

COMPUTED TOMOGRAPHIC EVALUATION OF SEIZURES (EPILEPSY) IN PEDIATRIC AGE GROUPG. V. Prasad¹, Rajendra², Kondal Rao³**HOW TO CITE THIS ARTICLE:**

G. V. Prasad, Rajendra, Kondal Rao. "Computed Tomographic Evaluation of Seizures (Epilepsy) in Pediatric Age Group". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 43, October 26, 2015; Page: 7680-7694, DOI: 10.18410/jebmh/2015/1038

ABSTRACT: BACKGROUND AND OBJECTIVE: The study is aimed to reassess the role of CT in detecting various epileptogenic lesions with multi detector CT imaging, to know the value of CECT is evaluation of various lesions and to know the commonest CNS lesions causing afebrile seizures in Paediatric age group is the local population. **METHODOLOGY:** The study consists of 70 Pediatric patients suffering from afebrile seizures referred to Radio – diagnostic department S.V.R.R. Hospital at Tirupati for C.T. brain investigation. **EXCLUSION CRITERIA:** As our study is to evaluate epilepsy characterized by recurrent (more than two episodes) seizures, with no immediate identifiable and avoidable cause (sleep deprivation), known metabolic disorders, alcohol withdrawal, pyrexia. Therefore we excluded patients below one month ago. Febrile convulsions, acute infections, toxic and known metabolic disorders Equipment used is Fourth generation Four slice CT with scan time 0.7 seconds Matrix size 640, gantry tilt 120, KV – 120 MAs – 100 to 200, Slice thickness 5mm and 2mm Auto power injector 3 to 3.5 ml per second. **NECT:** Continuous axial sections of brain, posterior fossa 3mm and rest of brain 5mm sections and 2mm sections were taken wherever necessary CECT is carried out logically in those cases which were inconclusive or ambiguous and NECT excluding more definite cases like congenital anomalies and calcified granulomas without peri lesion edema. **IV CONTRAST:** Non-ionic contrast medium at 1mg/ kg body weight was used whenever indicated, no adverse reactions were noted after injection of contrast medium and sedation was advised whenever the patient was un co-operative. **RESULTS:** In the present study we evaluated to cases of Pediatric Seizures and observed and analyzed our findings with the available relevant clinical data and concluded that; Out of 70 cases there are a Slight female Predilection 57%. And maximum incidence of Seizures was in the first 3 years, but no age is spared. Generalized Seizures accounted for 63.85% in our local Pediatric age group. We were able to detect various epileptogenic foci, in 61.4% (40) cases. And with available CT findings we could able to distinguish and diagnose various Pathological lesions, including infections, congenital anomalies, calcified lesions and neoplasm. CECT should be done in evaluation of low and mixed density lesions, CECT helped more in evaluation of low density lesions and revealed ring enhancing lesions. Delayed (5-7 min) and thin (2mm) sections are more useful. Ring entrancing lesions due to infections are the commonest epileptogenic foci in our study accounting for 28%. And CECT is not helped much in evaluation other than low density lesions. As normal neurological examination can't rule out an epileptogenic focus. Therefore CT brain should be included. **INTERPRETATION AND CONCLUSION:** Based on our study and on reviewing the literature, we are able to detect epileptogenic foci. CECT is very essential is evaluation of low density lesions. Only on contrast study we can detect and distinguish various lesions. Moreover delayed and thin sections are more

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useful CECT is may not play any role in evaluation of most of the congenital anomalies and calcified lesions. Ring enhancing lesions of infections etiology especially NCC are the commonest epileptogenic foci in our local paediatric population. Therefore CT is the prime mode of investigation is evaluation of epilepsy in Paediatric

KEYWORDS: Seizures (Epilepsy), Plain C.T. Contract CT.

INTRODUCTION: Seizures is a common disease and children are the most vulnerable.

Seizures can be defined as a sudden and transitory clinical event due to an abnormal and excessive electrical discharge from a set of neurons in the brain. It may manifest in various forms, like motor, sensory, autonomic and psychic events with or without alteration of consciousness.

The words convulsions and seizures are interchangeable.

Epilepsy (Derived from Greek word "epilepsia" meaning to be seized by forces from within). Epilepsy is a condition characterized by recurrent (Two or more) seizures with no immediate identifiable and avoidable cause (e.g. sleep deprivation, alcohol withdrawal, pyrexia etc).

Hippocrates 460-377 BC; recognized epilepsy as an abnormal reaction of the brain.

Jackson in the late nineteenth century analyzed many epileptic cases and identified that seizures is "an occasional, excessive and disorderly discharge of nerve tissue".

