cause[7].

Clinical features are seizures, headache, night sweats, fever or weight loss[8]. Other symptoms include double vision, difficulty in swallowing, hearing loss, vertigo, decline in memory or other any neurological defect. Many patients can survive just less than 3 months, if proper treatment is not given to patients. When chemotherapy is used, people can live for 4 -5 years[9].

METHODOLOGY

A historical cross-sectional study was conducted with data collected from radiological department of General Hospital, Lahore. Records from September 2019 to February 2020 were undergone to identify patients with a diagnosis of Primary central nervous system lymphoma. Imaging features of MRI were evaluated in the proper diagnosis of PCNSLs. MRI results were compared with the final lab reports and clinical findings made by doctors or both. MRI examination was performed using Philips 1.5 Tesla mac hine mode l 2006. 35 patients were scanned on MRI, both T1 (enhanced and non enhanced) and T2 acquisitions were done. Patients were presenting with symptoms of nausea, vomiting, lower body weakness and other neurological defects. Two pts were presented with hearing loss and double vision.

RESULTS

The detail of results is given in tables 1, 2

Table 1: Location, size and number of presenting lesions

Location	MRI lesions (50)	N0. of isolated lesions	Patients affected	Mean size (mm)
Cerebral Hemisphere	26(44%)	8	19	21.3mm
Deep w hite matter	1(2%)	0	1	4mm
Corpus Callosum	5 (10%)	2	6	32mm
Deep grey matter	4 (8%)	0	3	11mm
Brain stem	1(2%)	0	1	13.6mm
Cerebellum	9 (18%)	3	7	29mm
Ventricle w all	4(8%)	1	4	7mm

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Table 2: Other presenting features on MRI

Other imaging features	n	%age
Contrast enhancement	35	100
Leptomeningeal spread	4	11
Necrosis	2	5
Edema	10	57

DISCUSSION

In our study, lesions are seen in almost all patients with contrast enhancement and oedema is also seen in 60% patients.

Hardorsen et al in 2003 studied on 75 patients by using CT and MRI and concluded that imaging features of lesion changed with increase in incidence of primary CNS lymphoma i.e. diagnosis time and age factors. No lesions showed post-mortem condition or delay in time of diagnosis[10.] (90% positive results).

Kuker W et al in their study on 100 patients showed that diagnosis could be made after confirmation on MRI and unnecessary surgeries could reduce. T1 and T2 images of all patients were taken and contrast enhancement was seen in all. Diffusion weighted was seen in 15[11.](85% positive results)

Cheng G performed a study and patients were diagnosed by biopsy and then undergone imaging modalities. It was noticed that MRI is very helpful in diagnosis of primary central nervous lymphoma[12]. (96% positive result).

LEE et al in 2018 performed a study on 119 patients (having 30 primary central nervous system lymphomas patients and 89 glioblastomas patients), they concluded that this modality is of great importance in differentiating Primary CNS lymphomas from glioblastomas[14].(100% positive result).

Zeeshan et al studied a patient of 35yrs of age with symptoms of headache and right sided weakness. MRI was performed which showed lesion in left basal ganglia and surrounding oedema. Post contrast images were also taken. MRI features were similar to lymphoma[15].i.e.100% positive results. Our study is consistent with these results i.e. 94% positive results.

CONCLUSION

Lesions are seen in almost all patients with contrast enhancement and oedema is also seen in 60% patients. So MRI is first choice for diagnosis due to its specific imaging features.

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