

METABOLOMICS IN EARLY LIFE AND ASSOCIATION WITH BODY COMPOSITION AT AGE 2 YEARS

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BACKGROUND

Early life ≈ critical window for adiposity programming

Metabolic profile might contribute to adiposity programming

AIM

Is metabolic profile at age 3 months predictive for body composition at age 2 years?

Boys vs girls?

Breast vs formula?

METHOD

318 healthy term-born infants
Blood (3 months) & skinfolds (2 years)

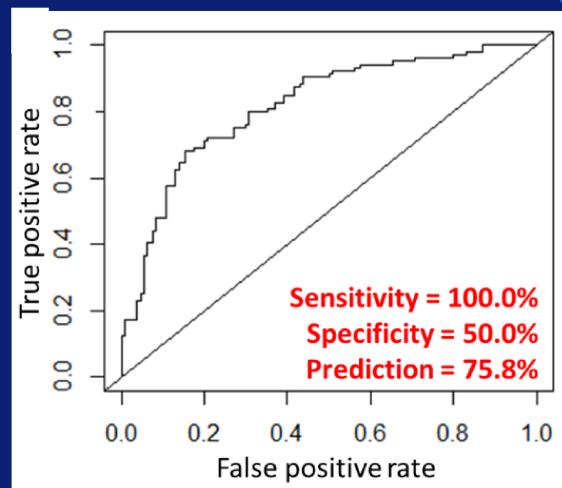
Identification of 349 metabolites & lipids by LC-MC-method

Prediction for 'high' vs 'low' truncal / peripheral skinfold ratio (T:P-ratio) at age 2 years by Random forest machine learning



RESULTS

15 metabolites at age 3 months were modestly predictive for T:P-ratio at age 2 years



ROC-curve showing ability of the model to identify individuals with 'high' vs 'low' T:P-ratio at age 2 years

These 5/15 metabolites are associated with inflammatory processes

Associations were independent of infant feeding

Fold change > 1 : infants with 'high' T:P-ratio at 2 years had higher metabolite level at age 3 months compared to infants with 'low' T:P-ratio

Metabolite variables	All		Boys		Girls	
	Fold change	p-value	Fold change	p-value	Fold change	p-value
LysoPS(22:2)	1.48	5.99x10 ⁻⁰⁶ * ⁺	1.58	4.95x10 ⁻⁰⁵	1.37	0.021
Dimethylarginine	1.85	0.0001 ⁺	2.20	0.0001	1.50	0.074
LysoPE(20:1)	1.09	0.0008 ⁺	1.08	0.0053	1.09	0.059
LysoPG(16:0)	1.14	0.0022	1.11	0.0240	1.17	0.054
LysoPA(22:1)	1.41	0.0040	1.42	0.0122	1.39	0.101

Associations with T:P-ratio was 14/15 in boys vs 5/15 in girls

Predictive performance ♂: 32.2% & ♀ : 11.7%

Abbreviations: LysoPA=lysophosphosphatidic acid, LysoPE=lysophosphosphatidylethanolamine, LysoPG=lysophosphosphatidylglycerol, LysoPS= lysophosphosphatidylserine . * denotes passing FDR based on Bonferoni and ⁺ Benjamini-Hochberg.

CONCLUSIONS

Metabolic profile in the first months of life might contribute to adiposity programming, potentially due to low grade inflammation

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