

THE RELATIONSHIP BETWEEN ACANTHOSIS NIGRICANS AND VITAMIN D IN OBESE CHILDREN AND ADOLESCENTS

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INTRODUCTION

Studies show that vitamin D deficiency can have negative effects on glucose homeostasis, although the mechanism for this is still unclear. The possible mechanism may be related to the presence of vitamin D receptors and its metabolizing enzymes in insulin-sensitive cell types, such as pancreatic cells and adipocytes.

AIM

The aim of this study is to compare how serum 25-OH D level and HOMA-IR index are related to acanthosis nigricans (AN) and which of the two is a better marker for acanthosis nigricans (AN).

METHOD

- The study included 115 obese children with a BMI > 95th percentile.
- After detailed history, anthropometric evaluation and physical examination of 115 cases presenting to our Pediatric Endocrinology clinic, we divided the cases into two groups according to whether they had acanthosis nigricans or not.
- Clinical examinations included insulin resistance measured by HOMA-IR ([fasting blood glucose (mmol/L) x serum fasting insulin (mIU/L)] / 22.5) and serum 25-OH D level.

RESULTS

- Mean weight and BMI SDS were 72.31 kg and 2.98, respectively, and our sample included 47 patients with AN, and 68 patients without AN.
- The mean HOMA-IR and serum 25-OH D levels of the patients with acanthosis nigricans were 5.11 and 14.46 ng/mL, respectively.
- The mean HOMA-IR and serum 25-OH D values of the patients who did not have acanthosis nigricans were 5.19 and 18 ng/mL, respectively.
- The serum 25-OH D levels of patients with AN were significantly lower than those of patients who did not have AN (p = 0.032).
- In contrast, the HOMA-IR indices of patients with AN and without AN were not significantly different from each other (p = 0.866).
- While patients with AN had significantly lower serum 25-OH D levels, the HOMA-IR index was not significantly different between children with and without AN.
- The results further indicate that serum 25-OH D level is more strongly related to AN than HOMA-IR.

Table 1. Anthropometric and evaluation of the cases

	Mean	Std. Dev.	Min	Max
Age	13.52	2.21	9.94	18
Weight (kg)	72.31	16.66	40.8	137.4
Height (cm)	158.45	9.33	135	186
Height SDS	0.46	1.05	-2.45	3.6
BMI (kg/m ²)	28.48	4.27	22.12	47.66
BMI %	97.07	2.97	87.08	99.99
BMI z score	2.98	0.94	2.02	5.69
RBMI	141.27	17.53	120.05	217.85

Table 2. The levels of 25-OH Vitamin D in patients with or without acanthosis nigricans (AN)

	AN (+)	AN (-)	P-value
Number of patients	47	68	
25-OH Vitamin D (ng/ml)	14.46	18	0.032
HOMA-IR index	5.11	5.19	0.866

Table 3. The comparison of association strength between AN and 25-OH Vitamin D levels-HOMA-IR index

	25-OH Vitamin D (ng/ml)				Homa-IR			
	Mean	Std. Dev.	P-value	R-squared	Mean	Std. Dev.	P-value	R-squared
AN (-)	18	9.21			5.19	2.65		
AN (+)	14.46	6.88	0.032	0.04	5.11	2.19	0.866	0.0003

CONCLUSIONS

- Our results suggest that vitamin D insufficiency and vitamin D deficiency should be investigated in patients with acanthosis nigricans.
- Our results further imply that a decrease in serum 25-OH D level is observed before an increase in HOMA-IR index in patients with acanthosis nigricans.

REFERENCES

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