

## The Relationship between Diabetes Mellitus and Electrolyte Disorders

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Dear Editor,

We read the article titled “Electrolyte Disorders in Patients with Type 2 Diabetes” by Özsan et al. (1) with great interest. In this study, 323 patients with type 2 diabetes were evaluated, and hypomagnesemia was detected to be the most common electrolyte disorder. When the exclusion criteria were considered, only patients with a history of use of diuretics and medications that leads to blockade of the renin-angiotensin-aldosterone system were excluded from the study (1). There are many case reports and studies that suggest that proton pump inhibitors (PPIs), which are commonly used, are associated with hypomagnesemia. In a study conducted by Danziger et al. (2), it was found that the use of PPI was associated with lower magnesium levels, but this relationship was found to be statistically significant only in patients using diuretics concomitantly. As a result of the decrease in the pH of the small intestine after the use of PPI, the transient receptor potential melastatin 6/7 channels, which are responsible for the absorption of magnesium from the small intestine via active transport, are inhibited, and the absorption of magnesium from the intestines is reduced. Hypomagnesemia associated with the use of PPI occurs mainly in elderly patients and men, but it is usually associated with usage for more than 1 year (3).

When the mean body mass index of the study population was examined, it was observed that the popula-

tion covers the obese group. Obesity was found to be associated with lower magnesium levels, especially in women (4).

When the relationship between diabetes and magnesium levels is evaluated in terms of the cause-and-effect relationship, a vicious circle appears. In case of hypomagnesemia, decreased tyrosine kinase activity results in a decrease in the action of insulin. In case of hyperglycemia, the loss of renal magnesium increases, leading to osmotic diuresis. Even in non-diabetic individuals, higher blood glucose levels were associated with lower magnesium levels (5).

Another point to be noted is that alcohol use was not mentioned in the study population. The most common electrolyte disorder in chronic alcohol use is hypomagnesemia, and its primary cause is a decrease in oral magnesium intake. In addition, due to either respiratory alkalosis developing after alcohol use or catecholaminergic charge increasing in the case of alcohol withdrawal, the intracellular shift of magnesium also causes hypomagnesemia (6).

In conclusion, the low level of magnesium is a commonly encountered electrolyte disorder in diabetic patients, and it should be kept in mind that hypomagnesemia may be caused by many diabetes- and non-diabetes-associated factors.



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