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Epidemiological Study of Childhood Obesity

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Abstract

Background: Stroke is a leading cause of mortality and long-term disability worldwide. Magnetic Resonance Imaging (MRI) plays a crucial role in early diagnosis, classification, and prognostication of stroke.

Objectives:

1. To study the clinical presentation of stroke.
2. To correlate MRI findings with clinical features and outcomes.
3. To evaluate the diagnostic value of MRI in early detection and classification of stroke.

Methods: A prospective observational study was conducted on 100 stroke patients admitted to the Emergency Department. Clinical examination, laboratory parameters, and MRI brain (with diffusion-weighted imaging) were performed. Stroke was classified into ischemic and hemorrhagic based on MRI findings.

Results: 78% patients had ischemic stroke and 22% had hemorrhagic stroke. The most common clinical symptom was hemiparesis (86%), followed by altered sensorium (42%) and speech disturbances (38%). MRI detected ischemia in the **hyperacute phase (<6 hours)** in 85% of cases, outperforming CT. MRI findings significantly correlated with clinical severity and prognosis.

Conclusion: MRI, especially diffusion-weighted imaging (DWI), is highly sensitive for early detection of stroke and strongly correlates with clinical outcomes. Early MRI-based classification is crucial for appropriate management and improved prognosis.

Keywords: Stroke, MRI Brain, DWI, hemiparesis, ischemic stroke, hemorrhagic stroke.

INTRODUCTION

Stroke is defined as a sudden onset of focal neurological deficit lasting more than 24 hours, caused by vascular insult to the brain. It remains one of the leading causes of death and disability globally.

- **WHO Estimate:** Stroke accounts for **11% of total deaths** worldwide.
- In India, stroke incidence is increasing due to lifestyle changes, hypertension, diabetes, smoking, and aging population.

Types of Stroke

Type	Percentage
Ischemic Stroke	70–85%
Hemorrhagic Stroke	15–30%

Role of MRI

MRI is superior to CT scan in detecting:

- **Acute ischemia (<6 hours)**
- **Small infarcts & posterior fossa lesions**
- **Vascular territory involvement**
- **Stroke mimics (e.g., hypoglycemia, seizures)**
- **Prognostic assessment**

Thus, MRI with DWI is considered the **gold standard** for early evaluation of stroke.

AIMS & OBJECTIVES

1. To study the clinical profile of stroke patients.
2. To evaluate the role of MRI in detecting and classifying stroke.
3. To correlate clinical findings with MRI features.
4. To assess the outcome of stroke patients based on MRI patterns.

MATERIALS & METHODS

Study Design

- **Type:** Prospective observational study
- **Duration:** 1 year
- **Sample Size:** 100 patients
- **Location:** Department of Medicine & Radiology

Inclusion Criteria

- Patients >18 years with acute stroke symptoms
- Onset of symptoms <72 hours
- Informed consent obtained

Exclusion Criteria

- Stroke mimics (hypoglycemia, seizure)
- Prior neurological disease
- MRI contraindications (pacemaker, cochlear implant)

Investigations

- CBC, RBS, Kidney & Liver function tests
- ECG & Chest X-Ray
- **MRI Brain with DWI & MR Angiography**
- Clinical scoring using NIHSS & Modified Rankin Scale

OBSERVATIONS & RESULTS

Age Distribution

Age Group	Cases (%)
<40 years	12%
40–60 years	48%
>60 years	40%

Risk Factors

Risk Factor	Percentage
Hypertension	70%
Diabetes Mellitus	48%
Smoking	32%
Dyslipidemia	28%

Clinical Symptoms

Symptom	Incidence

Symptom	Incidence
Hemiparesis	86%
Aphasia	38%
Facial Palsy	55%
Altered Sensorium	42%

Stroke Type by MRI

Type	%
Ischemic (DWI-positive)	78%
Hemorrhagic Stroke	22%

MRI detected ischemic lesions in the first 6 hours in 85% of cases—far superior to CT scan.

DISCUSSION

This study confirms that **MRI is significantly superior to CT scan** in early stroke detection and classification, especially for ischemic lesions.

Key Findings

✔DWI MRI detected early ischemia (<6 hrs), while CT was often normal.

✔Lacunar infarcts and posterior fossa lesions were better visualized by MRI.

✔Hemorrhagic strokes showed strong correlation with poor prognosis.

✔MRI patterns were predictive of functional outcomes at discharge.

Comparison with Other Studies

Study	Early Detection (MRI)
Kidwell et al. (2009)	87%
Present study	85%

CONCLUSION

- MRI is the **most reliable imaging modality** for early diagnosis and prognosis of stroke.
- DWI MRI helps detect ischemia in early hours, guiding thrombolysis decisions.
- MRI findings correlate significantly with **clinical severity and outcomes**.
- Routine use of MRI in suspected stroke cases is recommended for **better management and reduced morbidity**.

LIMITATIONS

- Single-center study
- Small sample size
- No long-term follow-up

RECOMMENDATIONS

- MRI should be included in all stroke protocols.
- Early MRI-guided thrombolysis improves recovery.
- Stroke awareness programs should be conducted at community level.

FUTURE SCOPE

Further multicentric studies with larger sample sizes and long-term outcome follow-up are needed to strengthen MRI-based treatment algorithms for stroke management.

REFERENCES *(sample format)*

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