IS THERE A ROLE FOR SOLUBLE α-KLOTHO IN KIDNEY AND IMMUNE DYSFUNCTION OF HIV-INFECTED PATIENTS?

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INTRODUCTION AND AIMS

Klotho is an anti-aging protein with pleiotropic functions, including regulation of energy metabolism, anti-inflammatory and anti-oxidative effects, modulation of ion transport, and regulation of mineral metabolism. Recently, a protective effect of klotho on aging-related chronic diseases was reported in non-HIV-infected adults.

The present work aimed to assess the serum and urinary levels of soluble α-klotho and its relation with kidney and immune function in a HIV positive population.

METHODS

Study design: Cross sectional study

Setting: Outpatient HIV+ population of Infectious Diseases Department

Population studied: Adult patients under stable Anti-retroviral Therapy (ARVT)

Exclusion criteria: <18 or >80 years old; CKD 5D; Pregnancy

Primary endpoint: Renal disease (eGFR <60mL/min)

Definitions: Serum and urinary levels of α-klotho were measured by ELISA.

Renal function was evaluated by creatinine and cystatin C based equations by MDRD and CKD-EPI.

Data collection: Clinical data was registered at admission and laboratory data was collected after 4 to 6 months of follow-up.

Statistic Analysis. Data is presented as mean ± SD or median and interquartile range (IQR) for continuous variables. Chi-squared test was used for categorical variables and independent samples t-test was used for continuous variables.

Patients were categorized by the 50th percentile of serum klotho level and the analysis was performed comparing clinical and laboratorial variables.

All statistics were two-tailed and a p value <0.05 was considered significant.

RESULTS

Tab.1 - Population Characterization (N = 169)

Age (± sd)	55 (SD 10,0)
♂ (%)	66%
African ancestry (%)	25%
HIV1 (%)	88%
CD4 + (cel/uL)	501 (IQR 341-722)
HIV CDC Stage (%)	A – 48 B – 19 C – 33
eGFR CKD-EPI (P_{25}-P_{75})	82 (IQR 67-92)
eGFR MDRD (P_{25} – P_{75})	81,9 (IQR 69,4-92,1)
Fe Pi (%)	21 (IQR 14-25)
Serum α-klotho (pg/mL)	956 (IQR 717-1214)
Urinary α-klotho (pg/mL)	222 (IQR 46-525)

