

Phosphorylated neurofilament H (pNF-H) as a potential diagnostic marker for neurological disorders in horses

Abstract

The current study aimed at the investigating the potential use of phosphorylated neurofilament H (pNF-H) as a diagnostic biomarker for neurologic disorders in the horse. Paired serum and cerebrospinal fluid (CSF) samples ($n = 88$) and serum only ($n = 30$) were obtained from horses diagnosed with neurologic disorders and clinically healthy horses as control. The neurologic horses consisted of equine protozoal myeloencephalitis (EPM) (38 cases) and cervical vertebral malformation (CVM) (23 cases). Levels of pNF-H were determined using an ELISA. The correlation between CSF and serum concentrations of pNF-H was evaluated using Spearman's Rank test and the significance of the difference among the groups was assessed using a nonparametric test. Horses had higher pNF-H levels in the CSF than serum. Horses afflicted with EPM had significantly higher serum pNF-H levels in comparison to controls or CVM cases. The correlation between CSF and serum pNF-H levels was poor in both the whole study population and among subgroups of horses included in the study. There was significant association between the likelihood of EPM and the concentrations of pNF-H in either the serum or CSF. These data suggest that pNF-H could be detected in serum and CSF samples from neurologic and control horses. This study demonstrated that pNF-H levels in serum and CSF have the potential to provide objective information to help in the early diagnosis of horses afflicted with neurologic disorders.

Keywords: Biomarker; Serum; CSF; Phosphorylated neurofilament; Neurological disorders; Horse