Body mass index but not visceral adiposity index is related to vitamin D levels in overweight HIV-patients

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Introduction

Several studies have shown that body mass index (BMI) and visceral adiposity index (VAI) are inversely related to serum 25-hydroxy vitamin D (25OHD) in general population.
There is a lack of studies performed in HIV population, whose body fat distribution is altered by lipodystrophy or liver disease.
We aimed to analyze the cross-sectional associations of VAI and BMI with the 25OHD concentration and parameters related to calcium-phosphorus metabolism in HIV-infected patients.

Methods/ Design

46 male patients with HIV-infection and BMI >25 Kg/m^2 were included.
Sex-specific for males VAI was calculated using a model of adipose distribution (MOAD) defined as: [Waist Circumference/39.68+1.88*(BMI)]*(Triglycerides/1.03) *(1.31/HDL).
VAI, BMI and 25OHD were divided into two groups at the 75th, 50th and 50th, percentiles respectively, according to previous studies.

Results

The mean age of the cohort was 43.5 ± 12.6 years. Clinical and analytical data are shown in TABLE 1.
Levels of 25OHD were significantly lower among patients with higher BMI (p = 0.034) but non-significant differences were observed between groups of VAI (≥75th percentile vs <75th percentile; p=0.502). Though levels of i-PTH and calcium were higher among patients with higher BMI, no significant differences were observed (p>0.05 in all cases). Also, no significant differences in calcium-phosphorus metabolism according to VAI percentile were found. (TABLE 2 and 3).

Table 1: Clinical and analytical data.

Gender (male;%)	100
Age (years; mean ± SD)	43.5 ± 12.6
BMI (Kg/m^2; mean ± SD)	28.9 ± 3.8
BMI (p25)	25.9
BMI (p50)	28.1
BMI (p75)	30.4
VAI (ng/mL; mean ± SD)	5.7 ± 3.9
VAI (p25)	2.9
VAI (p50)	4.9
VAI (p75)	8.1
Vitamin D (mean ± SD)	30.1 ± 10
Vitamin D (p25)	26.9
Vitamin D (p50)	32.4
Vitamin D (p75)	37.6

SD: standard deviation; BMI: body mass index; VAI: visceral adiposity index

Table 2: Variables related to calcium-phosphorus metabolism according to BMI percentile.

	BMI ≥p50	BMI <p50	p
Calcium (mg/dL)	9.7 ± 0.3	9.6 ± 0.4	NS[a]
Phosphorus (mg/dL)	2.8 ± 0.5	2.9 ± 0.6	NS[a]
i-PTH (pg/mL)	52.9 ± 22.9	50.1 ± 23.3	NS[a]
25OHD (ng/mL)	27.2 ± 9.2	32.9± 10.1	0.034[a]

A) from U Mann-Whitney; BMI: body mass index; NS: not significant.

Table 3: Variables related to calcium-phosphorus metabolism according to VAI percentile.

	VAI ≥p75	VAI <p75	p
Calcium (mg/dL)	9.5 ± 0.3	9.7 ± 0.4	NS[a]
Phosphorus (mg/dL)	2.8 ± 0.6	2.9 ± 0.6	NS[a]
i-PTH (pg/mL)	50.2 ± 23.3	51.9 ± 23.1	NS[a]
25OHD (ng/mL)	30.9 ± 13.1	29.5 ±13.6	NS[a]

a) from U Mann-Whitney; VAI: visceral adiposity index; NS: not significant.

Conclusions

According to our results, we cannot conclude that the inverse relationship between 25OHD and VAI described in general population, can be observed in our HIV cohort when MOAD formula was used.

Nevertheless, the inverse relationship with BMI is present.

Anyway, repercussions on calcium-phosphorus metabolism were inappreciable.