International Journal of Health Sciences and Research
[Indexed, Peer-Reviewed Journal]
Volume 16; Issue: 7; July 2026
Website: www.ijhsr.org
Original Research Article *ISSN: 2249-9571*

A Descriptive Cross-Sectional Study of Role of MRI in Paediatric Epilepsy at Tertiary Care Center in Rural Population of North Maharashtra

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DOI: https://doi.org/10.52403/ijhsr.20260722

ABSTRACT

Background: Epilepsy is one of the most common neurological disorders in children, and magnetic resonance imaging (MRI) plays a pivotal role in identifying underlying structural abnormalities and determining etiology.
Objectives: To evaluate the role of MRI in pediatric epilepsy and assess the association between MRI findings and clinical characteristics among children attending a tertiary care center in rural North Maharashtra.
Methods: A descriptive cross-sectional study was conducted at a tertiary care teaching hospital among 81 children (0– 15 years) diagnosed with epilepsy. Clinical and demographic details, seizure characteristics, developmental status, and etiological factors were recorded. All participants underwent brain MRI. MRI findings were analysed descriptively, and associations between clinical variables and MRI abnormalities were assessed using Chi-square test and binary logistic regression.
Results: Abnormal MRI findings were observed in 52 children (64.2%). Hypoxic ischemic injury was the most common lesion type (18.5%), followed by mesial temporal sclerosis (8.6%), infective lesions (7.4%), and malformations of cortical development (6.2%). Hypoxic etiology (23.5%) and developmental etiology (18.5%) were the leading identifiable causes of epilepsy. Significant associations were found between MRI abnormalities and seizure type ($p<0.001$), developmental delay ($p<0.001$), and etiology ($p<0.001$). All children with focal onset seizures demonstrated abnormal MRI findings.
Conclusions: MRI demonstrated a high diagnostic yield in pediatric epilepsy, particularly among children with focal seizures, developmental delay, and structural etiologies. MRI should be considered an essential component of the etiological evaluation of pediatric epilepsy, especially in rural populations where hypoxic and developmental brain injuries remain important contributors.

Keywords: Pediatric epilepsy, Magnetic resonance imaging, Hypoxic ischemic injury, Developmental delay, Focal seizures, Rural population.

INTRODUCTION

Epilepsy is one of the most common chronic neurological disorders in childhood, characterized by recurrent unprovoked seizures resulting from abnormal electrical discharges in the brain [1]. Determining the underlying etiology of epilepsy in children is crucial for guiding treatment decisions, predicting prognosis, and identifying candidates for surgical intervention when necessary [2]. The developing brain demonstrates unique susceptibility to seizures due to dynamic neurobiological processes such as synaptogenesis, myelination, and cortical maturation [3].

Magnetic Resonance Imaging (MRI) is the gold standard for evaluating paediatric epilepsy because of its superior soft tissue resolution and absence of ionizing radiation, making it the imaging modality of choice in pediatric epilepsy [4] [5].

High-resolution MRI with epilepsy-specific protocols has significantly improved the detection of epileptogenic lesions. According to established practice parameters, MRI is recommended in all children with new-onset focal seizures, refractory epilepsy, or abnormal neurological findings [5]. Studies have demonstrated that MRI can detect structural abnormalities in approximately 25–40% of children with epilepsy, many of which directly influence management decisions [6]. These abnormalities include focal cortical dysplasia, hippocampal sclerosis, low-grade tumors, vascular malformations, gliosis, and sequelae of hypoxic-ischemic injury [7]. Early MRI evaluation improves seizure control and neurodevelopmental outcomes by enabling timely intervention [8].

Despite advancements in imaging technology, there remains limited region-specific data evaluating the diagnostic yield of MRI in pediatric epilepsy within rural Indian populations. Understanding the prevalence and types of structural abnormalities will not only enhance clinical decision-making but also aid in resource allocation, early intervention strategies, and long-term management planning.

In this context, the present study aims to evaluate the role of MRI in pediatric epilepsy at a tertiary care center catering to the rural population of North Maharashtra. By systematically analyzing MRI findings and correlating them with clinical profiles, this study seeks to contribute meaningful regional data to the existing body of literature and strengthen evidence-based approaches in pediatric epilepsy care.

MATERIALS AND METHODS

The descriptive cross-sectional observational study was conducted in the Department of Radiodiagnosis at a tertiary care teaching hospital for a period of 18 months. Using a consecutive sampling technique, a total of 81 patients fulfilling the inclusion criteria were selected for the study. Ethical clearance was obtained from the Institutional Ethics Committee of SMBT Institute of Medical Sciences & Research Centre, Igatpuri Nashik (1401/SMBT/IMSRG/10/IEC/24/80) before starting the study.

