

# P2-P159 Serum NAMPT levels are not associated with parameters of liver function in children and adolescents

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## Background/Aim

Serum NAMPT levels are altered in adult patients with non-alcoholic fatty liver disease. However, less is known about NAMPT serum levels in children and adolescents with obesity and their association with parameters of liver function.

## Results

### Characteristics of a subcohort of LIFE Child Cohort Leipzig

**Table 1** Demographic characteristics and laboratory parameters of children with normal weight, overweight and obesity

	lean (n=221)	overweight (n=52)	obese (n=143)	all (n=416)
NAMPT (ng/ml)	4.8±3.2	5.43±3.54	5.45±3.72	5.1±3.4
<b>Anthropometry</b>				
Age (y) <sup>#</sup>	13.6±2.9	13.5±2.2	12.3±2.8	13.1±2.8
BMI-SDS <sup>**</sup>	0.1±0.6	1.6±0.18	2.5±0.4	1.1±1.2
Height-SDS <sup>**</sup>	0.1±0.9	0.6±1.2	0.6±1.0	0.3±1.0
<b>Liver parameter</b>				
ALAT (U/l) <sup>+</sup>	18.3±7.8	20.9±8.8	24.2±13.9	21.0±11.1
ASAT (U/l)	24.7±6.4	24.2±5.2	25.7±8.3	25.0±7.1
GGT (U/l) <sup>#</sup>	11.7±4.4	14.0±4.0	17.1±6.7	13.8±5.7
CAP (dB/m) <sup>**#</sup>	191.3±39.4	228.3±50.4	248.8±52.4	214.5±52.5
TE (kPa) <sup>+</sup>	4.4±1.2	4.6±1.2	4.9±2.1	4.6±1.5
Cytokeratin 18 (U/l)	144.3±108.1	143.2±76.1	171.0±114.5	153.4±107.5
<b>Inflammation</b>				
CRP (mg/l) <sup>#</sup>	0.7±1.2	1.5±2.0	2.9±3.1	1.6±2.4
Neutrophile (10 <sup>9</sup> /l) <sup>**</sup>	2.7±1.0	3.4±1.3	3.5±1.1	2.9±1.1
Leucocyte (10 <sup>9</sup> /l) <sup>**</sup>	5.5±1.3	6.4±1.4	6.8±1.4	5.8±1.4
Lymphocyte (10 <sup>9</sup> /l) <sup>+</sup>	2.0±0.5	2.3±0.4	2.4±1.2	2.1±0.7

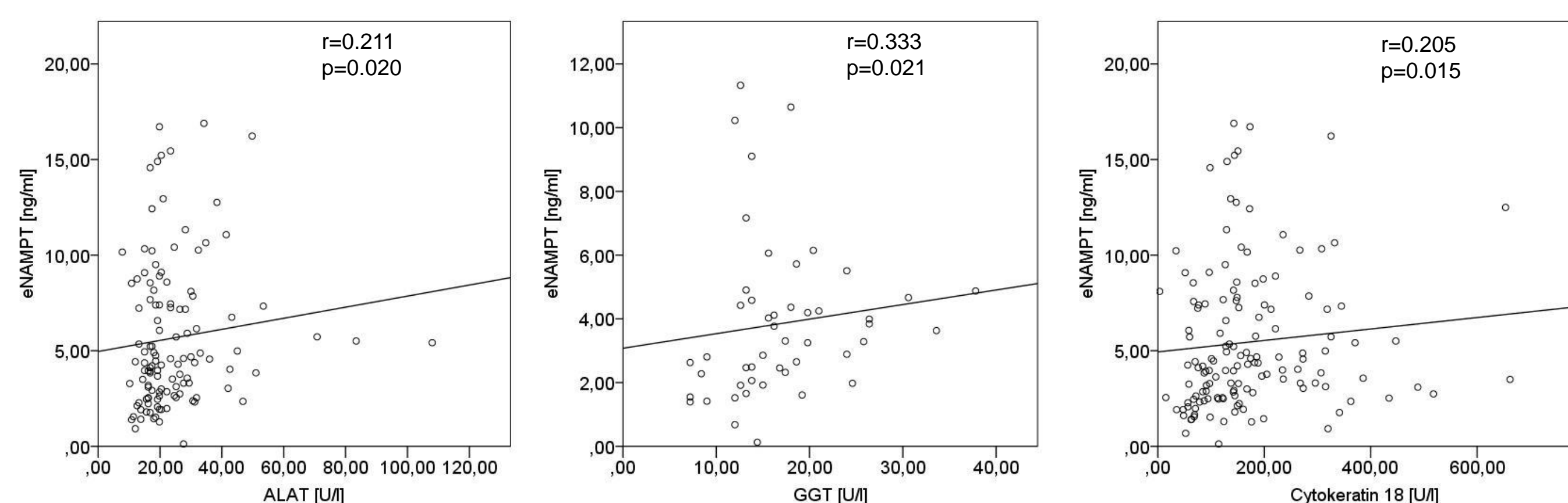
Data are given as mean±SD. Statistical significances were calculated by one-way ANOVA with post-hoc Tukey HSD. \*p value<0.05 lean vs. overweight; #p value<0.05 lean vs. obese; \*\*p value<0.05 overweight vs. obese