FE Pi – Fractional excretion of phosphorus

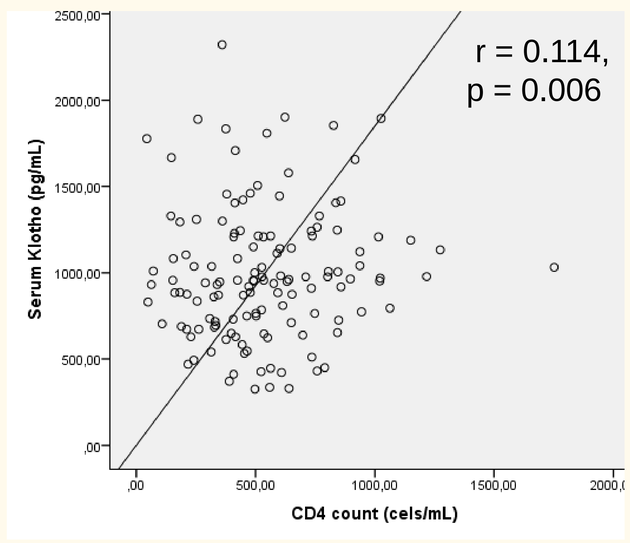

Fig 1. Correlation between serum klotho and CD4 count

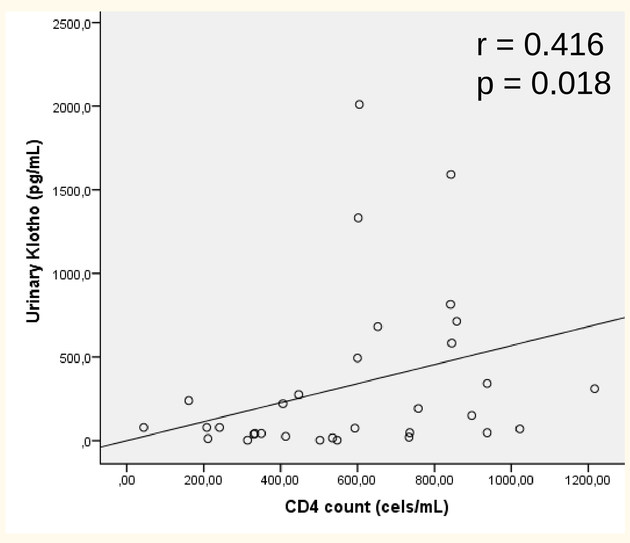

Fig 2. Correlation between urinary klotho and CD4 count

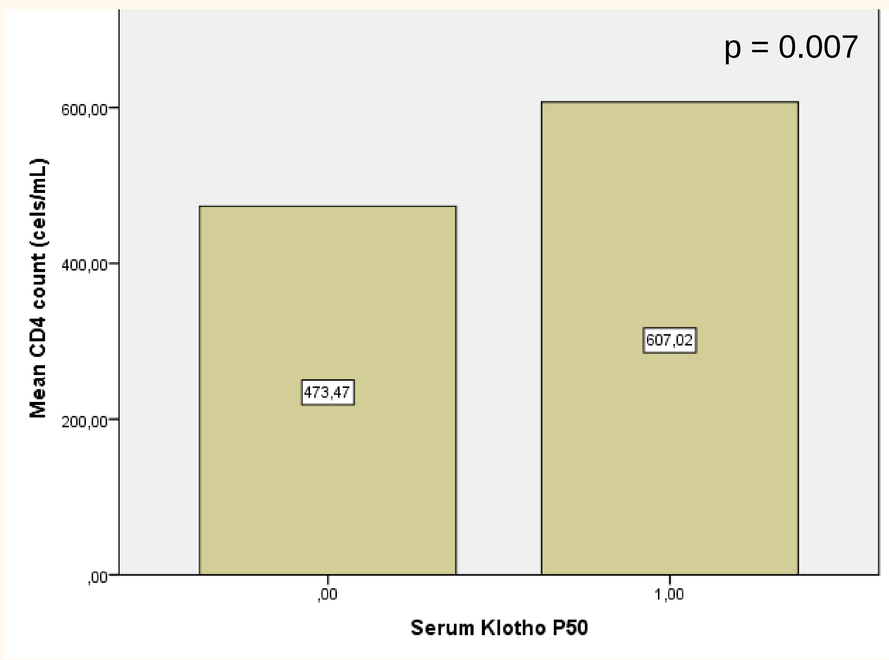

Fig 4. CD4 count according to median α-klotho levels

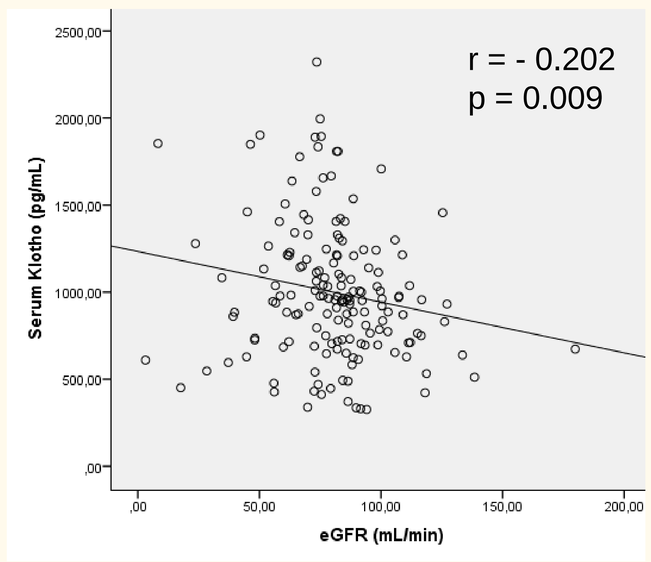

Fig 3. Correlation between serum klotho and eGFR by MDRD

There was no correlation between urinary klotho and eGFR
No correlation was found between age or FePi and both serum and urinary α-klotho.

CONCLUSIONS

In our HIV positive population, both serum and urinary α-klotho levels were positively associated with CD4 count but surprisingly not with age nor FePi, as previously reported for other populations. Our findings suggest an interplay between the immune system and soluble α-klotho that seems to overcome the effect of aging and kidney dysfunction.

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Jacek M. Witkowski. Monika Soroczyńska-Cvbula. Ewa Brvl. et al. **Klotho—a Common Link in Phvsiological and Rheumatoid**