



STUDY OF RING ENHANCING LESIONS IN PATIENTS PRESENTING WITH SEIZURES

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ABSTRACT

Seizure is a common manifestation of neurological patients at the time of presentation. Associated focal deficits give hint towards the localization in the brain. However, a significant number of patient present with no residual localizing deficits. In all such cases also, ring enhancing lesions constitute an important causal etiology. In this study, we analyze such cases and delineate the causes of such ring enhancing lesions.

KEYWORDS : Ring enhancing lesions

INTRODUCTION :

In India, ring enhancing lesions is still the most common radiological abnormality in patients presenting with seizures. Associated clinical features like gaze deviation, altered sensorium, fever, hemiparesis etc give an indirect hint towards the localization. However, in patients without any such feature and only seizures, it is mandatory to look at brain imaging and see for such lesions. Conventionally, CT scans have been used to delineate such lesions but with the arrival of MRI and with various modifications like MR spectroscopy, it is now easier than before to conclude about the etiology of all such cases. Tubercular lesions and neurocysticercosis are the two most common etiologies. However, others like metastasis, radiation necrosis, glioma and multiple sclerosis out of a few more also comprise of a significant proportion. It is important to delineate all these as treatment of all these are different and a few are even life threatening [1].

Aims and objectives:

To study about different causes of ring enhancing lesions in patients presenting as seizures.

Inclusion criteria :

1. Patients presenting with seizure without any residual deficits.
2. Patients above 20 years of age.
3. Patients with ring enhancing lesions on MRI with contrast.

Exclusion criteria :

1. Patients below 20 years of age
2. Patients with any other symptom or sign than seizure.
3. Patients without ring enhancing lesions on MRI

MATERIAL AND METHODS :

This was a prospective observational study done on the patients presenting to outpatient department at a tertiary care teaching hospital from central India (Ujjain). All patients who were more than 20 years of age and presenting with seizures with evidence of ring enhancing lesions on MRI contrast study were included in the study. The data was later analyzed.

RESULTS :

27 patients were studied. 15 were males and 12 were females. Most common age of presentation was between 20-30 years age group followed by those above 60 years of age. Most common type of seizure presentation was Generalized Tonic Clonic Seizure (GTCS) which was followed by partial with secondary generalized seizure and then those presenting as simple partial seizures. Complex partial seizure was the least common presentation [Table 1]. 11 patients were diagnosed to have NCC followed by tuberculoma in 10 patients. 3 patients had glioma while 1 patient each of brain metastasis and demyelination was diagnosed [Table 2]. (Although all patients were diagnosed based on best possible MRI contrast and spectroscopy studies, definitive diagnosis can't be ascertained without biopsy). All patients were started on their respective appropriate therapies, the details of which are beyond the scope of this paper.

Table 1 : Type of seizures

Type of seizure	Total patients(n=27)
GTCS	18(66.66%)
Partial with sec. generalized	4(14.81%)
Simple partial	2(7.4%)

Complex partial	1(3.7%)
Combination of two types	2(7.4%)

Table 2 : Type of lesion

Type of lesion	Number of patients (n=27)
Neurocysticercosis	11(40.74%)
Tuberculoma	10(37.03%)
Glioma	3(11.11%)
Brain metastasis	1(3.7%)
Demyelination	1(3.7%)

DISCUSSION:

The most common neuroimaging finding in patients with partial epilepsy from India is single enhancing lesions (SEL) with perifocal density suggestive of edema. The etiological spectrum of SEL in India seems to be different from that described in the Western literature with infections like NCC and tuberculomas likely to be the significant causes of ring-enhancing lesions. With the introduction of HIV/AIDS, toxoplasmosis, and fungal infections such as cryptococcosis or histoplasmosis are also increasingly associated with ring enhancement as well. Other causes for ring-enhancement are primary brain tumors, brain abscesses, metastases, granulomas, resolving hematomas, and infarcts[2].

In developing countries, most of these SEL are caused by NCC or tuberculosis with differential diagnoses being extremely difficult to ascertain. This is because the clinical and imaging features are similar. Common characteristics of cysticerci are round in shape, 20 mm (or smaller) in size, and with ring enhancement or visible scolex. In addition, cerebral edema is severe enough to produce midline shifts or focal neurological deficits are not visible. Tuberculomas, by contrast, are usually irregularly shaped, solid, and greater than 20 mm in size. They are often associated with severe perifocal edema and focal neurological deficits[3].

MR spectroscopy(MRS) complements the MRI as a non-invasive means for the characterization of the tissue. While the MRI uses signals from hydrogen protons to form anatomic images, the proton MRS uses this information to determine the concentration of brain metabolites such as N-acetyl aspartate (NAA), choline (Cho), creatine (Cr), and lactate in the tissue examined. MRS offers a promising investigation technique to differentiate tuberculoma from other infective granulomas[4].

To conclude, differentiating between all these ring enhancing lesions is very necessary as all the diseases have their specific management plans and if misdiagnosed, these can also be a grave danger for life.

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