Inclusion Criteria

All patients aged under 15 years presenting with epilepsy and referred to the Department of Radiology for MRI evaluation, diagnosed with refractory epilepsy, with a history of previous head trauma associated with seizure episodes.

Exclusion Criteria

Patients with claustrophobia, contraindications to MRI such as cochlear implants or cardiac pacemakers.

After obtaining informed consent from parents or guardians, detailed clinical history was recorded for each enrolled patient. All patients underwent MRI Brain examination using a standardized epilepsy imaging protocol.

MRI was performed using a GE Healthcare BRIVO 1.5 Tesla 355 system. Images were acquired in axial, coronal, and sagittal planes for accurate localization of pathology.

The MRI protocol included:

- Axial T1
- Axial T2

- Axial FLAIR
- DWI
- GRE
- Sagittal T1
- Coronal T1
- Coronal T2
- Coronal FLAIR
- Coronal oblique T2
- Thin section T1 (2.5 mm)

Intravenous contrast was administered wherever clinically indicated.

Data was collected using a structured case record proforma. Detailed clinical history was recorded. MRI findings were documented systematically. Radiological findings were interpreted and documented in a structured format for analysis. The collected data were entered into a spreadsheet and analyzed using appropriate statistical methods. Categorical variables were summarized as frequencies and percentages. Associations between categorical variables were assessed using Pearson's Chi-square test when the assumptions of the test were satisfied. Fisher's Exact Test was used when the expected cell frequencies were small. Binary logistic regression analysis was performed to identify independent predictors of abnormal MRI findings. Regression coefficients (B), standard errors (SE), adjusted odds ratios (AORs), 95% confidence intervals (CIs), and p-values were reported. Model fit was assessed using the Omnibus test of model coefficients, −2 Log Likelihood, Cox and Snell R^2, Nagelkerke R^2, and the Hosmer–Lemeshow goodness-of-fit test. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1: Demographic Characteristics of Study Participants (N = 81)

Variable	Category	Frequency (n)	Percentage (%)
Age Group	< 5 years	19	23.5
	5–8 years	27	33.3
	9–12 years	27	33.3
	13–15 years	8	9.9
Gender	Male	44	54.3
	Female	37	45.7

Among the 81 pediatric epilepsy patients included in the study, the highest proportion belonged to the 5–8 years and 9–12 years age groups, each accounting for 33.3% of the study population, whereas children aged 13–15 years constituted the smallest proportion (9.9%). The demographic profile demonstrated a slight male predominance, with males comprising 54.3% of participants and females 45.7%. These findings indicate that epilepsy was most frequently observed among school-aged children in the present cohort, with a relatively balanced gender distribution and a modest predominance of male patients. (Table 1)

Table 2: Distribution of Study Participants by Residence

Residence	Frequency (n)	Percentage (%)
Rural	77	95.1
Urban	4	4.9
Total	**81**	**100**

Out of 81 study participants, the majority were from rural areas, comprising 77 participants (95.1%), while only 4 participants (4.9%) belonged to urban areas. This indicates that the study population was predominantly represented by children from rural residential backgrounds. (Table 2)

Table 3: Distribution of Type of Seizures

Type of Seizure	Frequency (n)	Percentage (%)
Focal onset	11	13.6
Generalized onset	36	44.4
Unknown onset	34	42.0
Total	**81**	**100.0**

Among the 81 participants, generalized onset seizures were observed in 36 participants (44.4%), followed by unknown onset seizures in 34 participants (42.0%). Focal onset seizures were reported in 11 participants (13.6%), representing the least frequent seizure type in the study population. (Table 3)

Table 4: Clinical Characteristics of Epilepsy among Study Participants (N = 81)

Variable	Category	Frequency (n)	Percentage (%)
Duration of Epilepsy	<1 month	20	24.7
	1–3 months	15	18.5
	4–6 months	14	17.3
	7–12 months	16	19.8
	>12 months	6	7.4
	Since birth	10	12.3
Refractory Epilepsy	Yes	11	13.6
	No	70	86.4

The duration of epilepsy varied considerably among the study participants, with the largest proportion presenting within one month of disease onset (24.7%), followed by those with a duration of 7–12 months (19.8%) and 1–3 months (18.5%). Epilepsy since birth was reported in 12.3% of participants, while only 7.4% had a disease duration exceeding 12 months. Refractory epilepsy was identified in 13.6% of cases, whereas the majority of participants (86.4%) had non-refractory epilepsy. These findings suggest that most children were evaluated relatively early in the course of the disease and that refractory epilepsy constituted a relatively small proportion of the study population. (Table 4)

Table 5: MRI Findings among Study Participants

MRI Result	Frequency (n)	Percentage (%)
Abnormal	52	64.2
Normal	29	35.8
Total	**81**	**100.0**

