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## Background

In Mexico, there are about 1000 neurologists for 105 million inhabitants, which means that each one has to attend to more than 100,000 people, being evidently insufficient.

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 performed an observational, analytic, retrospective, case-control study at Neurology service of Speciality Hospital of National Medical Center "Siglo XXI", in Mexico City, Mexico.

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.

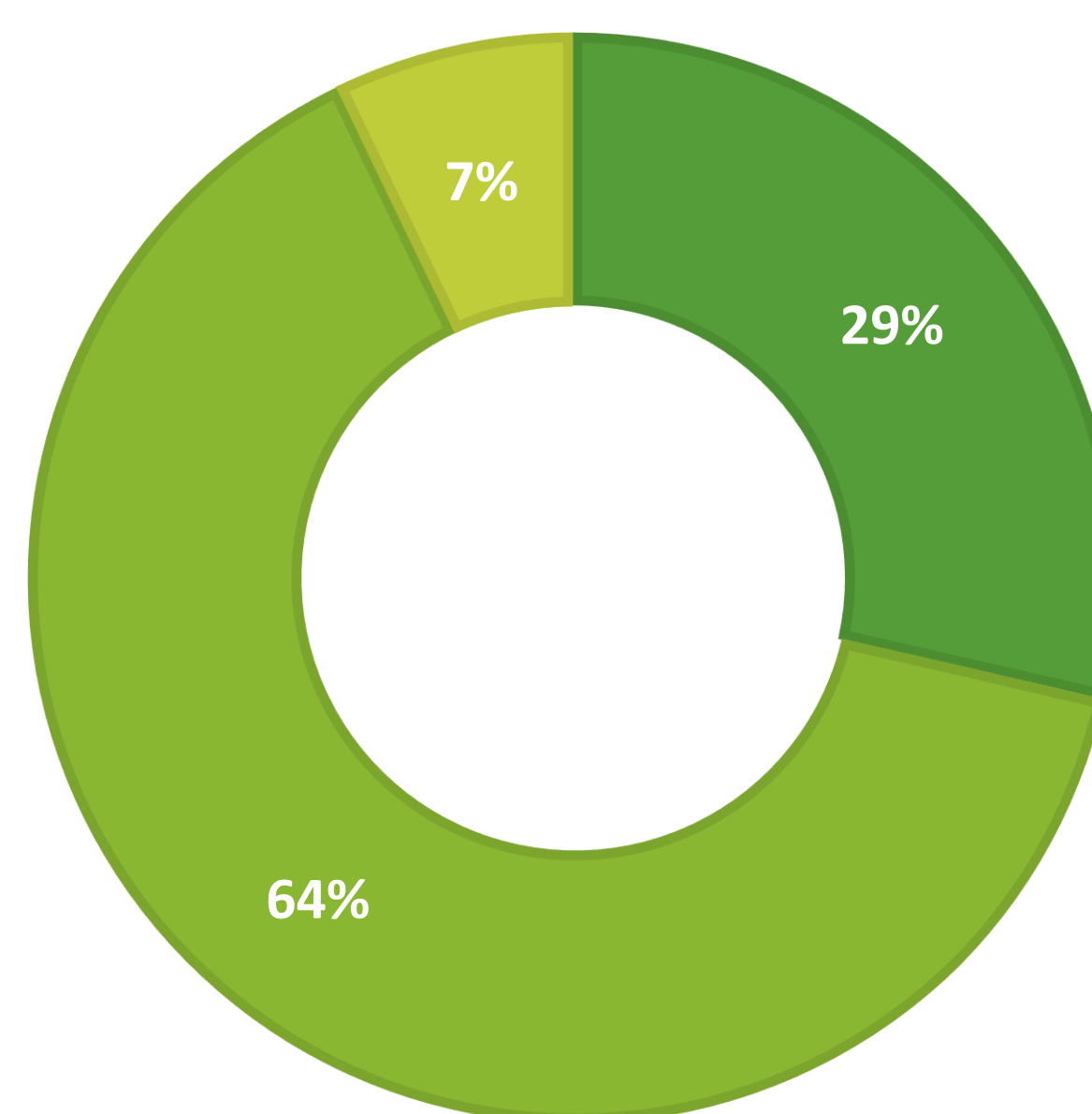
Patients with acute or chronic kidney disease, use of diuretics and septicemia.

## Results

16 patients were included, two men, 12 women, of which 10 presented conversion to MS, with an average of 10.8 months.

### PATIENTS WITH CIS

- Non conversion
- Conversion with high ratio
- Conversion with normal ratio



Of the 10 patients, 9 of them had a ratio higher than the mean ( $34.64 + 4.34$ ), 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.

## Discussion

Higher dietary sodium intake has been associated with more severe disease activity both in experimental autoimmune encephalomyelitis (EAE) and in patients with MS.

However, the role of sodium and other minerals as risk factors of MS is unclear

The idea that neurologic function might be improved if conduction could be restored in CNS demyelinated axons led to the testing of potassium (K<sup>+</sup>) channel blockers as a symptomatic treatment.

## 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.

Therefore, in the context of an environment lacking human resources, it is important to optimize material resources in the diagnosis of MS and the factors that favor the conversion from CIS to MS, which will have a favorable impact on both healthcare and economics given that will allow anticipating the treatment and probably the complications associated with the progression of the disease.

## References

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