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# SUN-456 Serum Sodium Is Inversely Related to Frailty and Bone Mineral Density (BMD) in Human Immunodeficiency Virus (HIV)-Infected Patients

Sara De Vincentis, MD, Maria Chiara Decaroli, MD, Chiara Diazzi, MD, PhD, Daniele Santi, MD, PhD, Federica Carli, MD, Stefano Zona, MD, Giovanni Guaraldi, MD, PhD, Vincenzo Rochira, MD, PhD

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## Abstract

**BACKGROUND:** HIV-infected patients are predisposed to an increased risk of hyponatremia<sup>1,2</sup>. In healthy population, low sodium is associated with impaired health status and reduced BMD<sup>3</sup>, but less is known about this association in HIV-infection.

**AIM:** To investigate the relationship between serum sodium, frailty and BMD in a large cohort of HIV-infected patients. **METHODOLOGY:** Retrospective study on the large HIV-infected patients cohort of the Multidisciplinary Metabolic Clinic of Modena, including all adult (age $\geq$ 18 years) patients whose serum sodium was assessed from 2007 to 2017. Laboratory ranges of normality for sodium (136–146 mEq/L) were used to subdivide records in hyponatremic (HypoNa), hypernatremic (HyperNa) and normonatremic (NormoNa) groups. BMD was measured at total body, lumbar spine (L1 to L4) and total hip using a Hologic QDR-2000 densitometer (DXA). Frailty was calculated through 38-item multimorbidity frailty index. **Statistical analysis:** Parameters were not normally distributed and Kruskal-Wallis test, followed by

Dunn's test, was used to compare continuous variables. Correlations were performed using linear regression models. **RESULTS:** 1862 HIV-infected patients (1271 (68.3%) males and 591 (31.7%) females) were enrolled (mean age  $46.3 \pm 7.8$  years; average duration of HIV-infection  $15.4 \pm 7.7$  years). Mean serum sodium was  $139.4 \pm 2.6$  mEq/L. 80 (4.3%) HypoNa, 6 (0.3%) HyperNa and 1776 (95.4%) NormoNa were found. HypoNa showed a significantly longer duration of HIV-infection ( $p=0.005$ ) and higher frailty index ( $p<0.0001$ ) compared to NormoNa, while they did not differ for age and duration of HAART ( $p=0.8.54$  and  $p=9.52$ , respectively). Frailty score and serum sodium were inversely related, even after the exclusion of HyperNa group ( $R=-0.144$ ,  $R^2=0.02$ ,  $p<0.0001$ ). Considering results at DXA examination, BMD was normal in 34.0% and reduced in 66.0% (51.7% osteopenia, 14.3% osteoporosis). Total body BMD, but neither femoral nor lumbar, directly correlated with serum sodium ( $R=0.057$ ,  $R^2=0.003$ ,  $p=0.015$ ) and it was significantly lower in HypoNa compared to NormoNa ( $p=0.047$ ). **Figure 1 CONCLUSIONS:** This study shows that serum sodium is inversely related to frailty, suggesting its potential role as reliable and cheap marker in the HIV-infection follow-up. Furthermore, we demonstrate a direct correlation between sodium and body BMD in HIV-infected patients, similarly to general population. **REFERENCES**<sup>1</sup>Braconnier P et al. Hyponatremia is a marker of disease severity in HIV-infected patients: a retrospective cohort study. *BMC Infect Dis.* 2017 Jan 26;17(1):98. <sup>2</sup>Shu Z et al. HIV/AIDS-related hyponatremia: an old but still serious problem. *Ren Fail.* 2018 Nov;40(1):68-74. <sup>3</sup>Fehlberg EA et al. Associations between hyponatraemia, volume depletion and the risk of falls in US hospitalised patients: a case-control study. *BMJ Open.* 2017 Aug 7;7(8):e017045.

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