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CLINICORADIOLOGICAL CORRELATION OF PAEDIATRIC AND NEONATAL SEIZURES.

Radiology

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ABSTRACT

INTRODUCTION- Seizures are defined as transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. The incidence of epilepsy is 1% [1], with no gender or geographical differences making it a common neurological condition. Neuroimaging becomes important and mandatory in the work up for epilepsy in localisation and lateralisation of the seizure focus.

METHOD- A total of 40 patients presenting in Dhiraj hospital with epilepsy (> 2 episodes of seizures) were included. Head CT was obtained in 15 (37.5%) and MRI in all cases.

RESULTS- The most common cause of epilepsy in our study was tuberculoma and tubercular meningitis. This was followed shortly by neurocysticercosis.

CONCLUSION- The imaging modality of choice is MRI because of its superior resolution multiplanar imaging capability, improved contrast of soft tissue and high anatomical resolution compared to CT.

KEYWORDS

MRI, CT scan, paediatric and neonatal seizures.

INTRODUCTION

Seizures are defined as "a transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain". The incidence of epilepsy is 1% [1], prevalence rate is 5.59/1000 population with no gender or geographical differences making it a common neurological condition. It has lot of psychological, social and functional inabilities in children affected and their families. Neuroimaging becomes important and mandatory in the work up for epilepsy in localisation and lateralisation of the seizure focus.

AIMS AND OBJECTIVES

To study MRI and CT findings of various pathologic conditions seen in epileptic children and neonates.

MATERIAL AND METHODS

Prospective data was obtained from evaluation of patients presenting with epilepsy in paediatric OPD and IPD of Dhiraj Hospital. A total of 40 patients presenting with epilepsy (> 2 episodes of seizures) were included. Head CT was obtained in 15 (37.5%), MRI in all cases. Contrast was given in patients with tumour, suspected vascular malformations, inflammation, and Infectious pathology. **Epilepsy provoked by causes such as fever, electrolyte imbalance and dehydration were excluded.**

DISCUSSION

The role of radio-imaging in partial seizures in children has already been an established fact [2,3,4]. Most of the studies in children with generalized seizures have been done in general population without discriminating between provoked and unprovoked seizures. Study regarding role of radio-imaging in first apparent unprovoked generalized seizure in childhood population (0-18years) is debatable point. In the present study 40 patients of paediatric age group were studied, who were clinically diagnosed as case of epilepsy, with no provoking factors. Generalized seizure accounted for the majority of our cases (77.5%), which is in agreement with other studies in Africa [6] and India [7], showing preponderance of GTCS of 60-90% [5].

S. NO.	AGE GROUP	TOTAL CASES	POSITIVE FINDINGS	PERCENTAGE
01	0-1 year	7	5	19.4%
02	2-6 years	9	6	21.5%
03	7-12 years	11	8	27.7%
04	13-18 years	13	9	31.4%
		40	28	

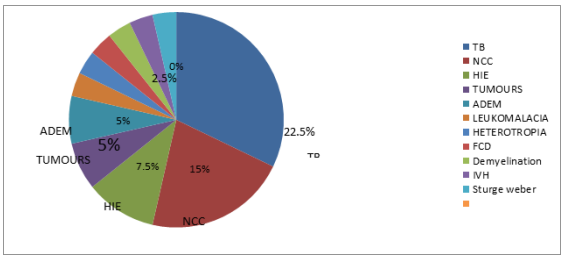
This table shows that maximum number of patients belonged to 13-18 years of age group and also MRI findings were more in the same.

MRI and CT SCAN - Of 3 patients with normal CT scan, there were significant MRI findings which were not seen on CT scan. This difference in diagnostic ability of CT and MRI was shown by previous studies also [3,4]. This could be reasonably explained by multiplanar imaging capability improved contrast of soft tissue, and high anatomical resolution of MRI over CT. Our finding corresponds with Jackson et al, 2006 [6], that it could be reasonable to forego CT and perform MRI. We found positive MRI study in 57.5% cases which is higher than previous studies by Resta et al. [7] r 51.3%.probably because of strict exclusion criteria's, which shows that patient selection, plays an important role in MR positivity rates. Though CT Scan played major role in identifying 5 cases of trauma. CT Scan is also useful for identifying calcification.