Among the 81 participants, MRI findings were abnormal in 52 participants (64.2%), while 29 participants (35.8%) had normal MRI findings. Thus, structural or radiological abnormalities were detected in nearly two-thirds of the study population. (Table 5)

Table 6: Distribution of MRI Lesion Types among Study Participants

Type of Lesion	Frequency (n)	Percentage (%)
No structural abnormality (NAD)	29	35.8
Hypoxic ischemic injury	15	18.5
Mesial temporal sclerosis	7	8.6
Malformations of cortical development	5	6.2
Infectious lesions	6	7.4
White matter injury / PVL	4	4.9
Vascular lesions	4	4.9
Tumors	2	2.5

Arachnoid cyst	2	2.5
Corpus callosal abnormalities	2	2.5
Leptomeningeal / pachymeningeal enhancement	2	2.5
Genetic / metabolic suspected lesions	1	1.2
Miscellaneous structural lesions	2	2.5
Total	**81**	**100**

Among 81 study participants, 29 participants (35.8%) had no structural abnormality. The most common abnormal lesion was hypoxic ischemic injury, seen in 15 participants (18.5%), followed by mesial temporal sclerosis in 7 (8.6%), infectious lesions in 6 (7.4%), and malformations of cortical development in 5 (6.2%). Other lesion types were less frequent. (Table 6)

Table 7: Etiology of Epilepsy among Study Participants

Etiology Category	Frequency (n)	Percentage (%)
Developmental	15	18.5
Genetic / Metabolic	1	1.2
Hypoxic	19	23.5
Infective	7	8.6
No identifiable etiology	29	35.8
Tumor	4	4.9
Vascular	6	7.4
Total	**81**	**100.0**

Among the 81 study participants, no identifiable etiology was observed in 29 participants (35.8%), followed by hypoxic etiology in 19 participants (23.5%) and developmental etiology in 15 participants (18.5%). Infective causes were seen in 7 participants (8.6%), vascular etiology in 6 (7.4%), tumor-related causes in 4 (4.9%), and genetic/metabolic etiology in 1 participant (1.2%). (Table 7)

Table 8: Final MRI Diagnosis among Study Participants

Final MRI Diagnosis	Frequency (n)	Percentage (%)
Hypoxic ischemic injury	18	22.2
Mesial temporal sclerosis	8	9.9
Malformations of cortical development	4	4.9
Tumor	4	4.9
Vascular lesion	4	4.9
White matter injury / PVL	2	2.5
Corpus callosal abnormality	2	2.5
Tuberculoma	3	3.7
Encephalitis sequelae / Meningitis	3	3.7
Neurocysticercosis	1	1.2
Genetic / Metabolic suspected	1	1.2
No structural abnormality	31	38.3
Total	**81**	**100.0**

MRI demonstrated structural abnormalities in 50 participants (61.7%), while 31 (38.3%) had no detectable structural abnormality. Hypoxic ischemic injury was the most common MRI diagnosis, observed in 18 patients (22.2%), followed by mesial temporal sclerosis in 8 (9.9%). Malformations of cortical development, tumors, and vascular lesions were each identified in 4 patients (4.9%). Tuberculoma and encephalitis/meningitis sequelae were each present in 3 patients (3.7%), whereas white matter injury/periventricular leukomalacia and corpus callosal

abnormalities were observed in 2 patients (2.5%) each. Neurocysticercosis and suspected genetic/metabolic disorders were the least frequent findings, each accounting for 1.2% of cases. These findings indicate that hypoxic ischemic injury was the predominant structural etiology, although over one-third of patients had normal MRI findings. (Table 8, Figure 1)

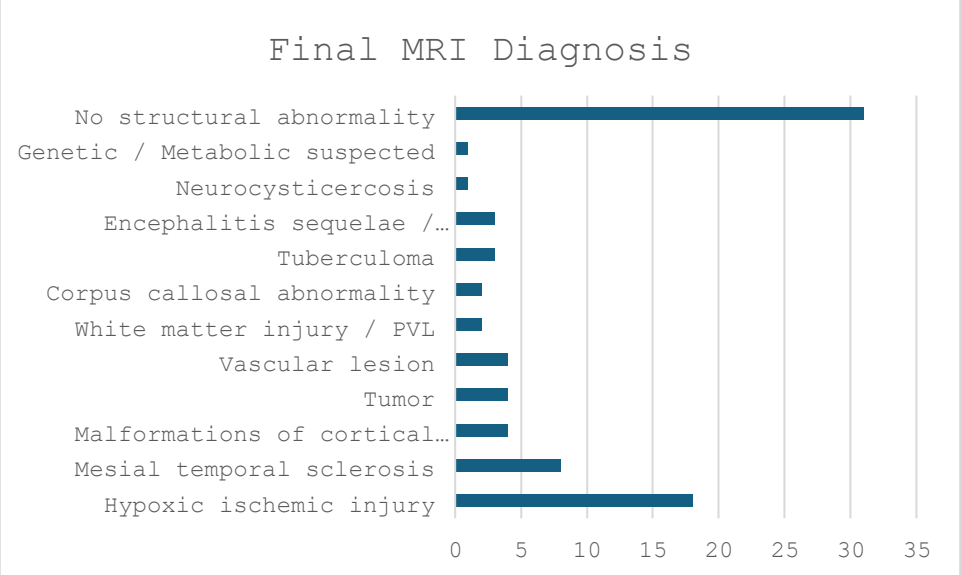


Figure 1: Final MRI Diagnoses among Study Participants (N = 81)