Parts of Seizures: Aura: It is the pre-ictus manifestation perceived by the patient. Goldhammer studied the aura in 187 cases and classified them into seven types, viz, Somatosensory, Cephalic, General Body Sensations, Specific Sensory Sensations, Visceral Sensations, Psychic Aura and Various Non-Specific Feelings. However because of retrograde amnesia for immediate preceding events, a history of aura may not be obtained in all cases.

Ictus: It is an attack itself.

Post Ictal Period: Patient gradually regains consciousness but remains in a. confused and disoriented state for about half an hour or more.

Inter-ictal period: It is the period between attacks. It is usually clinically normal.

- A child presenting with seizures should be handled with at most care. Irrelevant investigation and clinical tests should be avoided". The type of seizures should be established by taking thorough history both from the parents and the child. History should include questions of birth and family history. History of head injury and any childhood infections should be inquired into.
- Secondly a thorough physical examination including the head circumference, height and weight should be done. A careful search for any neurocutaneous marks, and the mental status should also be assessed.
- The protocol of investigations should begin with a routine hematological examination like, Hb, TC, DC, ESR BT, CT followed by serology for syphilis, HIV, Collagen diseases, CSF analysis and chest radiograph to rule out inflammatory or infectious disorders.
- Specific tests like blood glucose, serum electrolytes, serum calcium, magnesium, blood urea and liver function tests should be done to identify metabolic disorders.

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- EEG may help to establish a diagnosis and to characterize the type of epilepsy. Inter ictal record is abnormal in only 50% of patients hence EEG is not a specific Insensitive test. However ambulatory video recording may provide useful information when attacks are frequent

INDICATIONS FOR BRAIN IMAGING:

- The increasing sophistication of imaging techniques now allows the identification of the cause of epilepsy in more number of cases.
- Usually imaging is not required if a confident diagnosis of primary generalized epilepsy can be made with an EEG.
- Imaging is indicated when seizures have focal features clinically or when EEG shows a focal seizures source or when the control of seizures is difficult.
- CT is often sufficient to exclude a major structural cause. Mri may be indicated if CT shows no abnormality or a subtle structural change is still suspected.

CLASSIFICATION OF SEIZURES:

- The international league against epilepsy divided epilepsy into two broad categories i.e. partial and generalized epilepsy, based on the study of Gastant et al.¹
- There is a third category called unclassified seizures that do not fit into any category because of inadequate data. E.g. rhythmic eye movements and swimming movements.
- Further classification of epilepsy is best achieved by considering the clinical events.
- In partial seizures the paroxysmal neuronal activity is limited to one part of the cerebrum where as in generalized seizures the paroxysmal neuronal activity (Electrophysiological abnormality) involves both hemispheres simultaneously and synchronously.
- Partial Seizures: PS is further classified into simple partial seizures (SPS) and complex partial seizures (CPS).
- Simple partial seizures: SPS is partial seizures with no impairment of consciousness.
- Complex partial seizures: CPS is partial seizures with impairment of consciousness. This is usually seen when the focal lesion involves the parts of brain concerned with awareness, such as temporal and frontal lobes.
- Secondary generalized seizures: seizures which begin as partial but evolve into generalized seizures are called secondary generalized seizures. It develops when abnormal neuronal activity spreads into the diencephalons and thence throughout the remaining cortex.
- Generalized seizures: GS are the most common of all childhood seizures. They are usually idiopathic and genetically related. They usually start without warning, and inhibition of respiration leads to cyanosis. Autonomic symptoms may be seen.
- Absence seizures: This is sudden cessation of activity without convulsions and is known as "petit mal" epilepsy.
- Myoclonic seizures: In these sudden contractions involving the entire body or a part of the body is seen.

CAUSES OF EPILEPSY IN CHILDREN:

1. **Primary or Idiopathic epilepsy:** In this no etiological factor can be identified even after a thorough & complete investigation.

2. Secondary epilepsy: Includes secondary to underlying conditions and abnormalities of CNS including.

- i. Congenital anomalies.
- ii. Infections.
- iii. Tumors.
- iv. Trauma.
- v. Metabolic and functional disorders.

(Any anatomical or physiological disorder of CNS and its related structures can induce epilepsy).

PATHOPHYSIOLOGY: Congenital Causes: Any CNS congenital anomaly can induce seizures including CNS developmental and migrational disorders and intra uterine infections have known to be the etiology behind childhood epilepsy.

Infection convulsions may develop in meningitis, encephalitis, or occur in cases of inflammation due to local cortical venous and arterial occlusion due to inflection & inflammation. Late onset seizures may be secondary to meningeal scarring or brain abscesses, neural ischemia play an important role in the epileptogenic process. And CT can well detect such lesions as stated by various studies as mentioned below.

