

## Role of Radio Imaging In Children with First Episode of Apparent Unprovoked Generalised Seizure

Dr. Sandip Kumar Ghosh<sup>1</sup>, Dr. Sweta Singh<sup>2</sup>

<sup>1</sup>Associate Professor, Department of Radio-diagnosis, Bankura Sammilani Medical College and Hospital, Bankura

<sup>2</sup>Post Graduate Trainee, Department of Radio-diagnosis, Bankura Sammilani Medical College and Hospital, Bankura

Corresponding Author: Dr. Sweta Singh

---

### Abstract-

Approximately 10% of population will have at least one seizure in their lifetime at some point of time. Half of these will occur during childhood and adolescence, with highest risk before 1 year. Some patients with a first seizure eventually go on to have additional seizures and be diagnosed with epilepsy. Thus the occurrence of a single seizure in childhood deserves a careful consideration.

### Objectives-

To determine the percentage of children presenting with first episode of a generalized seizure having some neurological abnormalities in the brain.

To evaluate the utility of neuroimaging (Computed Tomography [CT] or Magnetic Resonance Imaging [MRI]) in the diagnosis of the cause of seizure.

### Materials and Methods-

The present study was conducted in the Department of Radio-diagnosis, Bankura. Children between the age group of 6 months to 12 years presenting to the Outdoor Patient Department (O.P.D) and Emergency department with first episode of a generalized seizure were included in the study conducted over a period of 6 months from October 2017 to March 2018.

Myoclonic jerks, infantile spasms and focal seizures with secondary generalization were excluded from the study.

CT was conducted in a 16 slice CT scanner and MRI was conducted on a 1.5 Tesla GE machine.

Detailed history was elicited from parents and caregivers. History of similar episode in the family was enquired into. Thorough physical examinations, neurological examinations with EEG evaluation of patients along with detailed history of developmental milestones, socio-economic and particular history of contact with Tuberculosis was enquired into. Selected patients fit for the study were advised to undergo CT or MRI of Brain, with desired sequences and contrast as and when required.

A study of total 59 children was conducted.

