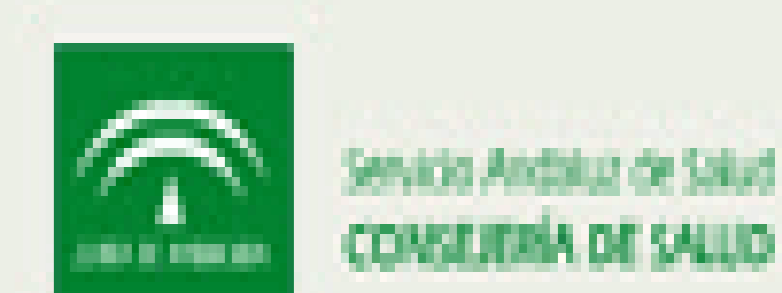


VITAMIN D DEFICIENCY IN OBESE CHILDREN AND THE RELATIONSHIP WITH INSULIN RESISTANCE AND METABOLIC SYNDROME

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Background: Vitamin D is a pleiotropic hormone the deficiency of which is related with extraskeletal manifestations such as insulin resistance and cardiovascular risk disease

Objective and hypotheses:

To investigate the levels of Vitamin D in a sample of children with obesity and to evaluate the relationship between carbohydrate metabolism and Metabolic Syndrome (MS).

Method:

In this prospective cross-sectional study, 189 children aged 5-14 years, with BMI>2SD, were evaluated from 1st January 2012 to 31st May 2015.

Anthropometric data used: weight, height, BMI, abdominal circumference and blood pressure. Serum 25-hydroxyvit D, was measured. For lipid metabolism, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol and triglyceride levels were determined. For glucose metabolism, fasting plasma glucose levels and insulin were measured after 12 hours of fasting performing an oral glucose tolerance test. Serum 25-hydroxyvit D levels were considered: appropriate values>30ng/dl, deficiency <29 ng/dl and insufficiency levels<20ng/dl. Classification of MS was accordance with that of the International Diabetes Federation. A multiple regression analysis was performed.

Results:

189 patients were included (48%male; 33.4%prepubertal), with a mean age 11.1 years(CI 9.8 to12.5). 36 patients presented within MS(21%).

We found higher incidence of deficiency and insufficiency VitD levels in pubertal children than in prepubertal (25% and 48% vs.10% and 26% respectively) p <0.001. Prepubertal children (50%) presented HOMA>2.5 and pubertal children (73.4%) within HOMA> 3 was found (P <0.05).

78% of children with VitD insufficiency presented HOMA> 3 and only 22% had HOMA<3 (P = 0.0001). 15% of patients with at least 3 criteria of MS(36/169), had levels of 25-hydroxyvit D > 30ng/dl. We found a negative correlation between HOMA and 25-hydroxyvit D among prepubertal and pubertal children(P = 0.01)

n	189
Gender	Male 48%, Female 52%
Age(median)	11,1(IC 9,8- 12,5)years
Abdominal Circunference	92,5+/-3cm
IMC	29,6+/-1,6 kg/m ²
Insulin (mUI/ml)	16,4+/-1
HOMA	3,15+/-0,27
CA: >P: 90	95%
HDL>40 mg/dl	17%
Calcium(mg/dl)	9,8(+/-0,2)
Phosphate(mg/dl)	4,8 +/-0,11
25OH-VitaminD	24,2+/-2,8
TG>150 mg/dl	15%
ATG	28%

	25OH-VITD INSUFFICIENCY	25OH-VITD DEFICIENCY	
PREPUBERTAL	26%	10%	P<0,001
PUBER	48%	25%	P<0,001

	HOMA>3	
PREPUBERTAL	50%	P<0,05
PUBER	73,4%	P<0,05

	25OH-VIT D NORMAL	25OHVITD INSUFFICIENCY	25OH-VITD DEFICIENCY	
PATIENTS WITH>3 CRITERIA METABOLIC SYNDROME	15%	35%	50%	P<0,001

	HOMA>3	HOMA<3	
INSUFFICIENCY 25OH-VITD	78%	22%	P<0,0001

25OH-VIT D	HOMA	
	r	p
	-0,5	0,01

Conclusion:

Our data support that serum 25-hydroxyvit D level may be inversely associated with insulin resistance. Also patients within MS criteria have significantly lower levels of 25-hydroxyvit D.

