The role of interleukin 6 in the pathogenesis of hyponatremia associated with Guillain-Barré syndrome

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Dear Editor,

We read with great interest the contribution by Monzón et al. They reported a significant case of a man who had Guillain-Barré syndrome (GBS) with syndrome of inappropriate antidiuretic hormone (SIADH) and speculated that increased sensitivity to vasopressin in the renal tubule and a long-lasting hyposmolality or antidiuretic substances might cause GBS-related SIADH. However, we would like to add a possible pathomechanism in the development of hyponatremia associated with GBS.

According to a previous study by Maimone et al., interleukin (IL)-6, a multifunctional cytokine, might be implicated in the immunopathogenesis of GBS. In their study, serum IL-6 levels were increased in six (26%) of 23 GBS patients, and detectable levels of IL-6 were also found in the cerebrospinal fluid in 13 (57%). Using enzyme-linked immunospot assays, Press et al. found elevated numbers of IL-6-secreting blood mononuclear cells during the acute phase in patients with GBS.

Quite recently and importantly, Swart et al. depicted the cascade-like fashion of events initiated by an inflammatory stimulus (lipopolysaccharides), with tumor necrosis factor-α secreted first, IL-1β second, and IL-6 last, suggesting possible pathways connecting IL-6 to vasopressin release. These pro-inflammatory cytokines are secreted into the systemic circulation to initiate the acute phase response which is involved in the innate immune system.

Furthermore, Mastorakos et al. reported that plasma anti-diuretic hormone levels were elevated after IL-6 injection in cancer patients, suggesting that IL-6 activated the magnocellular ADH-secreting neurons and that it might be involved in SIADH. Activation of the subfornical organ and the organum vasculosum of the lamina terminalis by IL-6 could eventually lead to thirst and increased vasopressin secretion by neurons from the supraoptic nucleus and paraventricular nucleus. The combination of antidiuresis and increased water intake may result in hyponatremia.

Therefore, there is a possibility that IL-6 may play a central role in the pathogenesis of hyponatremia associated with GBS. However, further studies are necessary to elucidate if IL-6 crosses the blood-brain barrier (BBB), or whether lipopolysaccharides cross the BBB and then increase IL-6 locally in the brain in the future.

Conflicts of interest

The authors have no conflicts of interest to declare.


A) COMENTARIOS A ARTÍCULOS PUBLICADOS

Neurotoxicidad por aciclovir-valoraciclovir en enfermos con insuficiencia renal


Sr. Director:

Hemos leído con gran interés el artículo de Quiñones et al. sobre la aparición de cuadros de toxicidad secundarios a la introducción de nuevos tratamientos en pacientes con insuficiencia renal, que inicialmente pueden conducir a diagnósticos erróneos, como los autores bien mencionan.

Uno de los enfermos referidos por estos autores presentó un cuadro de neurotoxicidad por aciclovir. El aciclovir y el valoraciclovir, son ampliamente utilizados en el tratamiento de la infección...