Tumors: Epileptic attacks due to intracerebral masses are caused by changes in the cortex because of deprived blood supply and traction by tumor pressure, edema or direct deformation of neural tissues by masses.

Traumatic and Structural Causes: Damage to neurons and it's supporting renders the brain susceptible to epileptic attacks.

- CV A can disturb the normal anatomy and scar formation lead to gliosis. Mass lesions distort the cellular membrane. Vascular malformation affects normal metabolism by altering the blood flow.
- In trauma seizures may occur simultaneously or within hours, days, weeks or years later even as late as 25 years later.

Prognostic factors associated with post traumatic epilepsy include penetration of more than one lobe of the brain, deep injury and injury to the central area, post traumatic amnesia, and depressed skull fracture.

Impaired cerebral circulation may cause seizures depending on the severity of the resulting ischemia and the susceptibility of the brain. Seizures are the common sign of cerebral anoxia in infants and generally suggests poor prognosis. Other vascular disorders that may produce seizures in children include congenital heart diseases sturge weber syndrome and infantile hemiplegia.

Metabolic causes constipation, diarrhea, urinary tract infection respiratory tract infections, liver failure, and occult neoplasms, anemia, malnutrition, fluid electrolyte disturbance are the various conditions that disrupt the body's homeostasis. Metabolic disturbance could be a therapeutically reversible cause of seizures in children.

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Hyponatremia due to profuse sweating, diarrhea may cause seizures. Hypocalcaemia due to neonatal tetany, hyperparathyroidism, rickets or chronic renal diseases may cause seizures. Renal failure accumulation of toxic substances may leads to convulsion. And some patients of insulinoma can present with seizures.

Epidemiology: Woodburg et al² reviewed the available data on the incidence of pediatric epilepsy and concluded that optimum incidence rate as 46.71100000 per year. He found that the overall incidence of epilepsy is high in the 1st year of life and then drops rapidly thereafter.

Shiner et al³ on their article "update on the epidemiology and prognosis of pediatric epilepsy, felt that the risk of epilepsy was highest in patients with serious neurological abnormality such as mental retardation or cerebral palsy.

Lennox studied the frequency of the types of seizures in Boston children hospital and their findings read as gen, tonic clonic seizures in 48%, CPS in 60/0 SPS 43% sec. gen. Seizures 8%, absence & other 6%.

- However there are contrasting and contradictory opinions regarding the incidence and prevalence of various types of seizures. But it is know that this is mostly depends on environmental and socio economic factors.
- An epidemiological study by Del-brotho et al⁴ in ecquador concluded that neuro cysticercosis was a prime cause.
- Patwari et al stated that in our country tuberculosis could play a pivotal role in the development of epileptic foci.

Neuro - Imaging in paediatric seizers:

- Neuro - imaging techniques have made a major breakthrough in the management of the child with epilepsy.
- Radiological investigations should begin with a chest radiograph to look for a pulmonary focus. Skull roentgenograph including views of the sinuses and mastoids.
- Ultrasound examination of the cranium would help in detecting hydrocephalus.(up to the age of 18 months only).
- CT is done to look for intracranial pathology including infection, anomalies and tumors.
- MRI and other various imaging modalities can help epilepsy management by identifying the epileptogenic zone. The aim of imaging is to reveal the pathological lesions responsible for epilepsy.
- **Role of CT:** The value of CT as a diagnostic tool in paediatric epilepsy is still continuing and more focused studies are the need of the hour. Though MRI is more superior to CT. because of its more availability, relatively low cost, and less time consuming factor and more ever majority of intracranial pathology including various infections, tumors and some anomalies can be diagnosed with CT.
- Further investigation like MRI and MR spectroscopy should be confirmed to patients who show no abnormally in other investigations or subtle structural changes in CT or in whom the symptoms are worsening in spite of treatment.

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Therefore focusing our vision towards the relevance of CT in pediatric seizures will reveal satisfactory evidence of its role and value, as the first line of imaging in the evaluation of epileptic foci.

AIM & OBJECTIVES:

1. The study is aimed to reassess the role of CT in detecting various epileptogenic lesions with multi detector CT imaging technology.
2. To know the value of CECT in the evaluation of various lesions.
3. To know the commonest CNS lesion causing afebrile seizures (epilepsy) in pediatric age group in the local population.

METHODOLOGY: This study consists of 70 pediatric patients suffering from afebrile seizure referred to Radio diagnosis department for CT brain investigation, during the period from Aug 2006 to Sep 2008.

