

# Role of vitamin D on a cohort of patients with obstructive sleep apnea (OSA) with and without excessive daytime sleepiness (EDS).

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## Introduction

Measurement of serum **25-hydroxyvitamin D (25[OH]D)** is the best test to determine vitamin D status. Levels of 25(OH)D are interpreted as follows: 21-29 ng/mL (52.5-72.5 nmol/L): Vitamin D insufficiency, < 20 ng/mL (< 50 nmol/L): Vitamin D deficiency.

Vitamin D deficiency has been recently associated with different sleep disorders, such as sleep apnea and restless leg syndrome (RLS) (1). An increasing number of papers has been recently published concerning the contribution of D3 deficiency to OSA severity. Low 25 (OH) D concentrations are also associated with type 2 diabetes mellitus, metabolic syndrome, and obesity, all of which are frequently found in patients with OSA. (2,3) Only a few studies have studied the association between lower 25(OH) D levels and OSA and daytime sleepiness, and these have reported inconsistent results. (4, 5,6).

## Methods

We enrolled all **sleep apnea patients** referred to our sleep center in the last year who accepted to test their **vitamin D levels on blood**. All patients were diagnosed for **OSA** according to the **Apnea/hypopnea index (AHI>5)** by ambulatory cardiorespiratory monitoring. OSA has been classified as mild (AHI>5 and < 15), moderate (AHI >=15 and <25) and severe (AHI >= 25). We collected all anthropometric data, **Epworth Sleepiness Scale (ESS) scores**, comorbidities. Uni and multivariate analysis were performed.

## Results

- Two hundred fifteen patients** (140 male), mean age 60.9 y.o (range 16-86), mean BMI 31.1 (range 19.1-50), mean AHI 33.4 (range 6-95) were enrolled.
- Ninety-five out of 215 patients reported EDS with mean ESS score of 13.4+/-3.1.
- Mean vitamin D values were 22.8 (n.v > 30).
- Patients with ESS≥10 had lower vitamin D values than patients without EDS (p<0.1).
- Comorbidities and general data** were reported on fig 1 and 2 in order to vitamin D levels.

- Pearson coefficient** showed an **inverse correlation** between **BMI** and **vitamin D values** (-0.03) and, less significantly, between **AHI** and **vitamin D values** (-0.1).
- Moreover, **lower vitamin D values** corresponds to **more daytime sleepiness** (-0.01).

- Regression analysis showed an inverse correlation between AHI and vitamin D values (r=0.1) and between ESS and vitamin D values (r=0.06).

- These results were also confirmed through regression analysis showing an inverse correlation between AHI and vitamin D values (r=0.1) and between ESS and vitamin D values (r=0.01).

