



To Assess Various Brain Lesions on MRI

¹Dr. Sunil Jakhar, Assistant Professor, Department of Radiodiagnosis, SMS medical College and attached group of Hospitals, Jaipur

²Dr. Bineeta Singh Parihar, Junior Resident, Department of Radiodiagnosis, SMS medical College and attached group of Hospitals, Jaipur

³Dr. Anu Bhandari, Professor, Department of Radiodiagnosis, SMS medical College and attached group of Hospitals, Jaipur

⁴Dr. Kuldeep Mendiratta, Professor, Department of Radiodiagnosis, SMS medical College and attached group of Hospitals, Jaipur

⁵Dr. Meenu Bagarhatta, Professor and Head of Department, Department of Radiodiagnosis, SMS medical College and attached group of Hospitals, Jaipur

Corresponding Author: Dr. Sunil Jakhar, Assistant Professor, Department of Radiodiagnosis, SMS medical College and attached group of Hospitals, Jaipur

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Abstract

Background: The danger of intracranial pathology is that expansion in an enclosed space leads to brain compression causing ischemia, swelling and loss of function that can be permanent and possibly fatal.

Methods: This was a simple observational prospective study carried out at the Department Of Radio-Diagnosis And Modern Imaging, S M S Medical college & Hospitals, Jaipur. All the patients presented for MR brain study with some neurological complaints and showed positive findings on MRI were included in this study.

Results: Here, out of total 80 stroke cases, there were 22 cases of acute arterial infarct, 3 of HIE, 4 cases of ICH, 750 of subacute arterial infarct and 1 case of venous infarct. Similarly, out of total 12 cases of

tumors, 6 cases were of meningioma, 3 of lymphoma, 1 of glioma and metastasis each. Out of total 6 cases of infections, there were 3 cases of abscess, 1 of encephalitis and 2 of tubercular meningitis. There were 1 case of pontine myelinolysis and 1 cases of ADEM in this study.

Conclusion: Stroke comprised the majority of lesions at 120 cases (80% of the total cases studied).

Keywords: MRI, Brain, lesion.

Introduction

The danger of intracranial pathology is that expansion in an enclosed space leads to brain compression causing ischemia, swelling and loss of function that can be permanent and possibly fatal. Seizures greatly increase the cerebral metabolic rate for oxygen. They are also associated with regional ischemia that can lead to cell

death and loss of cognitive and functional abilities. Compromised integrity of the membranes covering the CNS (e.g. meningocele) presents a significant risk for infection, as well as cerebrospinal fluid loss and hypothermia⁽¹⁾.

Intracranial lesions can occur in all age groups. In children, intracranial lesions are common in posterior fossa region. MRI and Diffusion weighted imaging help us in classification and characterization of the lesions. With advent of DWI and its ADC values, the diagnosis, classification, characterization and location of the lesion is made more precise and accurate⁽²⁾.

Materials And Methods

Source of Data: This was a simple observational prospective study. All the patients presented for MR brain study with some neurological complaints and showed positive findings on MRI were included in this study.

Sample Size: The study group consisted of 100 patients.

Inclusion Criteria

- All patients presented with neurological symptoms
- Both indoor and outdoor cases were included across all age groups, gender and religion etc.

Exclusion Criteria:

- Patients not willing to participate in study

Observations

Table 1: Age wise distribution of study group

Age (Mean±SD)	55.22±2.34
Male : Female	66:34

The mean age of patients was 55.22±2.34 years. The present study included 96(64%) males and 54(36%) females with male to female ratio of 1.94:1.

Table 2: Distribution of cases according to MRI diagnosis

Diagnosis		No.of cases	%
Stroke (80)	Subacute arterial infarct	50	50.00
	Acute arterial infarct	22	22.00
	ICH	4	4.00
	HIE	3	3.00
	Venous infarct	1	1.00
Tumors (12)	Meningioma	6	6.00
	Lymphoma	3	3.00
	Glioma	1	1.00
	Metastasis	2	2.00
Infections (6)	TBM	3	3.00
	Abscess	2	2.00
	Encephalitis	1	1.3
Others (2)	ADEM	1	1.00
	Pontine myelinolysis	1	1.00
Total		100	100

Here, out of total 80 stroke cases, there were 22 cases of acute arterial infarct, 3 of HIE, 4 cases of ICH, 750 of subacute arterial infarct and 1 case of venous infarct. Similarly, out of total 12 cases of tumors, 6 cases were of meningioma, 3 of lymphoma, 1 of glioma and metastasis each. Out of total 6 cases of infections, there were 3 cases of abscess, 1 of encephalitis and 2 of tubercular meningitis. There were 1 case of pontine myelinolysis and 1 cases of ADEM in this study.

Discussion

Diffusion weighted MRI provides image contrast that is different from that provided by conventional MRI sequences. It provides a technique for mapping proton contrast that reflects the microvascular environment. This imaging technique is sensitive to early ischemic insult. DWI is performed with a pulse sequence capable

of measuring water translation over short distances. This water diffusion is much slower in certain pathological conditions as compared with normal brain. Here, out of total 80 stroke cases, there were 22 cases of acute arterial infarct, 3 of HIE, 4 cases of ICH, 750 of subacute arterial infarct and 1 case of venous infarct. Similarly, out of total 12 cases of tumors, 6 cases were of meningioma, 3 of lymphoma, 1 of glioma and metastasis each. Out of total 6 cases of infections, there were 3 cases of abscess, 1 of encephalitis and 2 of tubercular meningitis. There were 1 case of pontine myelinolysis and 1 cases of ADEM in this study.

Reddy and Madhu⁽³⁾ studied age of the patients with intra cranial lesions and found ranged from 6 years to 80 years. In this study, majority of patients (23.6%) were from age group 51-60 years followed by 19.1% from age group 61-70 years. .

In study by Chakra et al⁽⁴⁾ found 52 cases of infarcts. Out of these, 30(57.7%) were acute infarcts, 18(34.6%) were chronic infarcts and 4(7.6%) were subacute infarcts.

Kumar et al⁽⁵⁾ found that infarcts constituted the major part of the disease. Of these, acute infarcts which presented within 24 hours of onset of ictus represented 70%, hyperacute infarcts (9.41%), subacute infarcts (10.5%) and chronic infarcts (9.41%) were less common.

Reddy et al⁽³⁾ found that infarcts constituted 56(50.9%) cases of the total cases in this study. Of these, 34(60.7%) were acute infarcts, 19(33.9%) were chronic infarcts and 3(5.3%) were subacute infarcts. The age group of patients with infarcts ranged from 24 years to 80 years. There were 35(62.5%) males and 21(37.5%) females among these cases.

Conclusion

Stroke comprised the majority of lesions (80% of the total cases studied). Of these subacute arterial infarcts constituted 50.00% cases.

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