Exclusion Criteria: As our study is to evaluate epilepsy characterized by recurrent (more than two episodes) seizures, with no immediate identifiable and avoidable cause (sleep deprivation, know metabolic disorders; alcohol withdrawal, pyrexia etc) Therefore we excluded.

- Patients below one month of age.
- Febrile convulsions acute infections.
- Toxic and known metabolic disorders.

Equipment used:

- 4th generation MD (four slice) CT sub second scanner (scan time 0.7sec.).
- Matrix size: 640.
- Gantry tilt: 120.
- KV: 120.
- MAs: 100 – 200.
- Slice thickness: 5mm & 2 mm.
- Auto power injector (3 t03.5 mIl sec).

METHODS: NECT: contiguous axial sections of brain, posterior fossa 3 mm. and rest of brain 5 mm sections. And 2 mm. sections were taken wherever necessary.

CECT: is carried logically in those cases which were inconclusive or ambiguous on NECT. Excluding more definite cases like congenital anomalies and calcified granulomas, without perilesion edema.

Intravenous Contrast: non-ionic contrast medium at 1 mg/kg body weight was used where ever indicated. No adverse reactions were noted after injection of contrast medium and sedation was advised whenever the patient was uncooperative.

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OBSERVAION AND RESULTS:

Sl. No.	Age	Male	Female	Total
1.	1 Month to 3 Years	13	6	19
2.	4 – 6 Years	4	10	14
3.	7 – 9 Years	6	7	13
4.	10 - 12 Years	5	9	14
5.	13 – 14 Years	5	5	10
	Total	33	37	70

Table I: Age and Gender Distribution

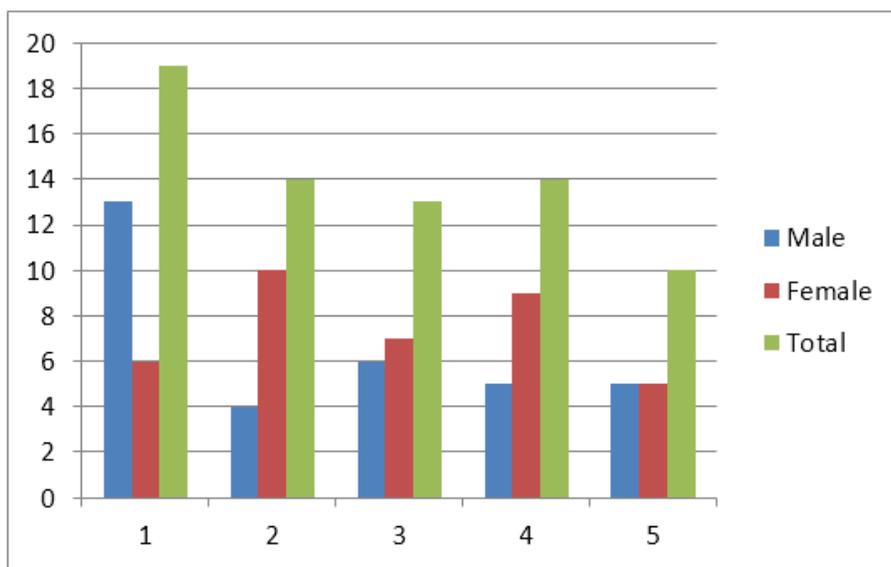


Chart - IA

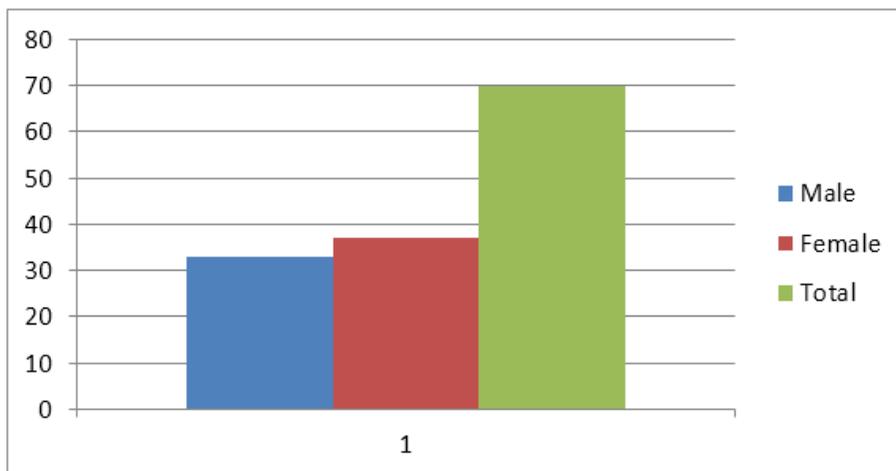


Chart IB: Gender Distribution

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Sl. No.	Type of Convulsions	Male	Female	Total
1.	Generalized	20 (28.5%)	24 (34.38%)	44 (62.8%)
2.	Focal	13 (18.5%)	11 (15.7%)	24 (34.2%)
3.	Focal with sec., gen	-	2 (2.85%)	2 (2.85%)
	Total	33 (47%)	37 (53%)	70 (100%)

Table II: Type of convulsions

***Generalized seizures: 62.8%.

**Focal Seizures: 34.2%.

* Focal C sec. gen.: 2.85%.