### Liver enzymes are positively correlated with eNAMPT serum levels in children and adolescents with obesity

**Table 2** Association of eNAMPT levels with liver parameters of children and adolescents

	lean	overweight	obese	all
ALAT (U/l)	r=-0.083	r=-0.021	r=0.211* (0.020)	r=0.157* (0.006)
ASAT (U/l)	r=-0.096	r=-0.058	r=0.133	r=0.005
GGT (U/l)	r=0.012	r=0.086	r=0.333* (0.021)	r=0.024
CAP (dB/m)	r=-0.078	r=-0.056	r=0.169 (0.060)	r=0.061
TE (kPa)	r=-0.062	r=-0.387* (0.008)	r=0.011	r=0.066
Cytokeratin 18 (U/l)	r=-0.003	r=0.209	r=0.205* (0.015)	r=0.108* (0.030)

Correlation coefficients were calculated by Spearman's calculation.

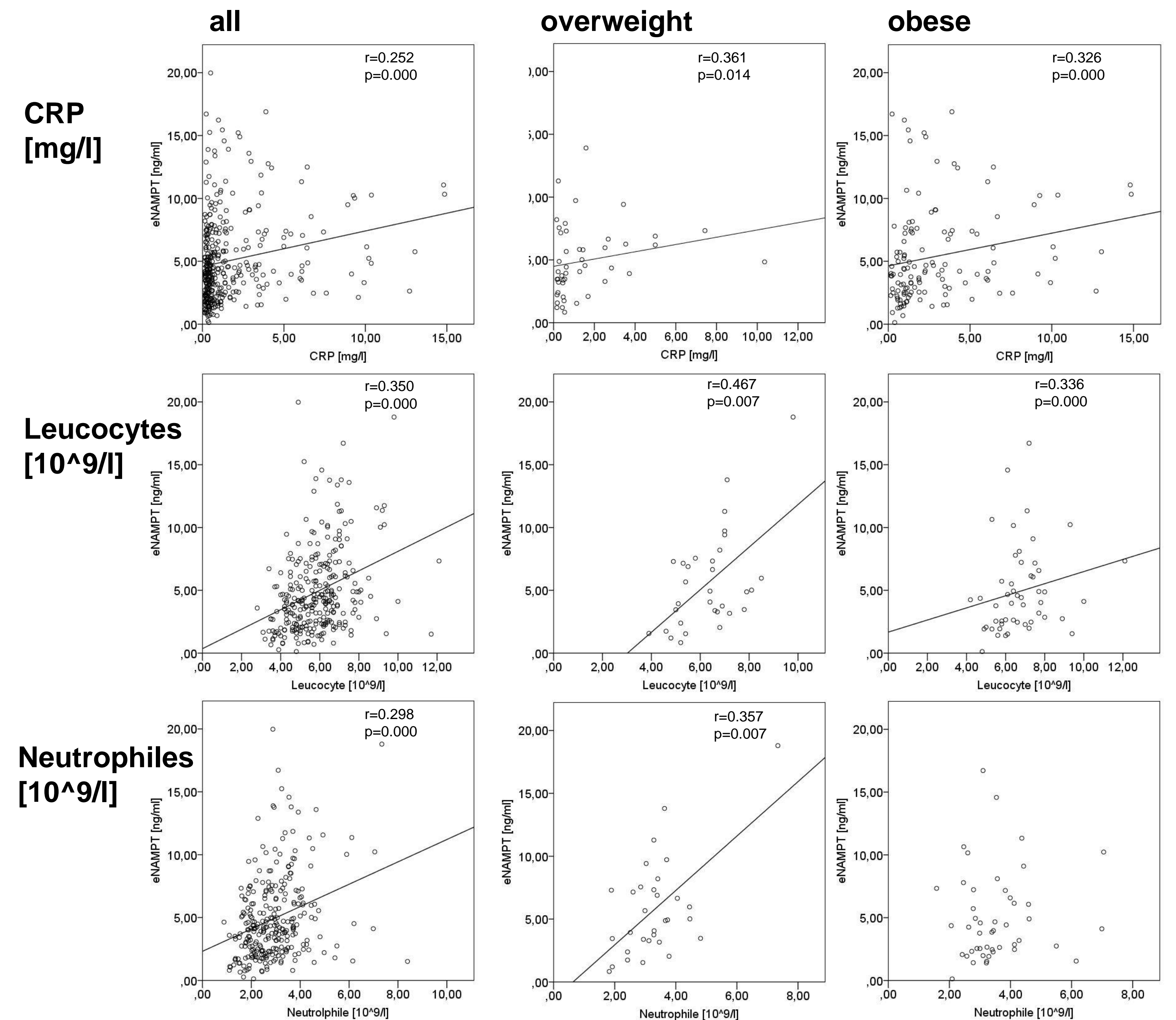


**Figure 1** Correlation of serum eNAMPT with A) ALAT, B) GGT and C) Cytokeratin 18 in children with obesity. Correlation coefficients were calculated by Spearman's calculation.

## Discussion

Our data show that serum NAMPT levels in children and adolescents are not associated with parameters of liver dysfunction after adjustment for BMI-SDS, age and sex. We could confirm previous studies that showed a positive association of NAMPT serum levels with inflammatory markers in children and adolescents.

## Inflammation markers are positively correlated with eNAMPT serum levels in children and adolescents



**Figure 2** Correlation of serum eNAMPT with CRP, leucocyte and neutrophil count in children and adolescents. Correlation coefficients were calculated by Spearman's calculation.

## NAMPT is the strongest predictor for inflammatory markers but not for liver parameters.

**Table 3** Association of log eNAMPT levels with liver and inflammation parameters in children and adolescents after adjustment for BMI-SDS, age and sex

	all	overweight	obese
<b>Liver parameter</b>			
ALAT (U/l)	r=0.099 <sup>#</sup>	r=-0.153 <sup>#</sup>	r=0.186 <sup>#</sup> p=0.045
