

## A case of Rasmussen's encephalitis mimicking focal cortical dysplasia treated with focal cortical resection



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**Introduction:** Rasmussen's encephalitis (RE) is one of the important causes of refractory seizure presenting epilepsy partialis continua (EPC), progressive hemiparesis and neuropsychological deterioration. Currently, the best approach to RE is hemispherectomy.

**Case histories:** A 8-year-old girl right handed with normal birth and development presented with 20-30 seizures per day since the past 2 years' The semiology was in the form of auditory aura followed by behavioral arrest, excessive salivation from mouth and deviation of angle of mouth to left side. The child was responsive during the attack. Visual acuity normal with no motor or sensory deficits.

MRI brain revealed T2 and FLAIR hyperintensity in the right insula extending into right temporal pole. Caudate was normal. MRI was interpreted as focal cortical dysplasia involving right insula.

VEEG showed frequent right hemispheric discharges with temporal neocortical simple partial seizures.

Patient was operated with focal cortical resection of right insula lesion with right temporal lobectomy. Patient had postoperative right hemiparesis due to a subcortical infarct. Histopathology revealed the characteristic picture of Rasmussen's encephalitis.

**Discussion:** The follow-up brain MRI 1 year later showed diffuse atrophy of the brain with more atrophic change in right hemisphere. At 3 years follow up, EEG showed right hemispheric slowing with few electrographic seizure with no clinical seizures. She was treated with a short course of IV methyl prednisolone. Right hemiparesis improved.

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## Magnetoencephalographic (MEG) yield of single and multiple dipole clusters in patients with drug refractory epilepsy (DRE)



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**Introduction:** Epilepsy is characterized by the presence of epileptic discharges, mainly in the form of Spikes and Sharp waves transients in electroencephalography (EEG). Magnetoencephalography (MEG) has the advantage that it can record potentials which is otherwise not possible to record in EEG when the discharges have a tangential dipole/orientation MEG also has the advantage of having greater temporal and spatial resolution than other available methods and that too non-invasively.

**Purpose:** Drug refractory epilepsy (DRE) is the most common reason for referring patients to magnetoencephalographic evaluation. Source localization of Magnetoencephalographic spikes and sharp wave dipole clustering is supposed to represent the focal epileptic source. The data of this study shows yield of magnetoencephalographic dipole clustering (in many forms) in focal intractable epilepsy. The present study addresses the following questions

1. Is there multiple or a single source of epileptogenicity?
2. What is the possibility of expecting a scattered region of Source Localization in focal or secondary generalized epilepsy?

**Procedure:** Patients diagnosed with epilepsy based on clinical findings underwent simultaneous MEG (306 Sensors) and EEG (64 Channels).

Data acquisition was performed with 1KHz sampling rate.

Band pass filter was 0.3-330 Hz.

Source localization was performed with equivalent dipole modelling.

Spherical head modelling was used in MEG source localization and BEM head model for EEG.

**Methods:**

**Patients:**

- This study was performed in 310 patients diagnosed with focal or Secondary Generalized DRE based on Clinical features and other noninvasive investigations (Video EEG, 3T MRI, SPECT, PET).
- 128 Cases were analyzed.
- The patients underwent MEG study of average duration 2 hrs, both awake and sleepfulness.
- The patients recruited were between the age 3-60 years.
- The patients were on their maximum allowed and tolerable dosage of medicines.

We retrospectively analysed with Equivalent Current Dipole Model in DANA software and Moving dipole and sLORETA analysis in CURRY Software, the average 2h MEG data of patients with intractable epilepsy who were referred to MEG Facility at National Brain Research Centre for MEG assessment.

**Findings**

Findings	Ratio	Percentage%
Spikes, sharpwaves or slow waves	286/310	92.25
Single dipole clustering	63/128	49.21
Multiple dipole clustering	39/128	30.46
Multiple clustering with scattering	15/128	11.71
Scattered	10/128	7.8
Total clustering	118/128	92.18

**Results:** This study demonstrates the high yield of MEG in DRE - focal in the form of Dipole Clusters, both single Cluster and Multiple Clusters.

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