---

Date of Submission: 10-04-2018

Date of acceptance: 24-04-2018

---

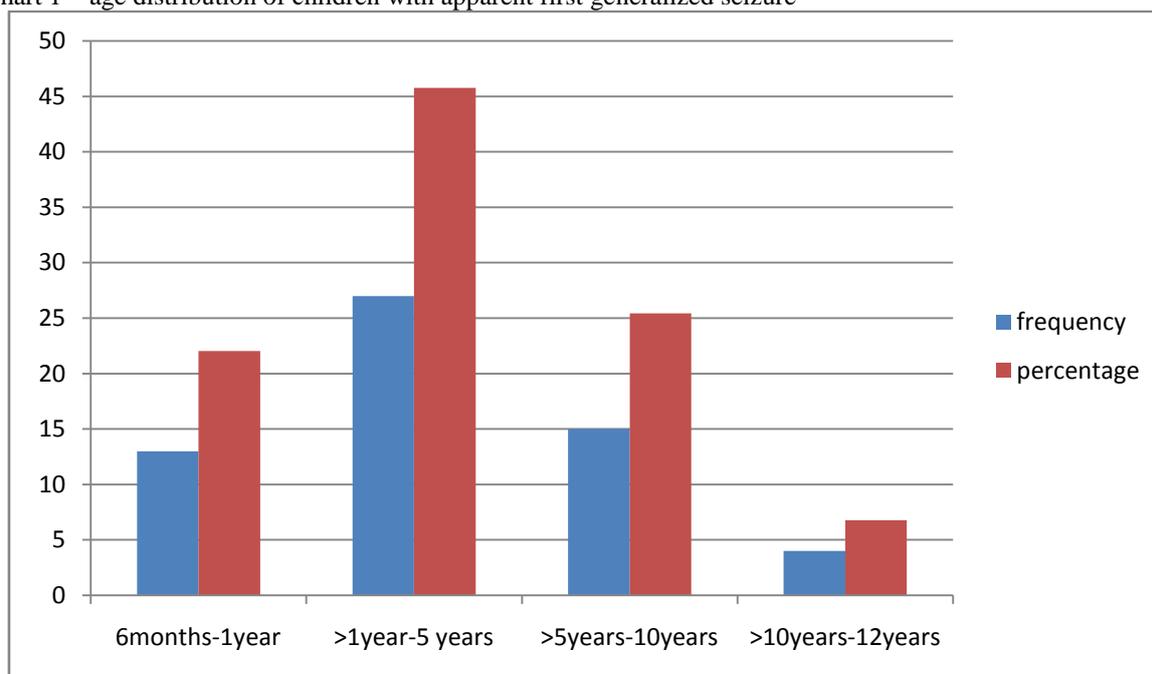
## I. Introduction

### OBSERVATIONS AND INTERPRETATIONS-

**Table 1-** age distribution of children with apparent first generalized seizure

Age groups	Total no. of patients	Percentage (%)
6months-1year	13	22.03
>1year-5 years	27	45.76
>5years-10years	15	25.42
>10years-12years	4	6.77

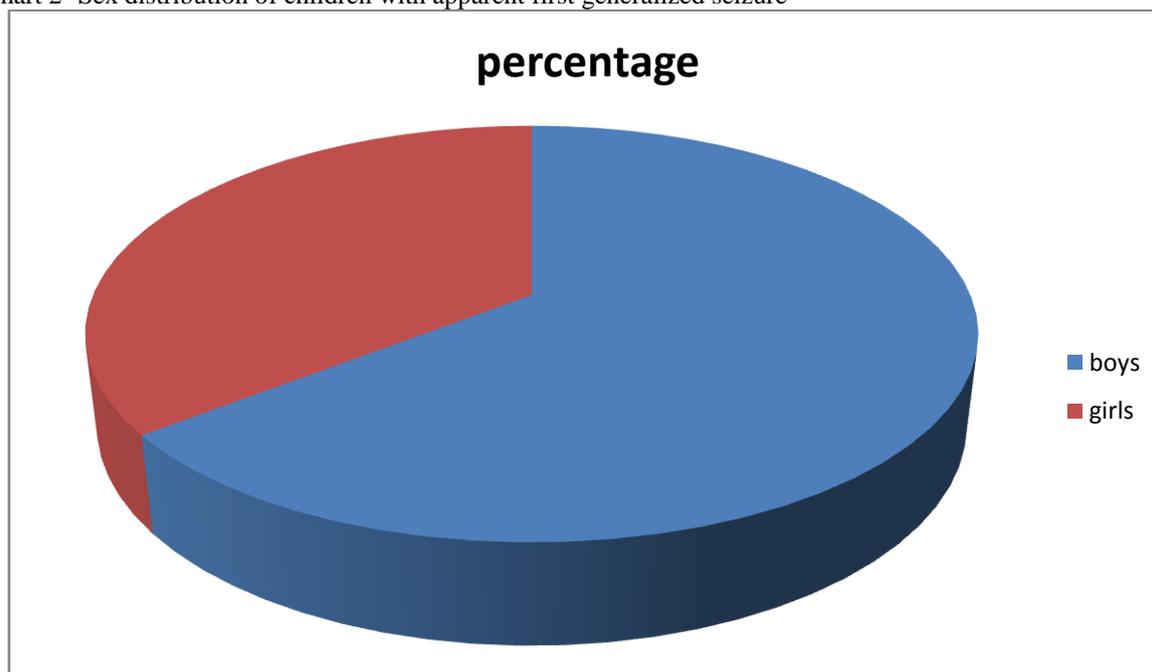
Chart 1 – age distribution of children with apparent first generalized seizure



