

Original Research Article

To Determine the Incidence of Typical and Atypical Regions of Parenchymal Involvement in Posterior Reversible Encephalopathy Syndrome

Dr. M. Kalaichezhian Mariappan^{1*}

¹MD., Associate Professor, Department of Radiology and Imaging Sciences, Sree Balaji Medical College and Hospital, 7, CLC Works Rd, Shankar Nagar, Chromepet, Chennai, Tamil Nadu 600044, India

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Abstract: Posterior reversible encephalopathy syndrome (PRES) is a clinical and radiological entity of acute neurological symptoms associated with characteristic MRI findings, characterized by bilateral symmetrical parietooccipital vasogenic edema but may occur in other lobes also. We aim to determine the incidence of typical and atypical regions of involvement in posterior reversible encephalopathy syndrome. Retrospective Study was carried out in the Department of Radiology, Sree Balaji Medical College and Hospital, Chennai, for a period of 8 years, from 2013 to April 2021. A total of 24 patients with MRI findings of PRES were studied and classified according to the incidence of Typical and atypical regions of involvement.

Key words: PRES, MRI, T2, FLAIR, Vasogenic edema.

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INTRODUCTION

Posterior reversible encephalopathy syndrome (PRES) is a clinical and radiological entity of acute neurological symptoms associated with characteristic MRI finding. Vasogenic edema in the grey and white matter of parieto - occipital regions is the classical MRI findings [1]. Though more widely recognized, controversy still exists as to the mechanism responsible for the brain edema, the most likely understood explanation is disruption of the cerebral vascular auto-regulation and endothelial dysfunction leading to vasogenic edema [3-6]. MR imaging is considered the gold standard imaging modality, and is recommended to be performed as soon as PRES is suspected [11]. The typical imaging findings of PRES are most apparent as hyperintensity on FLAIR images in the parietooccipital and posterior frontal cortical and subcortical white matter regions ; less commonly, the brainstem, basal

ganglia, and cerebellum are involved [1, 2, 7-10]. Atypical imaging appearances include contrast enhancement, hemorrhage, and restricted diffusion on MRI.

MATERIALS AND METHODS

The Study was conducted from 2013 to April 2021 for a period of 8 years in the Department Of Radiology, Sree Balaji Medical College and Hospital, Chennai. A total of 24 patients with MRI findings of PRES were studied and classified according to the incidence of atypical and typical regions of involvement. The MRI examinations were performed on Hitachi 1.5 tesla and GE 3 Tesla machines. However, the standard protocol included, unenhanced axial FLAIR, T1-weighted, and T2-weighted images in all 24 cases eventually confirmed as PRES.

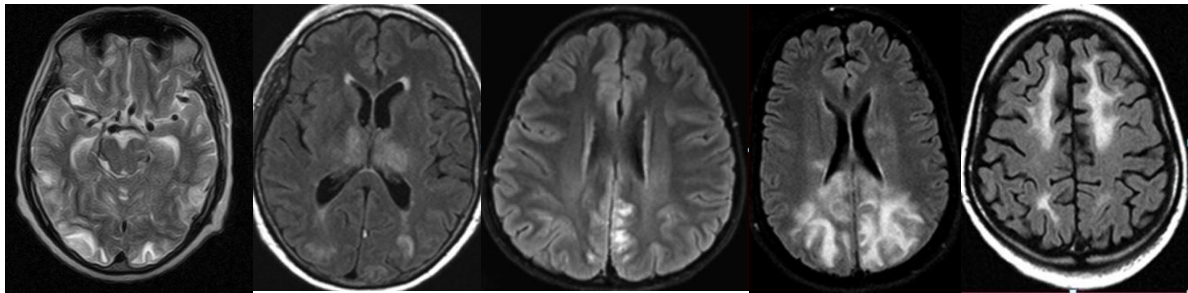


Figure-1: A: Parieto- Occipital, B: Thalamus, C: Parietal, D: Parieto – Occipital, E: Frontal

RESULTS AND STATISTICAL ANALYSIS

A total of 24 patients were analysed with MRI findings of PRES. Age group included between 16–70 years. Location of vasogenic edema were tabulated and calculated using standard Microsoft statistical package. The regions of brain mostly involved (Figure A – E).

■ Parietooccipital (n = 22, 91.6%)
■ Frontal (n = 18, 75.0%)
■ Temporal (n = 16, 66.6%)
■ Cerebellum (n = 8, 33.3%)
■ Thalamus (n = 5, 20.8%)
■ Brainstem (n = 4, 16.6%)
■ Basal ganglia (n = 2, 8.3 %)

DISCUSSION

The purpose of this study is to analyse both the typical and atypical regions of involvement of PRES. In our study vasogenic edema was present more commonly in parietooccipital, frontal and temporal regions. Less commonly in thalamus, brainstem and basal ganglia (Figure 1). PRES is not entirely an posterior phenomenon but can be in other regions also. A thorough knowledge about the Atypical regions of PRES is needed for further management and follow up imaging whenever necessary. Although CT scan in acute situations may help to rule out hemorrhage and ischemia, it may not always diagnose PRES [2].

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