Table 9: Association between Type of Seizure and MRI Findings among Study Participants

Type of Seizure	Abnormal (%) n	Normal (%) n	Total	p-value
Focal onset	11 (100.0)	0 (0.0)	11	<0.001*
Generalized onset	28 (77.8)	8 (22.2)	36	
Unknown onset	13 (38.2)	21 (61.8)	34	
Total	**52 (64.2)**	**29 (35.8)**	**81**	

Abnormal MRI findings were observed in all 11 participants (100.0%) with focal-onset seizures. Among participants with generalized-onset seizures, 28 of 36 (77.8%) had abnormal MRI findings, whereas 8 (22.2%) had normal MRI findings. Among participants with unknown-onset seizures, 13 of 34 (38.2%) had abnormal MRI findings, while 21 (61.8%) had normal MRI findings. A statistically significant association was observed between seizure onset type and MRI findings using Fisher's Exact Test ($p < 0.001$). (Table 9)

Table 10: Association of Clinical Factors with MRI Findings among Study Participants

Variable	Category	Abnormal n (%)	Normal n (%)	Total	χ^2	p-value
Developmental Delay	Yes	25 (92.6)	2 (7.4)	27	14.21	<0.001
	No	27 (50.0)	27 (50.0)	54		

Among participants with developmental delay, 25 of 27 (92.6%) had abnormal MRI findings, compared with 27 of 54 (50.0%) without developmental delay, showing a statistically significant association ($\chi^2 = 14.21$, $p < 0.001$). (Table 10)

Table 11: Association between Etiology Category and Type of Seizure

Etiology Category	Focal onset n (%)	Generalized onset n (%)	Unknown onset n (%)	Total	p-value
Developmental	0 (0.0)	9 (60.0)	6 (40.0)	15	
Genetic/Metabolic	0 (0.0)	1 (100.0)	0 (0.0)	1	
Hypoxic	2 (10.5)	13 (68.4)	4 (21.1)	19	
Infective	4 (57.1)	2 (28.6)	1 (14.3)	7	
No identifiable etiology	0 (0.0)	8 (27.6)	21 (72.4)	29	
Tumor	1 (25.0)	1 (25.0)	2 (50.0)	4	
Vascular	4 (66.7)	2 (33.3)	0 (0.0)	6	
Total	**11 (13.6)**	**36 (44.4)**	**34 (42.0)**	**81**	<0.001

A statistically significant association was observed between etiology category and seizure onset type using Fisher's Exact Test ($p < 0.001$). Generalized-onset seizures predominated among participants with developmental etiologies (60.0%), hypoxic injuries (68.4%), and the single genetic/metabolic case (100.0%). In contrast, focal-onset seizures were more frequent in vascular (66.7%) and infective etiologies (57.1%). Cases with no identifiable etiology were predominantly classified as unknown-onset seizures (72.4%). These findings suggest that seizure onset pattern varied significantly according to the underlying etiology, with generalized-onset seizures being more common in developmental and hypoxic causes, while focal-onset seizures were more frequently associated with vascular and infective lesions. (Table 11)