Fig 1

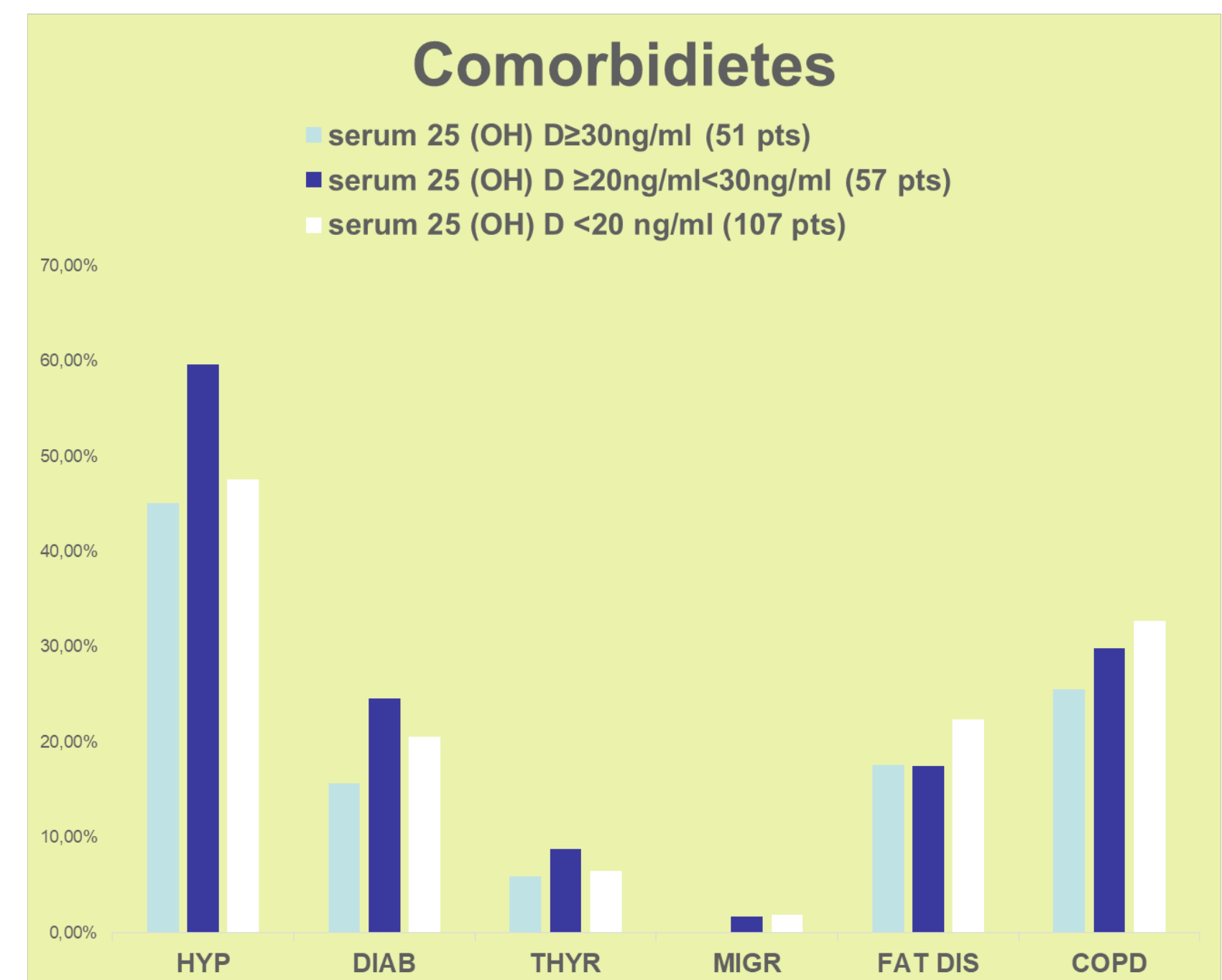
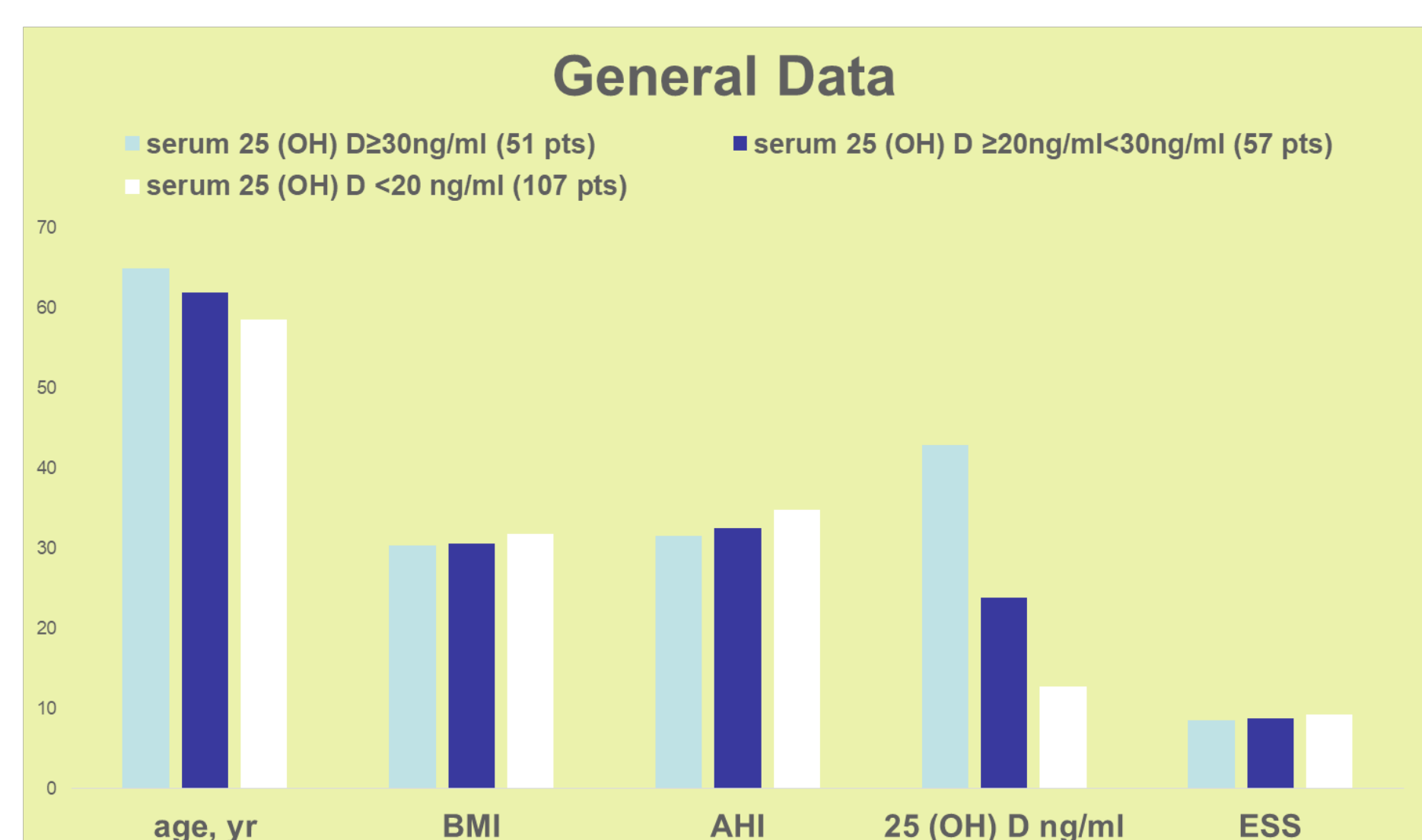


Fig 2



## Conclusions

In our sample, vitamin D values are strictly and inversely correlated with OSA severity and EDS. Daytime sleepiness could be correlated to specific hypoxic/inflammatory pathways due to hypovitamin D and to hypersomnia OSA related. Vitamin D supplementation could be useful to the management of daytime symptoms of OSA.

### Bibliografia

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