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132. Brain-Adrenal Axis Hormones Are Altered in the Cerebrospinal Fluid of Infants with Massive Infantile Spasms

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Massive infantile spasms (MIS) is a seizure disorder unique to infants. It is thought to be an age-dependent response of the immature brain to various insults and stressors. MIS responds poorly to conventional anticonvulsants but improves with adrenocorticotrophic hormone (ACTH) and glucocorticoids, both major components of the brain-adrenal axis. We set out to test the hypothesis that infants with MIS have abnormal central nervous system (CNS) levels of brain-adrenal axis hormones. Cerebrospinal fluid (CSF) was obtained from 14 infants with MIS and 12 age-matched controls, and subjected to analyses of corticotropin-releasing hormone (CRH), ACTH, cortisol, and interleukin-1. Levels of ACTH in CSF of infants with MIS were significantly lower

than those of controls (31.1 ± 3.0 vs 59.8 ± 7.1 , $p = 0.01$). Cortisol levels also differed between patients and controls ($p = 0.027$); however, after exclusion of the 2 febrile control infants, this difference was not statistically significant ($p = 0.188$). CRH levels did not differ between groups. CRH levels covaried with age, and fluctuated diurnally, with after-noon and evening levels (55.5 ± 3.8 pg/ml) significantly higher than those obtained earlier in the day (35.4 ± 3.8 pg/ml; $p = 0.002$). Interleukin-1 levels, in the few samples analyzed, were low or undetectable in both infant groups. These results indicate an alteration of specific CNS components of the brain-adrenal axis in infants with MIS. This is in line with the response of the seizures to ACTH and glucocorticoids, and suggests further lines of research into the patho-physiology of MIS.