Diagnostic Validity of Electroencephalography in Equine Intracranial Disorders

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Electroencephalography (EEG) is a valuable diagnostic test to identify functional disturbances in brain activity. The purpose of this study was to assess the validity of EEG as a diagnostic indicator of intracranial diseases in horses. The validity of EEG was estimated by comparing clinical, clinicopathologic, and histopathologic findings to EEG findings in 20 horses examined for seizures, collapse, or abnormal behavior between 1984 and 1997. A bipolar left-to-right, back-to-front montage and a bipolar circular montage were recorded from sedated (4) and anesthetized (16) horses. Visual and semiquantitative masked analysis of EEG recording 1st was validated on 10 horses presented for problems other than intracranial diseases. EEG pattern was normal in 7 of the 20 clinically affected horses. Abnormal EEG patterns included high-voltage slow waves and discrete paroxysmal activity with or without generalized activity in 13 horses. Histopathologic diagnoses in 10 horses included meningoencephalitis, neuronal necrosis, congenital anomalies, cerebral edema, and abscess. All of these horses had abnormal EEG patterns (sensitivity, 100%) with a positive neuroanatomic correlation in 7 animals. Localization of histopathologic and EEG abnormalities did not correlate in 15% of the horses (3/20). The cause of neurologic signs could not be explained at postmortem examination in 10 animals and the EEG pattern was normal in 7 of these horses (specificity, 70%). In conclusion, equine EEG was a sensitive tool in the diagnosis of intracranial disorders.

Key words: Brain abscess, Collapse, Horses, Meningoencephalitis, Seizures