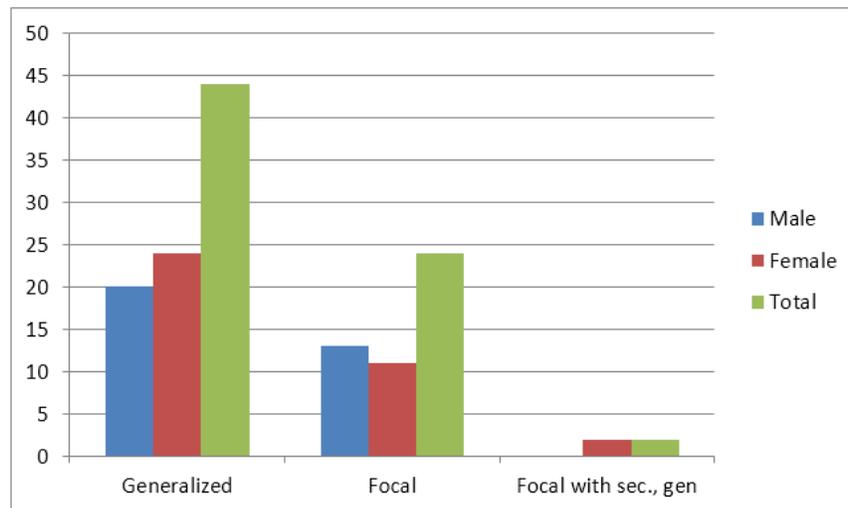
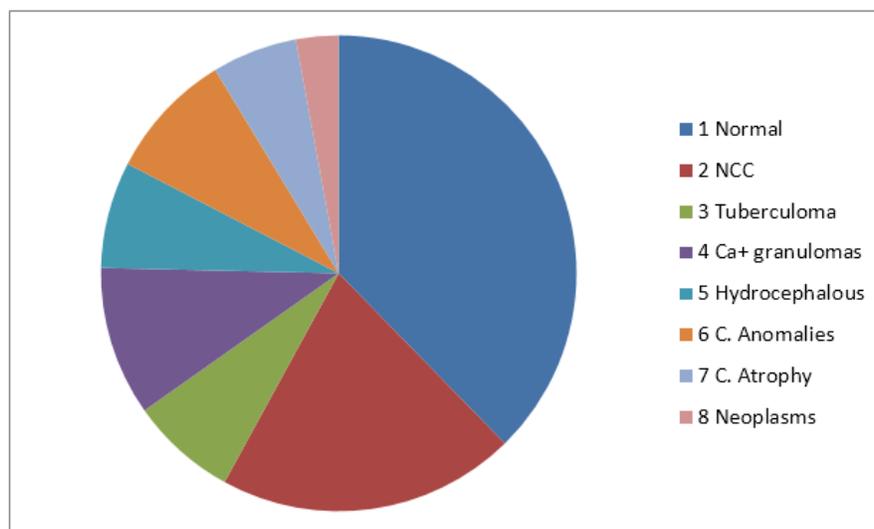


Chart - II Type of Convulsions

Sl. No.	Case no.	Ct brain findings					Cect	Diagnosis
		Nect						
		Lesion	Associated with					
			Edema	Mass effect	Calcification	Other		
Size/shape/density/other								
1.	18, 48	8 to 10 mm size CSF density lesions. Scolex seen in one case	No	No	No	-	No enhancement	Vesicular stage of NCC
2.	1, 8, 10, 15, 16, 23, 27, 29, 35, 44, 61, 69	III defined hypodense lesions, most of the lesions were obscured by edema	Mild moderate	No	Seen in 03 cases	-	Partial to complete ring enhancing lesions of size 7 to 15 mm noted	Colloid/nodular stage of NCC