**Table 2-** Sex distribution of children with apparent first generalized seizure

sex	No. of cases	Percentage %
boys	38	64.40
girls	21	35.60

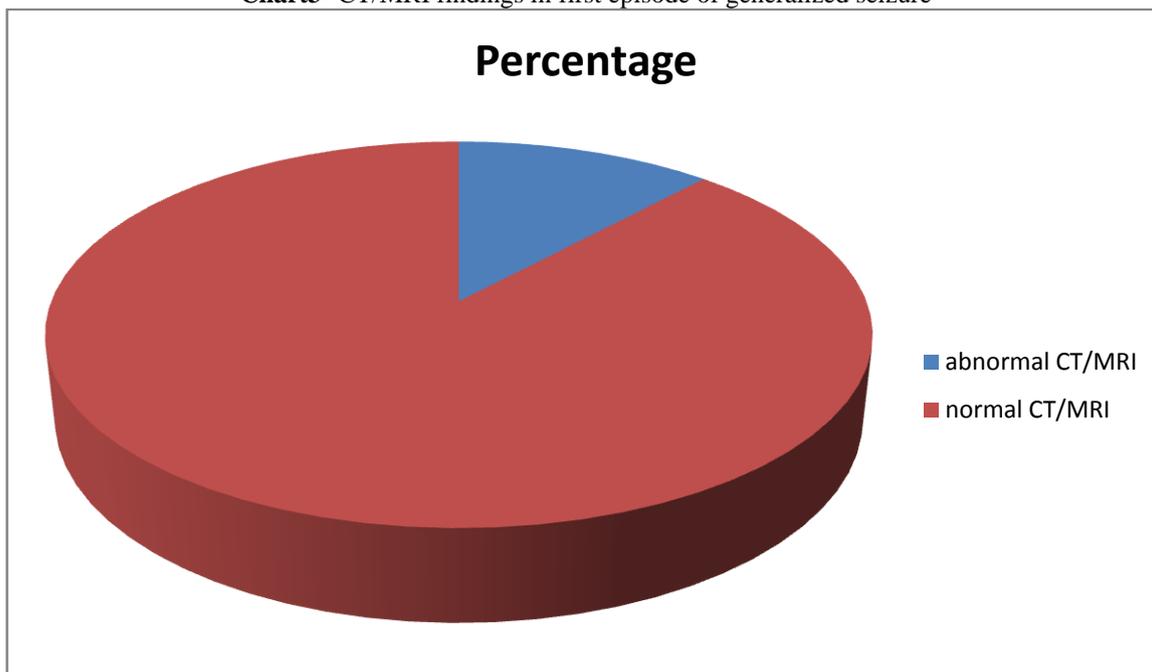
Chart 2- Sex distribution of children with apparent first generalized seizure



**Table 3-** CT/MRI findings in first episode of generalized seizure

Radio-imaging findings	Abnormality detected	Percentage %
Abnormal CT/MRI	7	11.86
Normal CT/MRI	52	88.13

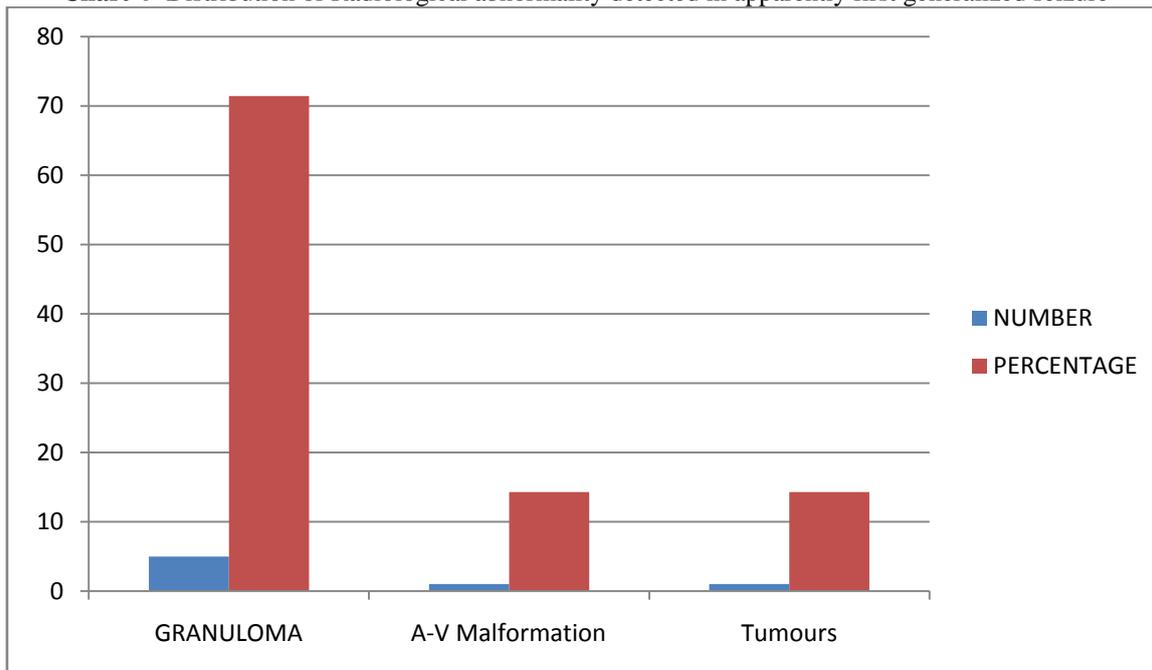
**Chart3-** CT/MRI findings in first episode of generalized seizure



