

Evolution of serum vitamin E concentration in horses living in a stable affected by EMND.

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Equine Motor Neuron Disease (EMND), a sporadic equine neurodegenerative disorder of unknown aetiology, has been associated with low serum vitamin E concentrations ([vitE]_s). The aim of this study was to follow [vitE]_s in a group of horses, living in an area with high incidence of EMND. Eight horses living in a stable where 2 cases of EMND had previously been confirmed were selected for a longitudinal study. The different [vitE]_s were measured before (samples 1) and after (samples 2) 5 weeks of oral vitamin E supplementation 5g daily, and 9 weeks after stopping supplementation and moving the horses to others premises (samples 3). The mean [vitE]_s was low (1.06 ± 0.68 mg/L) in samples 1 when compared to normal values, it was not statistically different between samples 1 and 2 (0.86 ± 0.62 mg/L), and was significantly ($P \leq 0.005$) higher in samples 3 (1.76 ± 0.78 mg/L) than in both samples 1 and 2. These results demonstrate that [vitE]_s can be low in horses living in an area with high incidence of EMND but not showing clinical signs of EMND, what is probably reflective of an increased oxidative stress predisposing to EMND. Furthermore, the fact that serum vitamin E levels did not significantly increase after massive oral supplementation, but significantly increased after moving the horses to another stable suggests that [vitE]_s depends not only on intrinsic and alimentary factors, but also on environmental and/or management factors. In conclusion, this study further supports the incrimination of low [vitE]_s as a risk factor for EMND and suggests the involvement of environmental and/or management factors in the determination of [vitE]_s in horses.