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3.	04, 17 31, 35 45	III Defined and irregular hypodense lesions of size > 18mm noted	++ Moderate	No	Seen in on case	-	Irregular conglomerated ring/nodular enhancement noted	Tuberculoma
4.	12, 14 28, 55 56, 64	4 to 12mm calcific density lesions	No	No	All	-	Done is two cases nil significant	Calcified granulom
5.	13, 37 39, 52 60	Diffuse dialatation of ventricles (lat.ven>10mm III ven.>6mm and IV ven.>13mm) (tow are non-communicating)	No	No	No	-	Done is two cases Nil significant	Hydrocephalus (communicating & non-communicating)
6.	45, 63, 65	Prominent ventricles, sulci and usterns	No	No	No	-	Not done	Diffuse cerebral atrophy
7.	68	4 x 3.5cm size an hypodense lesion noted in Lt.F. lobe, with prominenet adjacent sulci	No	No	No	-	Not done	Gliosis
8.	06	Sub ependymal tubers & calcifications, with parenchymal calcifications as well	No	No	No	-	Nil Significant	Tuberous sclerosis
9.	49	Smooth cortex with shallow sulci and figure of '8' configuration	No	No	No	-	Not done	Lissencephaly
10.	53	6 x 5 cm size extra axial CSF density lesions noted	No	+	No	-	Nil Significant	Arach noid cyst
11.	59	Absence of spetum pellucidum with inter communication of B/L lateral ventricles	No	No	No	-	Not done	Septooptic dysplasia
12.	18	12mm size CSF density lesion noted adjacent to the Rt. Frontal horn of lat, ventricle	No	No	No	-	Nil Significant	Sub-ependymal cyst or NCC (vesicular)
13.	22	3.4 x 3.0 cm size an irregular hypodense lesions noted in lt. parietal lobe	No	No	No	-	Nil Significant	Lowgrade glioma
	38	4 x 4.2 cm size mixed density lesion (central CSF marginal hyperdense) noted in the cerebellum with obliteration of IV ventricle	Minimal	++	No	Obstructive hydrocephalus	Not done	Pilocytic astrocytoma



Pie chart – III: Various CT Brain findings

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1. Normal	:	26	:	38.59%
2. NCC	:	14	:	20.00%
3. Tuberculoma	:	05	:	07.14%
4. Ca ⁺ granulomas	:	07	:	10.00%
5. Hydrocephalous	:	05	:	07.14%
6. C. Anomalies	:	06	:	08.57%
7. C. Atrophy	:	04	:	05.71%
8. Neplams	:	02	:	02.85%

	:	70	:	100%

(*Note: Infections (ring enhancing) lesions commonest abnormally).

Sl. No.	Type of Seizures	Total no. of cases	CT Brain findings Normal	Abnormal
1.	Focal	34.2%(24)	2083%(05)	79.17(19)
2.	Generakuzed	62.8%(44)	47.7%(21)	52.23(23)
3.	Focal with sec. gene.	2.85%(02)	-	100%(02)
Total		100%(70)	37.14(26)	62.86%(44)

Table III: CT Brain findings

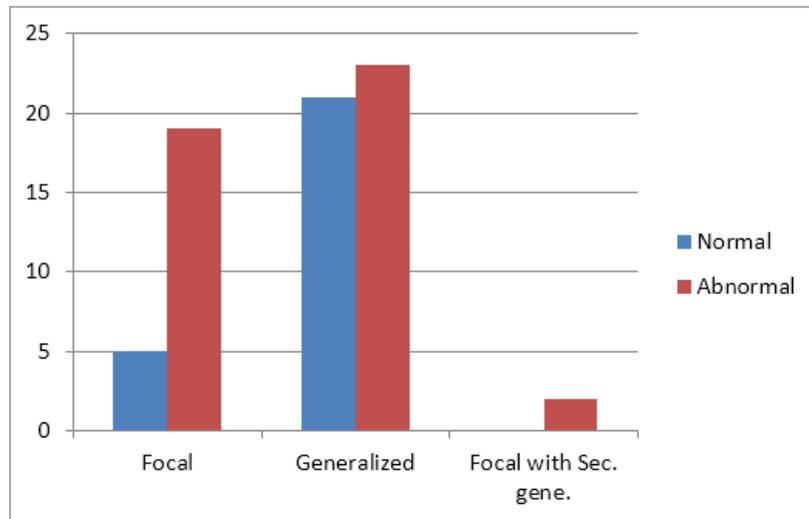


Chart IV: CT Brain Status

Sl. No.	CECT	Normal	Abnormal	Total
1.	Post Ictal edema	03	17	20
2.	Others (selected cases)	09	01	10
Total		12	18	30

Table IV Role of CECT in seizures

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(CECT done in 30 cases only including all edema and few selected cases. It is understood that CECT is mandatory in all edema/ post ictal edema conditions)