**Table 4-** Distribution of Radiological abnormality detected in apparently first generalized seizure

Pathological finding	number	Percentage %
Granuloma	5	71.42
Arterio-venous malformation	1	14.28
tumours	1	14.28

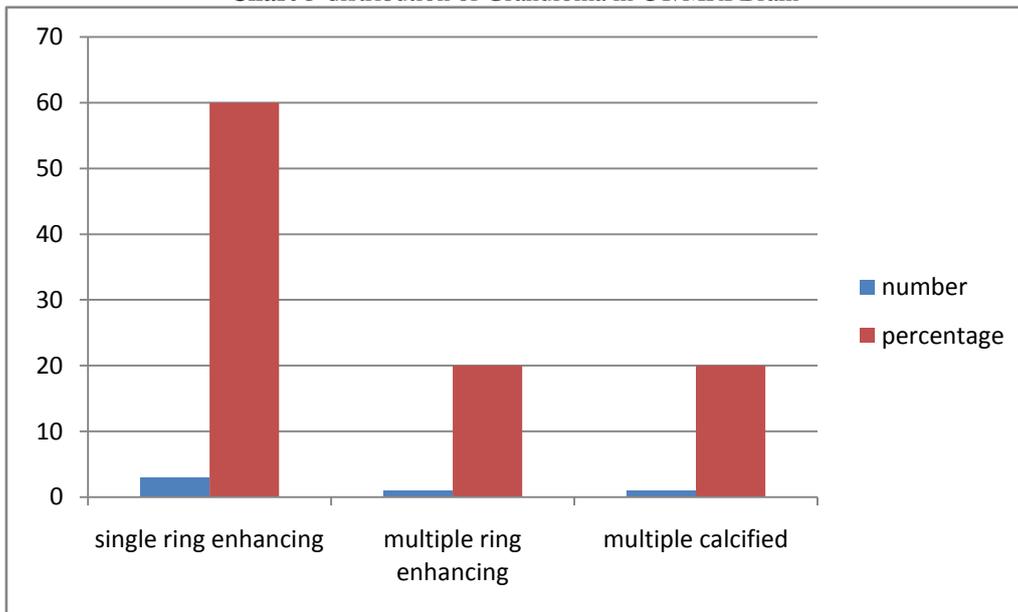
**Chart 4-** Distribution of Radiological abnormality detected in apparently first generalized seizure



**Table 5-** distribution of Granuloma in CT/MRI Brain-

TYPE OF GRANULOMA	NUMBER	PERCENTAGE %
Single enhancing lesion	3	60
Multiple enhancing lesion	1	20
Multiple calcified lesion	1	20

