

## Sodium/potassium ratio as a conversion predictor from CIS to MS

Authors: Marlene Arbeu Reyes<sup>1</sup>, Brenda Bertado Cortés<sup>1, 2</sup>, Alejandra Calderón Vallejo<sup>3</sup>.

<sup>1</sup>Department of Neurology

<sup>2</sup>Clinic for Demyelinating Diseases

<sup>3</sup>Head of the Department of Neurology. Hospital de Especialidades “Dr. Bernardo Sepúlveda”. Siglo XXI National Medical Center, Mexican Institute of Social Security.

**Background:** High sodium intake and low potassium intake have been found to be associated with the development of MS, by leading to the induction of Interleukin-17 and the proliferation of Th-17 cells. It is hypothesized that sodium would be higher and potassium lower in MS patients.

**Objective:** To describe if there is a relationship between the sodium / potassium ratio obtained in patients with clinical isolated syndrome (CIS) upon admission and the risk of conversion to multiple sclerosis (MS).

**Methods:** We carried out an observational, analytical, retrospective, case-control study at the “Siglo XXI” National Medical Center, in Mexico City. All hospitalized CIS patients were included for the study protocol, and of them, those who met the diagnostic criteria for MS, from January 2015 to June 2021. Patients with acute or chronic kidney disease, use of diuretics and septicemia.

**Results:** 16 patients were included, two men, 12 women, of which 10 presented conversion to MS, with an average of 10.8 months; Of the 10 patients, 9 of them had a ratio higher than the mean ( $34.64 \pm 4.34$ ), while in those who did not progress, none had a ratio higher than the mean. A relative risk of 7 was obtained, with a confidence interval of 1 to 42 ( $p$  less than 0.05). Likewise, the mean serum potassium concentration in patients with conversion was lower (4.14 meq / L) than that present in those without MS (4.78 meq / L), conditioning a higher Na / K ratio.

**Conclusions:** A serum Na / K ratio at admission higher than the average in patients with CIS is a risk factor for presenting conversion to MS in our population, requiring a more extensive investigation in this regard.