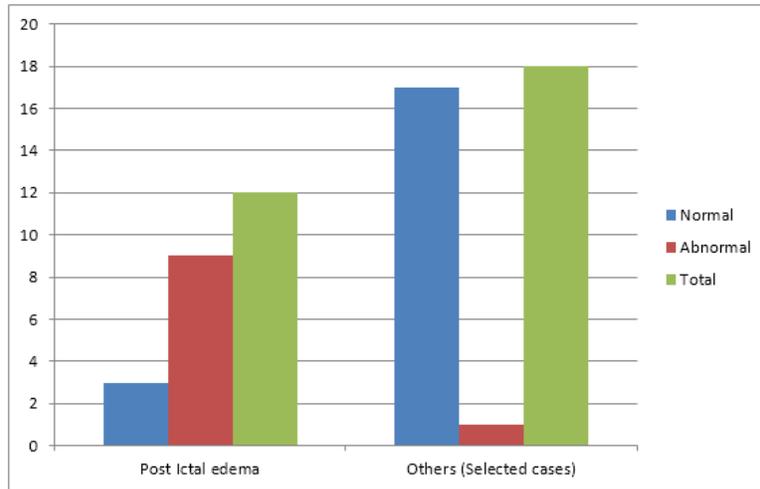
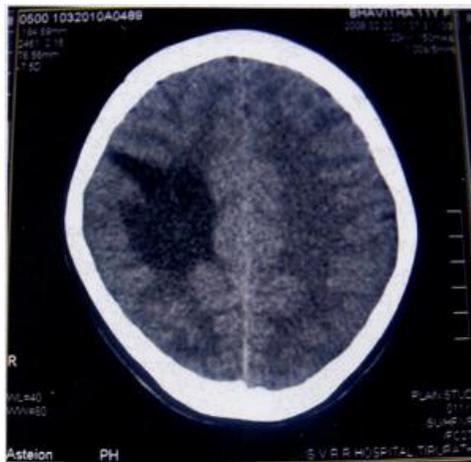


Chart V: Role of CECT



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DISCUSSION: Age and Gender distribution:

Table I depicts the age and gender distribution of seventy children who presented with seizures. In our study 52.86% (37) of the cases were female & 47.14% were male. Our study is contradicting with the study of sunder moity⁵ who noticed male predilection (57%).

And male predominance was noted in most of the epidemiological studies as stated by Richen and Oxley et al.⁶

In our study the total number of cases studied cases (Sample) were small, which could be the reason for slight female predilection.

Also Table - I shows that the maximum incidence of seizures was in the first 3 years of life. Here our study is agreeing with the observations of Ramoslizane and confield et al,⁷ who also noticed similar findings. And it is noticed that no age is exempted.

Types of Convulsions: Table - II reflects the type of convulsions experienced by the children. In this study Generalized - Seizures formed the bulk of the list accounting for (44) 63.85/0 of total cases, and focal seizures were notice in 34.38% (24) followed by two cases of focal seizures that become secondary generalized (2.85%).

Here our study is agreeing with patwari confield, and Keiden etal⁸. Who also observed more number of generalized seizures. But it is contradicting with Ramesh-Bahaeti⁹, Karmer and Good brige etal¹⁰, who noticed more number of focal seizures.

We can see almost equal incidence of generalized and focal seizures in either gender.[GCTS showed slight Predilection in Female 54.5% (24 out of 44) and a slight predilection of focal seizures in male i.e. 54.2%, (13 out of 24), whereas the two secondary generalized seizures were noticed in females].

Similarly various studies have been done by different persons on the nature of convulsions and found that the results have been non-uniform.

Spectrum of Findings:

Chart - III shows the spectrum of various abnormal findings noted on CT in this study. On this basis we were able to detect & diagnose different epileptogenic foci.

The vanous abnormalities included viz Neurocysticercosis, tuberculomas, congenital anomalies (such as schizencephaly, septoopticdysplasia, lissencephaly, arachnoid cyst, post infection squeal (like cerebral atrophy, gliosis, hydrocephalus). CT clearly identified the calcified granulomas, tuberous sclerosis. And also helped in detection of neoplasms.

The pie diagram shows the percentage of abnormality detected on CT brain is 61.4% (43) which emphasizes the role of CT. Here our study is inconsistent with the studies of Jayakumar¹¹ and Anguiler etal¹² who also found CT Brain abnormality in >50% of cases. But Al Sulaiman¹³ noticed abnormality in 40% of cases only.