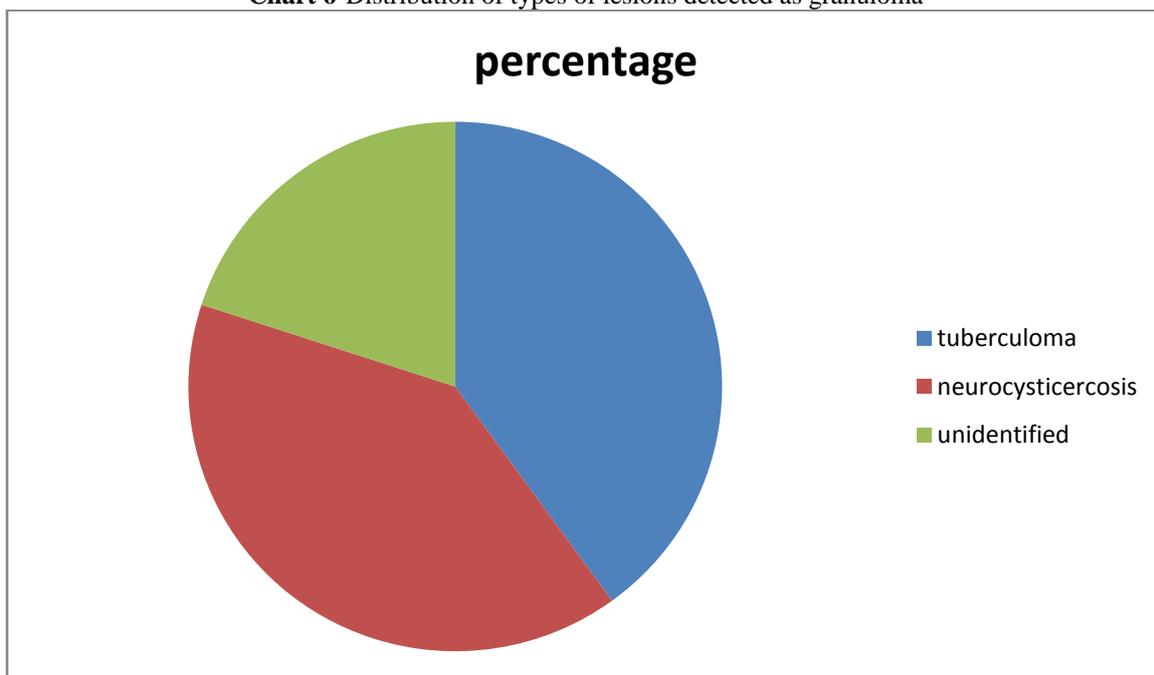
**Chart 5-distribution of Granuloma in CT/MRI Brain-**



**Table 6-Distribution of types of lesions detected as granuloma**

Type of lesion	number	Percentage %
Tuberculoma	2	40
Neurocysticercosis	2	40
Unidentified lesion	1	20