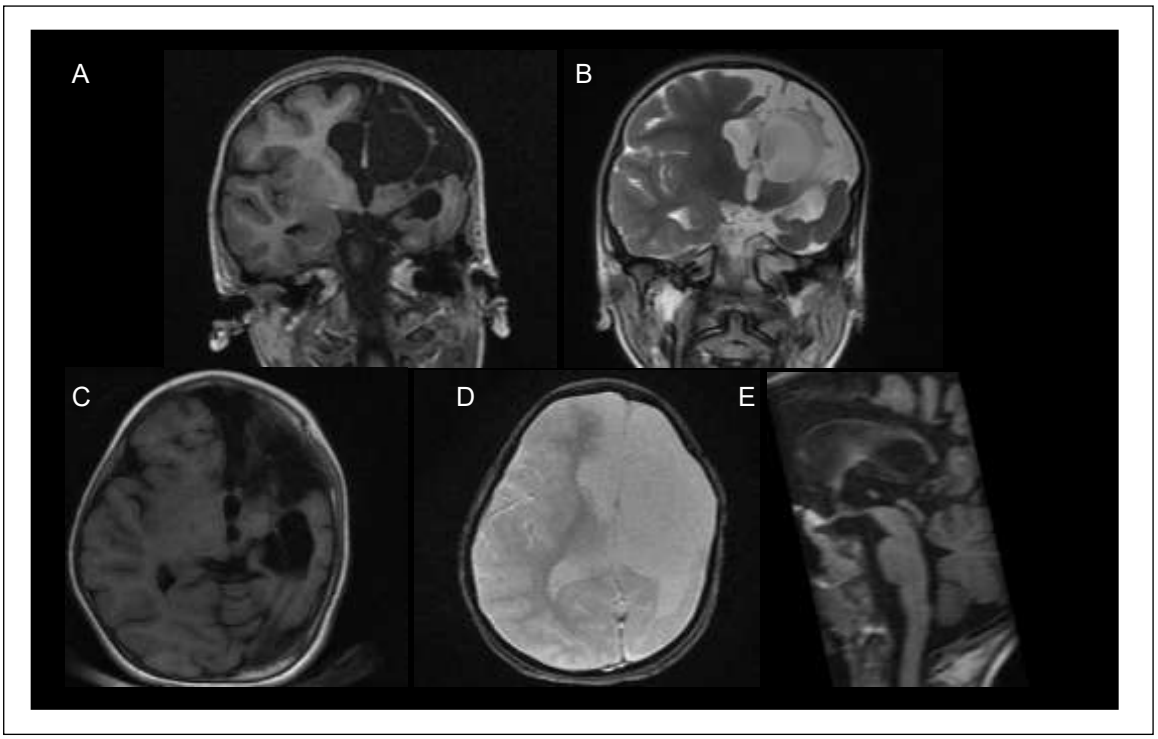
Table 12: Binary Logistic Regression Analysis for Predictors of Abnormal MRI Findings

Variable	B	SE	Wald	Adjusted OR	95% CI	p-value
Age	-0.17	0.09	3.57	0.844	0.707–1.006	0.059
Gender	0.735	0.629	1.365	2.085	0.608–7.154	0.243
Seizure onset	1.275	0.652	3.827	3.578	0.998–12.835	0.05
Refractory epilepsy	-0.127	1.459	0.008	0.881	0.050–15.382	0.931
Developmental delay	-2.748	0.882	9.701	0.064	0.011–0.361	0.002

Binary logistic regression analysis was performed to identify independent predictors of abnormal MRI findings. The overall logistic regression model was statistically significant (Omnibus $\chi^2 = 41.037$, $df = 6$, $p < 0.001$), indicating that the predictors collectively improved the prediction of abnormal MRI findings. The model demonstrated good fit, as indicated by a non-significant Hosmer–Lemeshow goodness-of-fit test ($\chi^2 = 4.356$, $df = 8$, $p = 0.824$). The −2 Log Likelihood of the final model was 64.631. The model explained 39.7% and 54.5% of the variation in MRI findings, as indicated by the Cox & Snell R^2 (0.397) and Nagelkerke R^2 (0.545), respectively. Among the variables included in the model, developmental delay was an independent predictor of MRI findings (Adjusted OR = 0.064, 95% CI: 0.011–0.361, $p = 0.002$). Age ($p = 0.059$), gender ($p = 0.243$), seizure onset ($p = 0.050$), and refractory epilepsy ($p = 0.931$) were not independently associated with MRI findings after adjustment for the other variables. (Table 12)