Conditions we came across in this study and percentage.

S. No	Cause	No. Of Cases	Percentage (%)
1.	Tuberculosis-TBM and Tuberculomas	09	22.5
2.	Neurocysticercosis	06	15
3.	Hypoxic ischemic encephalopathy	03	7.5
4.	Tumours	02	5
5.	ADEM	2	5
6.	Leukomalcia	1	2.5
7.	Grrey matter heterotropia with perinatal ischemic insult.	1	2.5
8.	Focal cortical dysplasia	1	2.5
9.	Demyelination	1	2.5
10.	Intraventricular haemorrhage	1	2.5
11.	Sturge weber syndrome	1	2.5
	TOTAL	28	

Pie chart showing distribution of conditions causing seizures in childhood age group in this study.



The most common cause of epilepsy in our study was tuberculosis in this region, being at 22.5% % which consisted cases of both

tuberculoma and tubercular meningitis. This was followed shortly by neurocysticercosis at 15%. This was followed by Hypoxic Ischemic Encephalopathy at 10%. This correlates well with studies done in other tropical countries, where infection still predominate as the most common cause of epilepsy [8]. The studies in developed countries showed that the most common cause for epilepsy, were cerebral dysgenesis , and followed by hypoxic-ischemic lesions, non-accidental injuries, infections, metabolic diseases and tumours [9].

CONCLUSION

Imaging of children with epilepsy is a challenging subject and requires an understanding of the wide spectrum of pathology that affects the paediatric population. Structural neuro imaging is recommended for all children with recently diagnosed localization-related or generalized epilepsy who do not have the clinical and EEG features characteristic of classical idiopathic focal or generalized epilepsy and for any child younger than 2 years of age. These children have the highest likelihood of identifying a symptomatic etiology for their seizures.

The imaging modality of choice is MRI because of its superior resolution compared to CT. CT plays role in identifying calcification and trauma. MRI has increased our understanding of the underlying disease process as well as revolutionised evaluation and management of epilepsy. For medically refractory epilepsy it is crucial to precisely identify epileptogenic foci that are potentially amenable to surgical resection for possible cure.[10]

REFERENCES

1. Hauser WA. The prevalence and incidence of convulsive disorders in children. Epilepsia 1994; 35(suppl 2):S1-S6.
2. Garg R K, Singh MK, Misra S (2000). Single enhancing CT lesions in Indian patient with seizures. A review. Epilepsy Res 2000; 38: 91-104.
3. Chang T, Acosta MT, Rosser T, Conry JA, Pearl PL, Weinstein SL, Kolodgie M, Johnson P, Vezina LG, Dubovsky EC, Galliard WD. (2002) Neuroimaging in children during the acute evaluation of new onset seizures. Ann Neurol 52:S134.
4. Hsieh DT, Chang T, Tsuchida TN, Vezina LG, Vanderver A, Siedel J, Brown K, Berl MM, Stephens S, Zeitchick A, Gaillard WD: New onset afebrile seizures in infants- role of Neuroimaging. Neurology 2010; 74:150-156.
5. Das SK, Sanyal K: Neuroepidemiology of major neurological disorders in rural Bengal. Neurol India 1996; 14: 47-58.
6. Jackson N, Ridge CA, Delanty N: Imaging in patient with first seizure. Ir Med J. 2006 Jun; 99(6): 173-5
7. Resta M, Palma M, Dicuonzo F, Spagnolo P, Specchio LM, Laneve A, Bellomo R, Lauriero F, La Selva L. (1994) Imaging studies in partial epilepsy in children and adolescents. Epilepsia 38:1187-1193.
8. Gupta AK, Sharma R and Sarma D, 2000: Imaging in epilepsy. Indian J Pediatr 2000 Jan; 67 (1suppl):S40-60.
9. Guissard G, Damry N, Dan B, Sekhara t, Ziereisen F, Christophe C: Imaging in pediatric epilepsy. Arch Pediatr. 2005 Mar; 12(3): 337-46.
10. Shinnar S, O'Dell C, Mitnick R, Berg AT, Moshe SL. (2001) Neuroimaging abnormalities in children with an apparent first unprovoked seizure. Epilepsy Res 43:261-269.