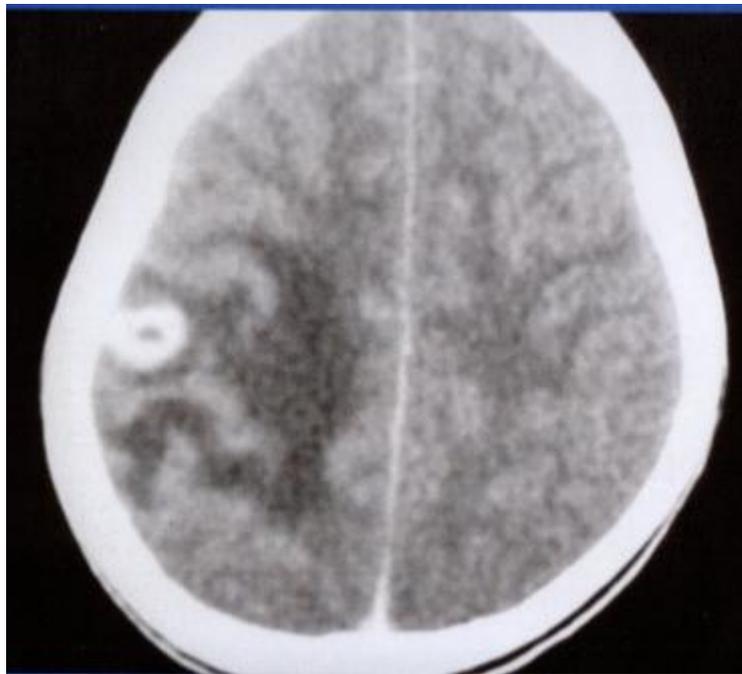
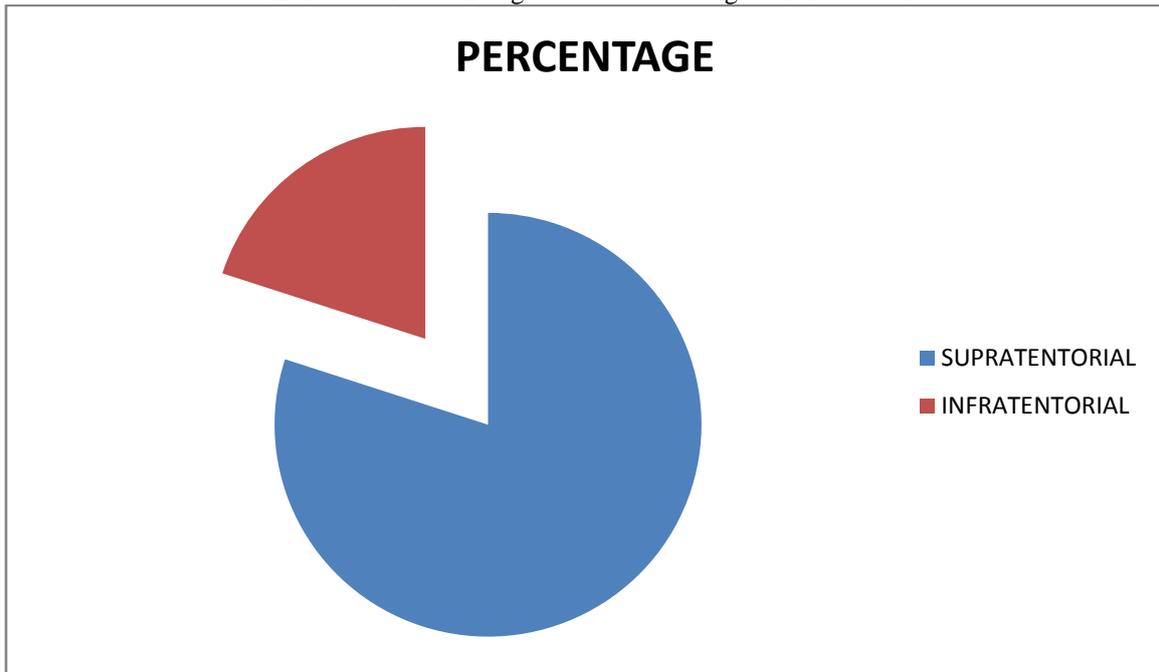
**Chart 6-Distribution of types of lesions detected as granuloma**



**Table 7-distribution of granuloma according to their location**

Location in the brain	number	Percentage %
supratentorial	4	80
infratentorial	1	20

