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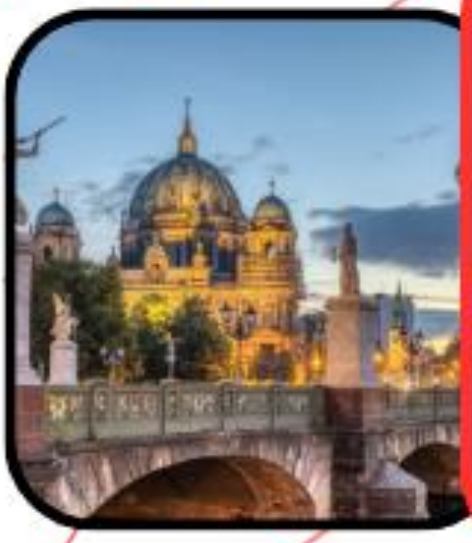

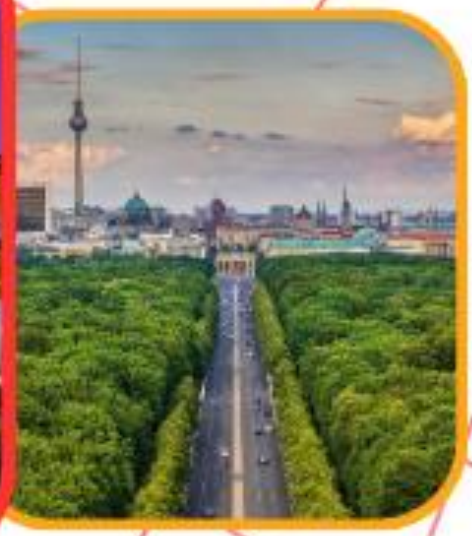

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SUBACUTE SCLEROSING PANENCEPHALITIS IN KIDS: EEG & MRI TRENDS PRE- AND POST-2023

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Introduction: Subacute sclerosing panencephalitis (SSPE) is a rare and fatal neurodegenerative disorder caused by persistent measles virus infection, primarily affecting children. Despite advances in vaccination, SSPE persists in regions with suboptimal immunization coverage, posing a significant public health challenge. Understanding its clinical presentation and diagnostic patterns in specific healthcare settings is crucial for improving detection and informing prevention strategies. This study focuses on SSPE cases in a single government hospital, where resource constraints and patient demographics may influence disease outcomes. By analyzing electroencephalographic (EEG) and magnetic resonance imaging (MRI) findings, this research aims to contribute to the limited data on SSPE in localized settings, emphasizing its relevance in pediatric neurology.

Aim of the Study: The aim of this study is to evaluate the clinical and diagnostic features of SSPE in 32 children admitted to a single government hospital, comparing EEG and MRI findings between a main group diagnosed before 2023 and a control group diagnosed from 2023 onward, to assess consistency and progression of diagnostic markers over time.

Materials and Methods: This retrospective study included 32 pediatric patients diagnosed with SSPE at a government hospital, based on clinical criteria and laboratory confirmation (elevated measles antibody titers). Patients were divided into two groups: the main group (20 patients diagnosed before 2023) and the control group (12 patients diagnosed in 2023 and later). Data were extracted from medical records, focusing on EEG patterns (e.g., periodic complexes, atypical findings) and MRI results (e.g., white matter changes, atrophy). EEGs were conducted using standard 10-20 electrode placement, and MRIs were performed with T2-weighted and FLAIR sequences. Comparative analysis assessed differences in diagnostic findings between groups, with descriptive statistics used to summarize results. The study period spanned hospital admissions up to February 20, 2025.

Results and Discussion: In the main group (n=20), EEG revealed periodic high-amplitude delta wave complexes in 17 patients (85%), with atypical patterns in 2 (10%). MRI showed white matter hyperintensities in 12 patients (60%), with cerebral atrophy in 8 (40%). In the control group (n=12), periodic EEG complexes were observed in 9 patients (75%), atypical patterns in 2 (15%), and MRI indicated white matter changes in 6 (50%), with atrophy in 4 (33%). The slightly lower prevalence of classic EEG findings in the control

group may reflect earlier detection, supported by milder initial MRI changes compared to the main group's more advanced atrophy. These findings align with SSPE's established diagnostic profile, though the lack of significant evolution between groups suggests consistent disease pathology over time. The discussion highlights EEG's sensitivity for early detection and MRI's role in tracking progression, emphasizing SSPE's devastating uniformity despite variable presentation.

Conclusion: This study demonstrates that SSPE in children at this government hospital exhibits consistent EEG and MRI features across pre-2023 and post-2023 cohorts, with periodic complexes and white matter abnormalities as reliable diagnostic markers. Earlier detection in recent cases may mitigate initial MRI severity, but the disease's progressive nature remains unchanged, underscoring the need for preventive focus. Recommendations:

1. Strengthen Measles Vaccination Efforts: Intensify vaccination campaigns targeting the hospital's catchment area to prevent measles and subsequent SSPE cases.

2. Establish Routine Diagnostic Protocols: Introduce systematic EEG and MRI screening for children with neurological symptoms suggestive of SSPE to enhance early diagnosis and monitoring.

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