Reviewer’s report

Title: Impact of diuretic therapy-associated electrolyte disorders present on admission to the emergency department: a cross-sectional analysis

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Reviewer: Marcus Saemann

Reviewer’s report:

In their study, Arampatzis and coworkers aimed to investigate the prevalence of diuretic therapy and electrolyte disorders associated with diuretic therapy among patients admitted to an emergency department. The authors were able to include more than 22,000 patients in their analysis and found a prevalence of diuretic therapy of 11-12%. Also, they gathered data on the various substances used and calculated odds ratios for the prevalence rates of the various diuretic substances, showing interesting results. Moreover, it was shown that both dysnatremias and dyskalemias were associated with an increase in in-hospital mortality.

Given the broad spectrum of indications for diuretic therapy and the large group of patients taking the various diuretic substances, one might think that there is plenty of literature on this subject. Indeed, I was surprised that the present study is probably the first investigating the likelihood for the presence of disorders of serum sodium and potassium in patients various diuretic medications ranging from loop diuretics to potassium sparing diuretics and aldosterone antagonists.

The study aim is defined adequately and the methods and statistics are sound. The findings are important to a broad group of physicians, including specialists but also physicians in primary care.

I have only some minor comments:

1. Abstract, Background section: Study aims should be given in one clear sentence.
2. “Thiazides” should be changed to thiazide diuretics.
3. I see that it is always a problem in a large study as this, but do the authors have more detailed information on the patients co-morbidities? This information could be of great use.
4. Mean serum potassium was higher in patients under diuretic medication than in those who took no diuretics (although Hypokalemia was seen more frequently in patients on diuretics, which makes sense). What is the authors’ explanation for this finding?
5. Maybe one or two sentence in the discussion section on the new vasopressin antagonists and their expected impact on electrolyte homeostasis would further improve this section.

Quality of written English: Acceptable
**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests