

Newsletter GISMO

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Anno IX – Numero XXXII – 2021

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HYPONATREMIA, HYPOKALEMIA AND FRAGILITY FRACTURES IN OLD PATIENTS: MORE THAN AN ASSOCIATION?

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SUMMARY

Low sodium level is associated with higher risk of fragility fractures, and with higher mortality rate, however after correction for confounding factors we conclude that hyponatremia and hypokalemia have to be considered as hallmarks of poor health rather than independent players in the fracture risk.

ABSTRACT.

Purpose. Hyponatremia and hypokalemia are common amongst elderly and have been associated with osteoporosis, we evaluate the role of these electrolytes as risk for fragility fractures.

Methods. This study is divided in two parts: one retrospective, one prospective. We retrospectively collected data on patients admitted at emergency for femoral fragility fractures (Fx) or for acute myocardial infarction (AMI) or in election for hip/knee prosthesis for osteoarthritis (OA). Age, sex, serum sodium, potassium, creatinine and co-morbidities were recorded.

We enrolled prospectively in-patients from our unit: age, sex, comorbidities, drugs, fragility fractures were recorded. Blood electrolytes were measured. Cognitive function, nutrition, muscular strength and balance were evaluated by standard tests. The mortality rate was recorded with a follow-up after hospital discharge.

Results. The retrospective study included 2166 subjects: 702 Fx and 1464 controls (907 AMI, 557 OA), hyponatremia was more prevalent in Fx than in controls ($p=0.002$), whereas hypokalemia was not significantly different. The prevalence of hyponatremia was similar in Fx and AMI, whereas it was higher in Fx as respect to OA ($p<0.001$) as well as hypokalemia ($p<0.001$). Sodium decrease was associated with higher fracture risk.

In the prospective study, the hyponatremic patients were more likely malnourished and presented a higher prevalence of fragility fractures ($p=0.008$). Hyponatremic patients had a higher mortality after hospital discharge (HR=1.80, $p=0.005$), however this association disappear after correction for confounding variables.

Conclusions. We suggest that hyponatremia and hypokalemia have to be considered as a marker of poor health more than an independent fracture risk.

KEY WORDS: hyponatraemia, fracture, osteoporosis, sodium, potassium.