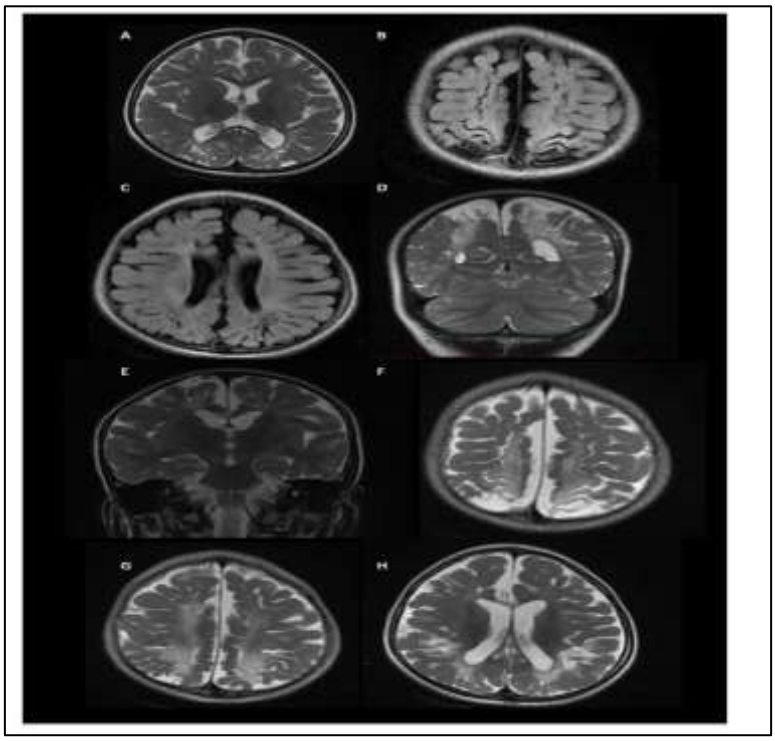
CASE 1

Left cerebral hemiatrophy with ex-vacuo dilatation, sequalae to previous ischemic insult (Dyke-Davidoff-Masson syndrome)



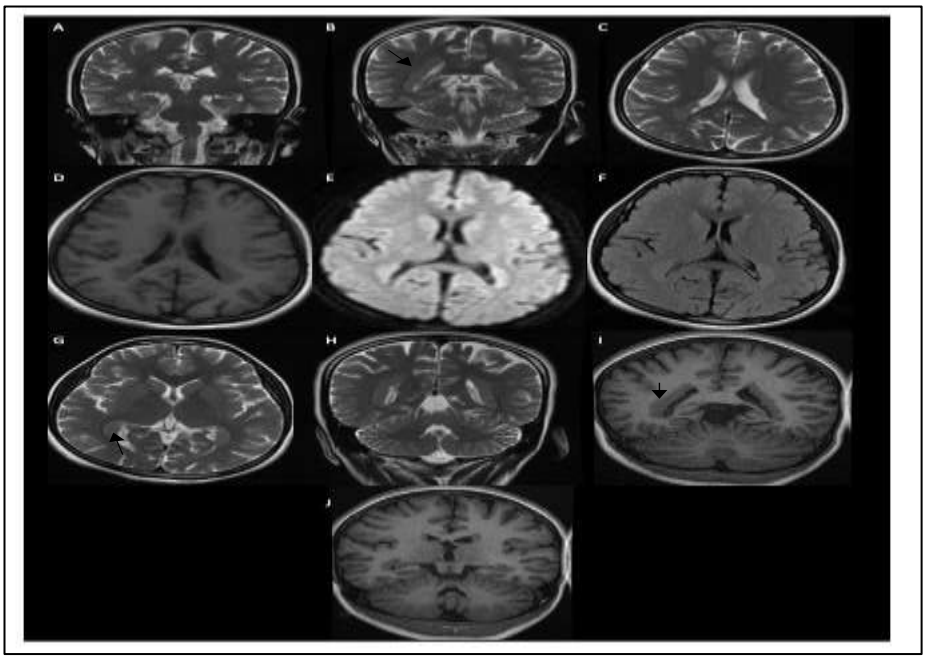
(A) Cor T1 3d and (B) Cor T2WI sequences showing left cerebellar hemiatrophy with ex-vacuo dilatation of the left lateral ventricle, subtle shift of the midline falx to the left side. (C) axial T1WI sequence showing subtle hyperostosis along the left frontal region calvarium. (D) Axial GRE sequence showing no gyriform blooming. (D) Sagittal T1 WI showing diffusely thinned out CC.

CASE 2
Periventricular leukomalacia (PVL) with bilateral periventricular white matter injury



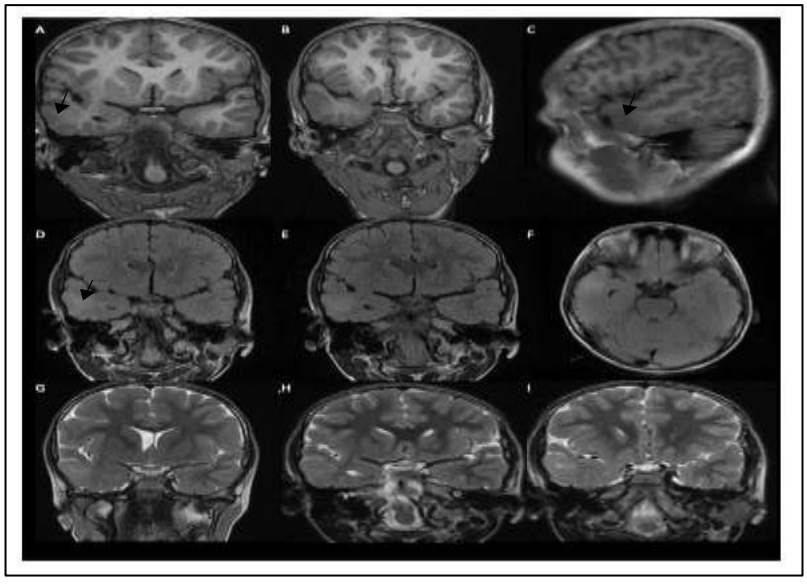
(A. Axial T2WI and B, C axial FLAIR) showing Abnormal hyperintensity along the bilateral periventricular white matter along with few cystic changes in the bilateral parietal lobes, (D, E) Coronal T2WI, showing the periventricular hyper intensity and the cystic changes, (F to H) Axial T2.

CASE 3
HETEROTOPIA (SUBEPENDYMAL TYPE)



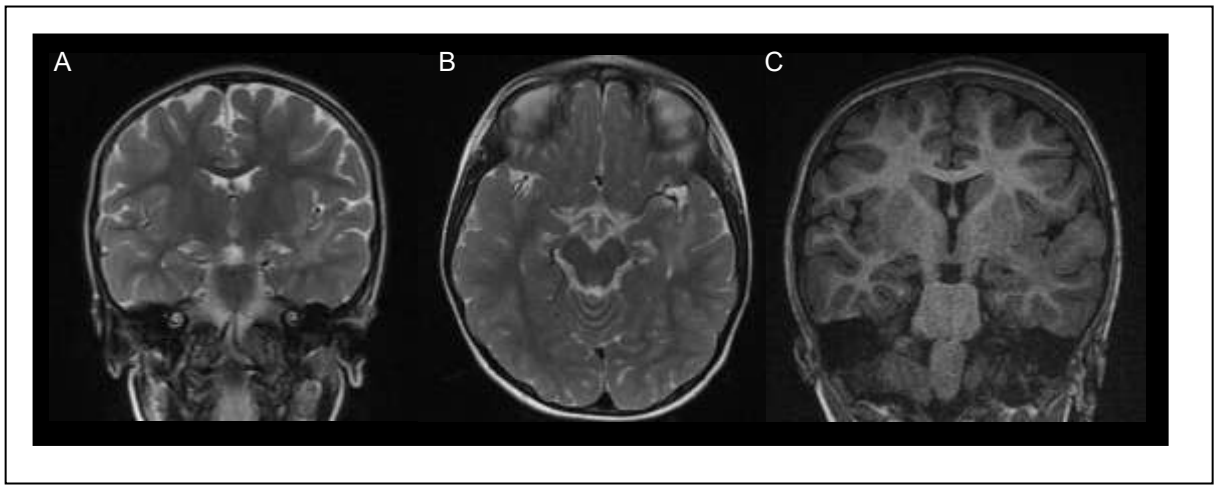
Images (A to J) showing abnormally located grey matter in the sub ependymal and periventricular location of lateral ventricles bilaterally. (A, B) Coronal T2WI heterotopic grey matter tissue in the subependymal and periventricular locations, (C) axial T2 weighted image, (D) axial T1 weighted image, (E) diffusion T2WI showing no diffusion restriction, (F) axial T2FLAIR showing the abnormally located grey matter, axial T2WI (H) coronal T2WI (I, J) coronal T1WI.

CASE 4
FOCAL CORTICAL DYSPLASIA



(A, B) Coronal 3D T1WI demonstrating focal cortical thickening and blurring of the gray-white matter junction in the right temporal lobe. (C) Sagittal 3D T1-WI demonstrating cortical thickening and loss of normal gray white matter differentiation. (D, E) Coronal T2-FLAIR showing subtle hyperintense signal abnormality along the right temporal lobe associated with poor grey-white matter differentiation. The signal is seen extending upto the temporal horn of the right lateral ventricle, representing the "Transmantle sign". (F) Axial FLAIR (G to I) Coronal T2-WI demonstrating cortical thickening and blurring of the gray-white matter junction in the right temporal lobe.

Case 5
Left mesial temporal lobe sclerosis



(A) Coronal T2WI showing abnormal hyperintense signal along the left hippocampus and along the left temporal lobe in para-hippocampal and periventricular areas. B) Axial T2WI showing Mildly atrophic left temporal lobe with hyper intense signal intensities (C) Coronal T1 3D sequences showing atrophic left hippocampus with abnormal T1 hypointense signal along the left temporal lobe.

DISCUSSION

The aim of the present study was to evaluate the role of magnetic resonance imaging in paediatric epilepsy among children attending a tertiary care centre serving the rural population of North Maharashtra, with emphasis on identifying the frequency, type, location, and etiological pattern of MRI-detectable structural brain abnormalities.

The present study included 81 pediatric epilepsy patients, with the highest proportion belonging to the 5–8 years and 9–12 year's age groups (33.3% each). This age distribution suggests that epilepsy requiring MRI evaluation is more frequently encountered during middle childhood. Similar findings were reported by Mundhe and Kombade **[9]** and Singh et al. **[10]**, who observed the highest patient representation in older pediatric age groups. A slight male predominance was observed (54.3%), consistent with reports by Mundhe and Kombade **[9]**, Singh et al. **[10]**, Apolot et al. **[11]**, and Raafat et al. **[12]**.

