

Hepatic steatosis influences significantly the cardiovascular risk in children with metabolic syndrome

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Background:

Despite the metabolic syndrome in pediatrics is a well recognized entity, there is no unanimous consensus on exact value of MS to predict long-term cardiovascular risk. Hepatic Steatosis (HS) is another emerging condition associated to pediatric obesity.

Objective and hypotheses: To evaluate the prevalence of MS in a large pediatric obese population, assess the relationship between MS and HS, and evaluating the possible role of HS in defining the syndrome and modulating the cardiovascular impact.

Methods

we studied 803 overweight and obese children (395 girls and 408 boys, mean age 9.43±2.5 yrs, BMI z-score 2.23±0.53).

AHA modified criteria for MS

- BMI ≥ 90th percentile
- Hypertension (SBP and/or DBP > 90th pc)
- HDL < 10th percentile
- Triglycerides ≥ 110 mg/dl
- Fasting Blood Glucose ≥ 100 mg/dl

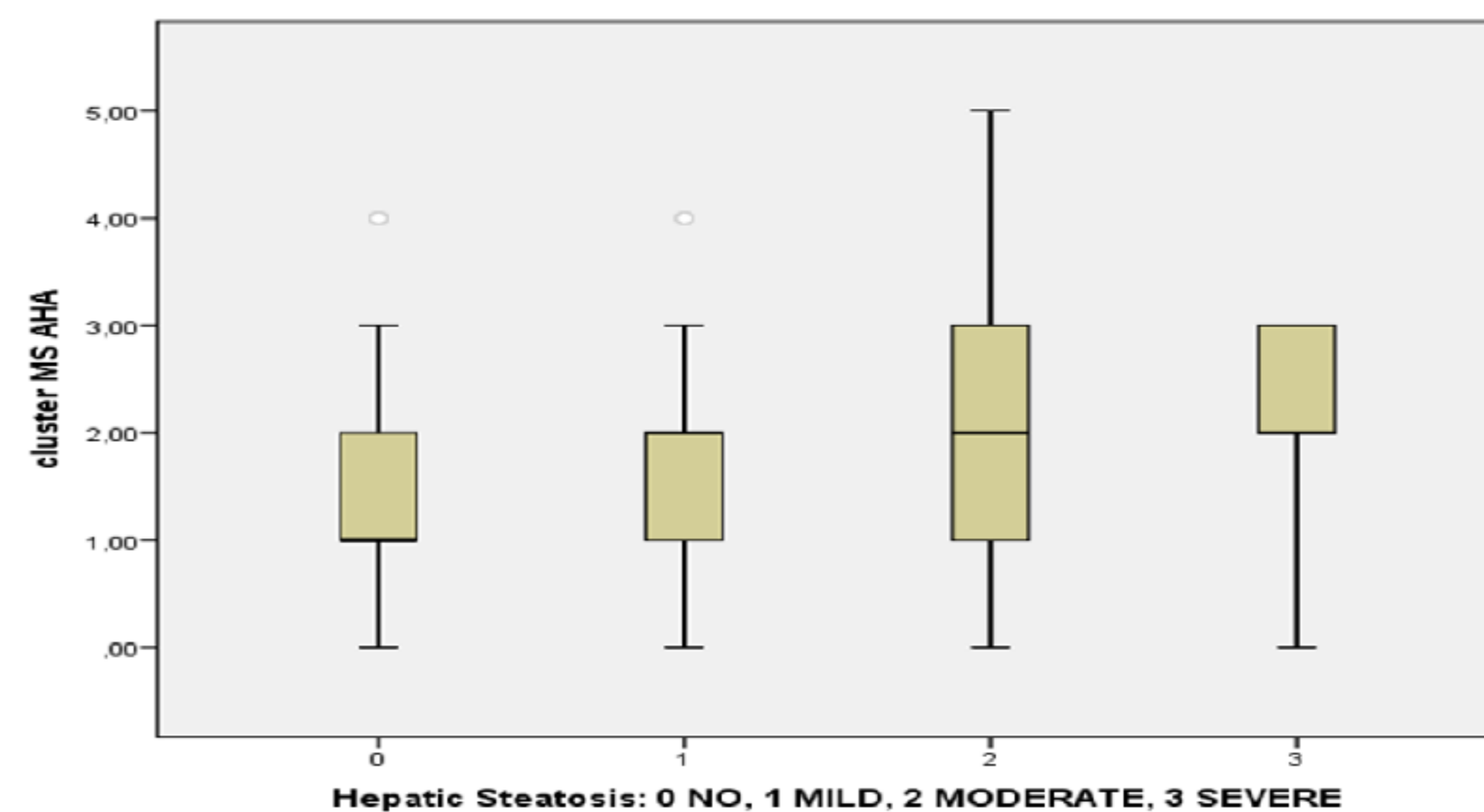
The diagnosis and severity of HS was based on ultrasound scan. All patients underwent an ultrasonography to measure carotid intima-media thickness (cIMT), a validated marker of subclinical atherosclerosis.

Results

The overall prevalence of MS was 13.07 % (105 patients, 62 males) and prevalence of HS was significantly higher in patients with MS: 40.9% vs 18.5% (p < 0.0001).

HS status	Overall population (%)	Patients with MS (%)
Absent	78	59
Mild	12	21
Moderate	9	18
Severe	1	2

Spearman's correlation between HS grade and the number of MS criteria was significant (rho=0.285 p<0.0001).



No statistical difference was recorded about cIMT and cIMT z-score between patients with or without MS, until inclusion of HS as additional criterion for the diagnosis of MS.

In this case, there was significant difference in cIMT and cIMT z-score between the two groups. In multiple stepwise linear regression analysis, cIMT z-score was better predicted by using HS grade and (= 0.279, adjusted R2 2.6%, p < 0.0001), than using only MS cluster.

MS + HS	cIMT (mm)	P value	cIMT(z-score)	P value
Yes	0.53 ± 0.08	0.03	2.6±1.7	0.024
No	0.48 ± 0.027		2.2±1.6	

Conclusion

HS should be used as additional criterion in detecting pediatric MS phenotype at higher risk for long-term cardiovascular morbidity.

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