GGT (U/l)	r=0.163 <sup>#</sup> p=0.056	r=0.051 <sup>#</sup>	r=0.296 p=0.048
Cytokeratin 18 (U/l)	r=0.076 <sup>#</sup>	r=0.181 <sup>#</sup>	r=0.147 <sup>#</sup>
<b>Inflammation</b>			
CRP (mg/l)	r=0.272 <sup>#</sup> p=0.000	0.395 <sup>#</sup> p=0.010	r=0.291 <sup>#</sup> p=0.001
Neutrophile (10 <sup>9</sup> /l)	r=0.324 <sup>#</sup> p=0.000	r=0.726 <sup>#</sup> p=0.000	r=0.149 <sup>#</sup>
Leucocyte (10 <sup>9</sup> /l)	r=0.380 <sup>#</sup> p=0.000	r=0.703 p=0.000	r=0.282 p=0.052

Correlation coefficients were calculated by Pearson partial correlation analysis adjusted for BMI-SDS, age and sex. # Indicates log-transformed variables

**Table 4** Multiple regression analyses for independent associations of eNAMPT serum levels in children and adolescents with overweight

	Parameter	Δ R <sup>2</sup>	B ±SEM	p
Dependent variable: log CRP (R <sup>2</sup> =0.197; p=0.010)				
1	log NAMPT	0.100	0.630±0.014	0.014
2	log age	0.097	-2.072±0.029	0.029
Dependent variable: log neutrophile (R <sup>2</sup> =0.618; p=0.000)				
1	log NAMPT	0.290	0.270±0.053	0.000
2	BMI-SDS	0.242	0.306±0.085	0.001
3	sex	0.086	0.078±0.032	0.023
Dependent variable: leucocyte [10 <sup>9</sup> /l] (R <sup>2</sup> =0.505; p=0.000)				
1	log NAMPT	0.300	2.772±0.566	0.000
2	BMI-SDS	0.205	3.161±0.928	0.002

ALAT: alanine aminotransferase; ASAT: aspartate aminotransferase; B: regression coefficient; CAP: controlled attenuation parameter; CRP: C-reactive protein; eNAMPT: extracellular nicotinamide phosphoribosyltransferase; GGT: γ-glutamyltransferase; SD: standard deviation; SEM: standard error; TE: transient elastography

For multiple regression analyses, the stepwise forward model was employed. Independent variables: log NAMPT, log age, sex and BMI-SDS



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