The study population was predominantly rural (95.1%), reflecting the catchment area of the tertiary care center. This finding emphasizes the importance of MRI in identifying structural causes of epilepsy in resource-limited rural settings, where perinatal insults and preventable acquired etiologies remain common.

Generalized onset seizures were the most frequent seizure type (44.4%), followed by unknown onset seizures (42.0%), while focal onset seizures accounted for 13.6%. Similar predominance of generalized seizures has been reported by Mundhe and Kombade **[9]** and Raafat et al. **[12]**.

Most children presented early in the disease course, and refractory epilepsy was identified in 13.6% of cases, highlighting the heterogeneous clinical profile of the cohort.

MRI abnormalities were detected in 64.2% of participants, demonstrating a substantial diagnostic yield. This abnormality rate is comparable to findings reported by Ali et al. **[13]** and Apolot et al. **[11]**, although lower than rates reported in Indian tertiary-care studies by Mundhe and Kombade **[9]**. Hypoxic ischemic injury was the most common lesion type (18.5%), followed by mesial temporal sclerosis (8.6%), infective lesions (7.4%), and malformations of cortical development (6.2%). These findings indicate that perinatal and developmental brain insults remain important contributors to pediatric epilepsy.

Regarding etiology, no identifiable cause was found in 35.8% of children, while hypoxic (23.5%) and developmental (18.5%) etiologies were the most common identifiable causes. In contrast to studies by Mundhe and Kombade **[9]** and Singh et al. **[10]**, where infective etiologies predominated, the present study identified hypoxic injury as the leading structural cause. Final MRI diagnoses further supported this observation, with hypoxic ischemic injury representing the most common abnormal diagnosis (22.2%), followed by mesial temporal sclerosis (9.9%).

A highly significant association was observed between seizure type and MRI findings ($p<0.001$). All children with focal onset seizures demonstrated abnormal MRI findings, confirming the strong relationship between focal seizures and underlying structural abnormalities. Similar observations regarding the diagnostic utility of MRI in focal epilepsy have been reported by Singh et al. [10] and Soetanto and Bewina **[14]**.

Developmental delay showed a significant association with abnormal MRI findings (92.6% abnormal MRI; $p<0.001$), indicating that neurodevelopmental impairment is a strong clinical marker of structural brain pathology. This observation is supported by previous studies reporting high frequencies of cortical malformations and developmental abnormalities among children with epilepsy **[9,10,14]**. Although refractory epilepsy demonstrated a high prevalence of MRI abnormalities (90.9%), the association did not achieve statistical significance, likely due to the limited number of refractory cases. Nevertheless, findings are consistent with Mousa et al. **[15]**, who reported a high MRI abnormality rate among children with refractory epilepsy.

The association between etiology and seizure type was also statistically significant ($p<0.001$). Generalized seizures predominated in hypoxic and developmental etiologies, whereas focal seizures were more common in vascular and infective etiologies. These findings suggest that diffuse cerebral insults tend to manifest with generalized seizure patterns, while localized structural lesions are more likely to produce focal seizure semiology.

A major strength of this study is the complete MRI evaluation of all 81 pediatric epilepsy patients from a predominantly rural population, enabling accurate assessment of MRI diagnostic yield and comprehensive characterization of structural abnormalities. The inclusion of detailed clinical, radiological, and etiological variables, along with inferential statistics and logistic regression analysis, enhanced the robustness of the findings. However, the study is limited by its single-center, cross-sectional design and relatively small sample size, which may restrict generalizability and reduce statistical power for less common etiological subgroups. Additionally, long-term clinical outcomes, EEG correlation, advanced epilepsy-protocol imaging, and genetic or metabolic evaluations were not uniformly available, potentially leading to under-recognition of subtle epileptogenic abnormalities.

CONCLUSION

Overall, the study concludes that MRI is a highly useful imaging modality in paediatric epilepsy, especially among children with focal onset seizures, developmental delay, and clinically identifiable etiological factors. The high proportion of abnormal MRI findings in this rural paediatric population supports the need for early MRI evaluation, structured epilepsy imaging protocols, and improved access to neuroimaging services in tertiary care centres serving rural regions. The predominance of hypoxic ischemic injury also underlines the importance of strengthening antenatal care, safe delivery practices, neonatal care, and early neurodevelopmental follow-up to reduce preventable epilepsy-related brain injury in children.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Mayur J Dodani, Kalpana Vavyhare, Durgesh Jadhav. A descriptive cross-sectional study of role of MRI in paediatric epilepsy at tertiary care center in rural population of North Maharashtra. *Int J Health Sci Res.* 2026; 16(7):208-219. DOI: *10.52403/ijhsr.20260722*

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