

Fetuin A Serum Levels in Children with Nonalcoholic Fatty Liver Disease (NAFLD)

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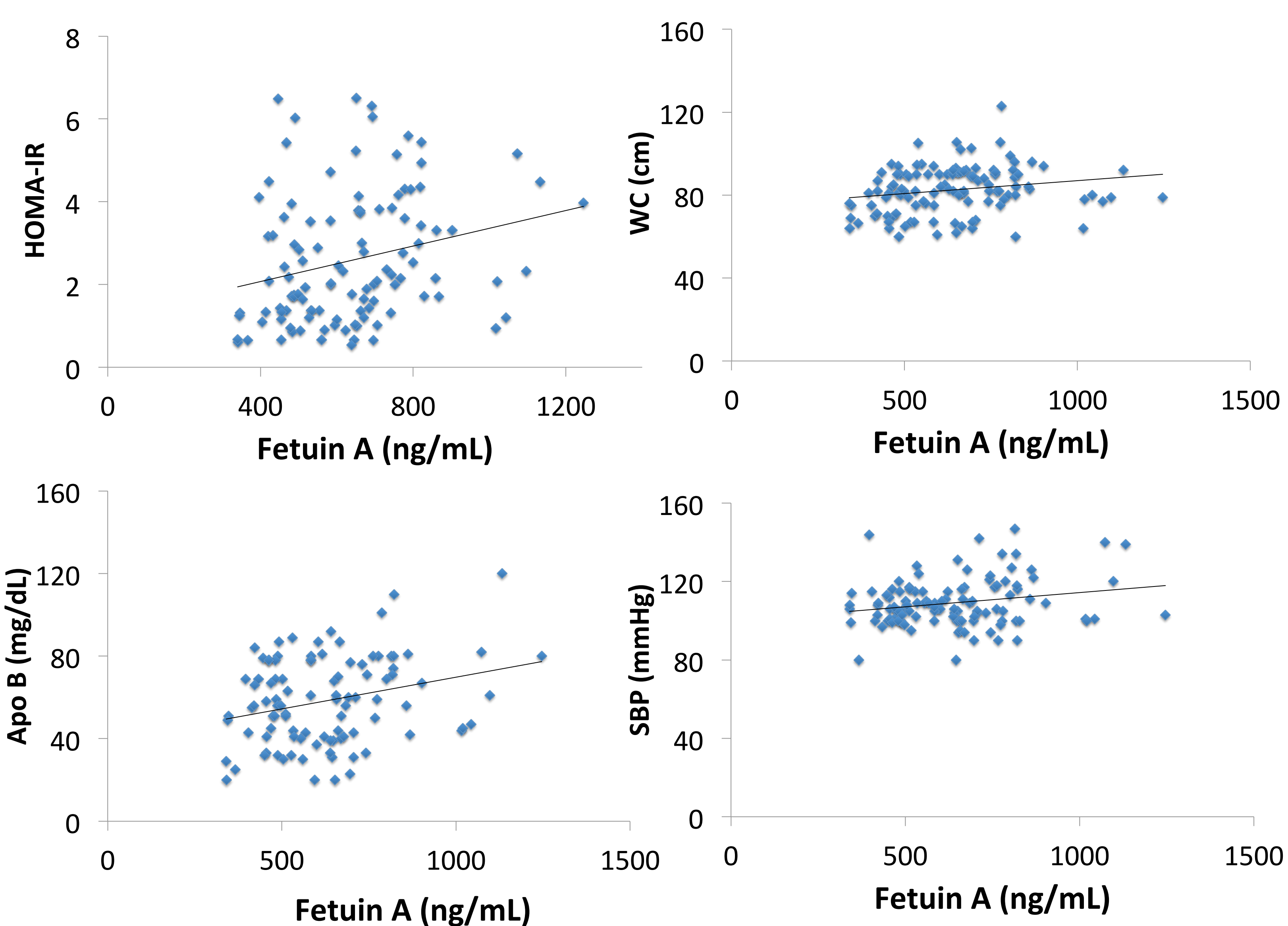
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Background

Fetuin A is a hepatokine known as a natural inhibitor of the insulin receptor tyrosine kinase and is associated with insulin resistance and NAFLD. Studies on adults provided conflicting results regarding the link between fetuin A and the severity of liver damage in NAFLD. Data on children are limited. **Objective:** Our aim was to investigate the relationship between fetuin A, metabolic parameters and NAFLD in obese children.

Methods

118 obese subjects (48F/70M), aged 9.3 ± 2.4 yrs, were studied. Anthropometry, OGTT, biochemical measurements and fetuin A serum levels were assessed. In 19 children the presence of NAFLD was investigated by ultrasonography (US). 7/19 children had a normal liver US (group 1), whereas 12/19 were diagnosed as NAFLD (group 2). Ninety-nine children underwent liver biopsy to assess the presence of NASH: 14 were diagnosed as “NASH” (group 3) and 85 as “not NASH” (group 4). Differences between groups were assessed by Mann-Whitney U-test.



	Correlation (R)	Significance (P)
Age	0.25	<0.01
WC	0.2	<0.05
SBP	0.2	<0.05
Apolipoprotein B	0.27	<0.01
Fasting plasma glucose	0.2	<0.05
Fasting plasma insulin	0.3	<0.005
OGTT mean insulin	0.26	<0.05
2h post-load insulin	0.26	<0.01
HOMA-IR	0.3	<0.01
ISI	-0.3	<0.01

Results

Fetuin A levels were related to age ($r=0.25$, $P<0.01$), waist circumference (WC) ($r=0.2$, $P<0.05$) systolic blood pressure ($r=0.2$, $P<0.05$), apolipoprotein B ($r=0.275$, $P<0.01$), fasting plasma glucose ($r=0.2$, $P<0.05$) and insulin levels ($r=0.3$, $P<0.005$), OGTT mean insulin ($r=0.26$, $P<0.05$), 2h postload insulin ($r=0.26$, $P<0.01$), HOMA-IR ($r=0.3$, $P<0.01$) and ISI ($r= -0.3$, $P<0.01$).

Stepwise regression analysis revealed that among age, BMI SDS and WC, fetuin A was the major predictors of 2h postload insulin levels (adj R^2 0.105).

Group 2 tended to have significantly higher levels of fetuin A (723.2 ± 102.6 $\mu\text{g/mL}$) than group 1 (641.1 ± 81.4 $\mu\text{g/mL}$) ($p=0.056$). No significant differences between groups were found in age and BMI (Table 1).

Among children who underwent liver biopsy no significant difference between group 3 and 4 was found in fetuin A serum levels (Table 2).

	Group 1	Group 2	P
Nr	7	12	
Age (yrs)	11.9 ± 1.9	12.1 ± 2.6	ns
BMI (SDS)	2.9 ± 1.1	3.2 ± 1.3	ns
% Male	85.7	58.3	ns
Fetuin A (ng/mL)	641.1 ± 81.4	723.2 ± 102.6	0.056

Table 1. Comparison between patients with or without NAFLD diagnosed by US.

	Group 3	Group 4	P
Nr	14	85	
Age (yrs)	9.56 ± 2.02	8.58 ± 1.95	ns
BMI (SDS)	2.47 ± 1.12	2.69 ± 0.86	ns
% Male	50	58.8	ns
Fetuin A (ng/mL)	606.53 ± 156.37	631.87 ± 193.79	ns

Table 2. Comparison between patients with different degrees of NAFLD (NASH/not NASH) diagnosed by liver biopsy

Conclusions

Fetuin A may represent a biomarker of NAFLD in obese children, though not related to the severity of the disease.