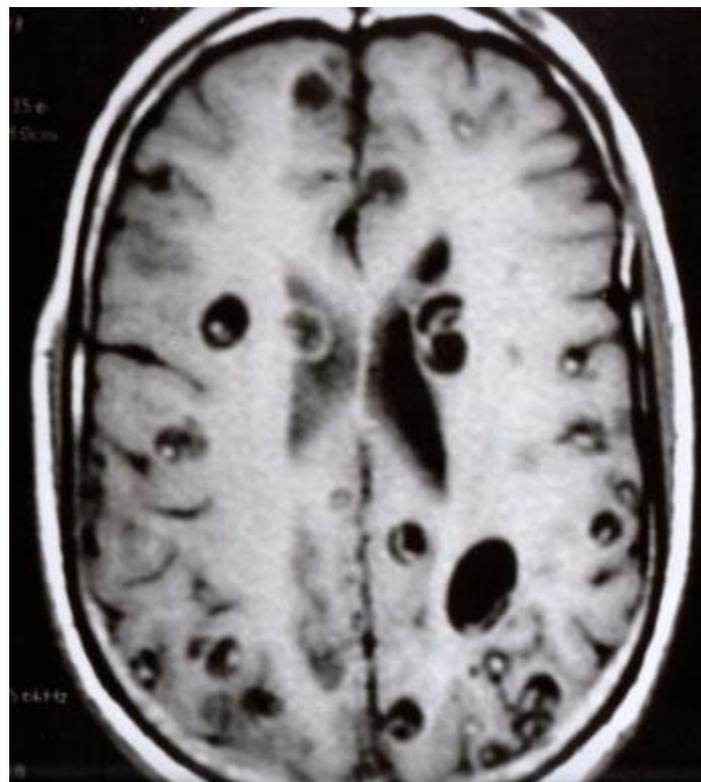
**Chart 7**-distribution of granuloma according to their location



CT showing a single ring lesion with perilesional edema.features are suggestive of tuberculoma



CT showing a case of Arterio-venous Malformation in right frontal lobe



MRI T1 weighted image showing neurocysticercosis

## **II. Results And Conclusion-**

The present study was conducted on 59 patients, in the Department of Radio-diagnosis, Bankura Sammilani medical college and hospital. It is evident that most of the children who came in for neuroimaging at our department with first episode of generalized seizure had normal imaging findings. neither of them needed any urgent intervention. In the present study there is a strong male preponderance and granuloma is the most common finding on imaging. Tuberculoma and Neurocysticercosis have been found in equal incidence. most of the lesions were seen in the supratentorial compartment.

## **SUMMARY-**

The cause of seizure in most of the children could not be determined. However, infective cause was predominant in the known cases of seizures in this part of the country.

**LIMITATIONS-**

Small sample size of the study conducted in the population of Bankura district gave a closed approach to the study.

Congenital structural malformations causing focal seizures or other pathologies requiring a continuous follow up was not possible in our study.

**References**

- [1]. Intracranial structural lesions in young epileptics: a computed tomographic study. [Kapoor M<sup>1</sup>](#), [Talukdar B](#), [Chowdhury V](#), [Puri V](#), [Rath B](#)
- [2]. Nelson Text Book of Pediatrics:Vol.2; The nervous system, PartXXVII:1686.
- [3]. Metrakos JD and Metrakos K; Genetics of Convulsive disorders: H Genetic and Electroencephalographic studies in centrencephalic epilepsy .Neurology 11; 474-483, 1961.
- [4]. Tower, D.The Neurochemistry of epilepsy.Charless C Thomas, Springfield.III 1960
- [5]. Goldin KR and Freeman JM Neonatal seizures and their treatment .Clin Perinatal 2 No.1; 3-13, 1975
- [6]. Gaser GH and Dixon MS Psychomotor seizures in childhood: A clinical study .Neurology 6:644-655, 1956
- [7]. Sumi, SM and Teasdall RD Focal seizures. A review of 150 cases. Neurology13: 582 – 586: 1963
- [8]. Joynt, RJ Green D and Green R Musicogenic epilepsy JAMA 179; 501 -504; 1962
- [9]. Jeffery R Starke; Tuberculosis Nelson Text book of pediatrics 19<sup>th</sup>Ed vol II 834-846.
- [10]. Anne G Osborn; diagnostics Neuroradiology 1994; 706.
- [11]. MargaretAnne Whelan and Jack stern “IntracranialTuberculoma “; Radiology 138:75-81 January 1981.
- [12]. Puri V ;Sharma DK ; Kumar S;choudary V;Gupta RK;Khalil A;” Neurocysticercosis in children”; Indian Pediatrics Vol.28.1309-1317.Nov.1991.

Dr. Sandip Ghosh "Role of Radio Imaging In Children with First Episode of Apparent Unprovoked Generalised Seizure."IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 4, 2018, pp 29-35.