In our study the commonly noticed abnormality was ring enhancing lesions, including NCC and Tuberculomas accounting for 27.20/0. In this aspect our study is closely reassembly the studies of Patwari, Garvey⁸ and Kumar et al.¹⁴

Other abnormal findings noticed were calcified granuloma 10% (7), hydrocephalus 7.14% (5) cerebral anomalies 8.57% (6) cerebral atrophy 5.7% (4) and neopladms 2.850/0 (2). [CT features of various lesions of brain are depicted in the chart no III].

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Seizures Type associated with CT Brain Abnormality: Table - III depicts the type of seizures that was more often associated with the abnormality on CT Brain. In our study 79% of the cases with focal seizures showed abnormal scan. Were as only 50% of Generalized seizures showed abnormal scan.

Our study agrees with McAbee¹⁵ et al. who also observed that focal convulsions often had abnormal scan in more than 65% of cases.

And Gales found that out of 120 children 45% cases of focal seizures had an abnormality while only 31 % of GS had an abnormality on CT Brain.

Role of CECT: Table IV & Chart V depicts the role of CECT. We noticed that CECT had a remarkable role especially in evaluation of hypo & mixed dense lesion. In our study 20 cases of post ictal edemas appeared as mere hypodense area, only on the administration of contrast injection helped in delineation of enhancing lesions. Out of these 20 cases we found NCC in 12 cases and Tuberculoma in 5 cases, accounting to 85%. But CECT didn't added any extra information in 03 cases of edema. CECT also helped in detection of two neoplasms.

In this regard our study is agreeing with the studies of Sutton¹⁶ & Berger¹⁷ who concluded that low density areas (edemas) seen on CECT should be examined by contrast study.

We observed that delayed (5-7 min) and thin section(2mm) are more useful in detection of ring enhancing lesions. In our study we didn't notice any enhancing lesions on routine immediate and 5 mm thickness section in 12 cases out of 17 post ictal edemas, but they were revealed on delayed & thin sections. In this regard our study is consistent with the observations of Haaga,¹⁸ Shalen PR¹⁹ and Davis PC²⁰ et al.

Thus we observed that CECT had a promising role in evaluation of infections and neoplasms. Whereas it was not much useful in evaluation of various congenital anomalies, [cerebral atrophy, gliosis, hydrocephalus] and calcified granulomas lesions. Out of 10 selected non edematous lesions only in one case CECT was useful.

Various relevant studies in pediatric seizures show no uniformity in incidence in terms of age, gender and etiology. As it is influenced by various socioeconomic, geographical parameters, broad spectrum of etiology, technical errors and differences in subjective interpretation play a significant role.

But it is concluded that CT has a vital role to play in evaluation of seizures.

CONCLUSION: Epilepsy is a peculiar entity having broad spectrum of etiology. Therefore any anatomical and functional variations in the brain can induce seizures.

In the present study we evaluated 70 cases of pediatric seizures referred to the dept of radiology SVGG hospital, Tirupathi for CT scan brain.

We observed and analyzed our findings with the available relevant clinical data, and concluded that.

1. Out of 70 cases there is a slight female predilection 57%.
2. And maximum incidence of seizures was in the first 3 years, but no age is spared.
3. Generalized seizures accounted for 63.85% in our local pediatric age group.
4. We able to detect various epileptogenic foci, in 61.4% (43) cases.

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5. And with available CT findings we could able to distinguish and diagnose various pathological lesions, including infections, congenital anomalies, calcified lesions, and neoplasm.
6. CECT should be done in evaluation of low & mixed density lesions, CECT helped more in evaluation of low density lesions and revealed ring enhancing lesions. Delayed (5-7min) & thin (2mm) sections are more useful.
7. Ring enhancing lesions due to infections are the commonest epileptogenic foci in our study accounting for 28%.
8. And CECT IS not helped much in evaluation other than low density lesions.

As normal neurological examination can't rule out an epileptogenic focus. Therefore CT brain should be included in the routine work up of childhood seizures. [Both NECT and CECT].

CT has been evolved as a vital tool in evaluation of seizures. As CT is a non-invasive, non-time consuming widely available and more economical and can able to detect various epileptogenic lesions.

At the end we conclude that CT should be included in the routine list of investigations in evaluation of seizures.

In this study we evaluated CT brain of 70 children suffering from epilepsy out of which 61.4% showed some abnormality which reemphasized the value of CT in detection of epileptogenic foci.

CECT is very essential in evaluation of low density lesions. Only on contrast study we can detect and distinguish various lesions. More over delayed and thin sections are more useful. CECT may not play any role in evaluation of most of the congenital anomalies and calcified lesions.

Ring enhancing lesions of infectious etiology especially NCC are the commonest epileptogenic foci in our local pediatric population.

Therefore CT is the prime mode of investigation in evaluation of epilepsy in pediatric age group.

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