



INFLAMMATION ASSOCIATED TO BODY COMPOSITION IN EUROPEAN PREPUBERTAL CHILDREN: RESULTS FROM THE IDEFICS STUDY

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INTRODUCTION

Obesity is characterised by excessive fat accumulation coursing with a chronic mild inflammatory state, with adipose tissue (AT) being the main site of increased systemic cytokine production. Increased adiposity early in life is the main risk factor for cardiometabolic disorders later in life, with the abnormal accumulation of lipids in AT leading to the production of pro-inflammatory cytokines (1). Inflammatory process that involves metabolic and cardiovascular diseases has been reported in children and adolescents tracking into adulthood (2,3,4). Targeting inflammation early in life could be key as an important strategy fighting obesity as well as other metabolic complications.

AIM

To evaluate the association between TNF- α , IP-10, IL-6, IL-15, IL-8, IL-1ra, leptin or adiponectin with body composition (BMI, skinfold thickness and waist circumference) in prepubertal children.

METHOD

3459 children between 2 and 9 years old (51.5% males) participated in the multicentric IDEFICS study. The relationship between fat (assessed using the BMI, the sum of subscapular and triceps skinfolds thickness (SF) as marker of subcutaneous fat and waist circumference (WC) as a surrogate marker of abdominal adiposity and plasma concentrations of TNF- α , IL-6, IL-15, IL-8, IL-1ra, leptin or adiponectin quantified by multiplex assay was studied these children. Linear regression analysis adjusted for age, sex, center and ISCED level was applied.

RESULTS

Table 1. Association between inflammatory biomarkers and body composition (BMI: body mass index; SF: skinfold thickness; WC: waist circumference), analysed by linear regression

Leptin ($\mu\text{g/L}$)	PREPUBERTAL CHILDREN											
	z-WC				z-SF				z-BMI			
B	p value	95% CI	N	B	p value	95% CI	N	β	p value	95% CI	N	
5.689	<0.0001	5.416, 5.961	3459	5.671	<0.0001	5.406, 5.936	3459	5.749	<0.0001	5.481, 6.017	3459	
Adiponectin (mg/L)	PREPUBERTAL CHILDREN											
	z-WC				z-SF				z-BMI			
B	p value	95% CI	N	β	p value	95% CI	N	β	p value	95% CI	N	
2.935	<0.0001	2.850, 3.335	3459	2.948	<0.0001	2.530, 3.336	3459	2.941	<0.0001	2.533, 3.350	3459	
IL-6 (ng/L)	PREPUBERTAL CHILDREN											
	z-WC				z-SF				z-BMI			
B	p value	95% CI	N	B	p value	95% CI	N	B	p value	95% CI	N	
-1.327	<0.0001	-1.629, -1.024	3459	-1.357	<0.0001	-1.660, -1.054	3459	-1.346	<0.0001	-1.642, -1.050	3459	
IL-8 (ng/L)	PREPUBERTAL CHILDREN											
	z-WC				z-SF				z-BMI			
B	p value	95% CI	N	B	p value	95% CI	N	B	p value	95% CI	N	
1.077	<0.0001	0.877, 1.277	3459	1.082	<0.0001	0.882, 1.281	3459	1.082	<0.0001	0.886, 1.276	3459	
TNF- α (ng/L)	PREPUBERTAL CHILDREN											
	z-WC				z-SF				z-BMI			
B	p value	95% CI	N	B	p value	95% CI	N	B	p value	95% CI	N	
0.869	<0.0001	0.743, 1.004	3459	0.864	<0.0001	0.729, 0.999	3459	0.865	<0.0001	0.733, 0.997	3459	
IP-10	PREPUBERTAL CHILDREN											
	z-WC				z-SF				z-BMI			
B	p value	95% CI	N	B	p value	95% CI	N	B	p value	95% CI	N	
5.689	<0.0001	5.416, 5.961	3459	5.426	<0.0001	5.192, 5.660	3459	5.423	<0.0001	5.190, 5.657	3459	
IL1-ra	PREPUBERTAL CHILDREN											
	z-WC				z-SF				z-BMI			
B	p value	95% CI	N	B	p value	95% CI	N	B	p value	95% CI	N	
6.872	<0.0001	6.646, 7.098	3459	6.831	<0.0001	6.606, 7.057	3459	6.849	<0.0001	6.628, 7.071	3459	

CONCLUSIONS

Detection of inflammation associated with changes in body composition from the early stages of life could be key in order to prevent further degree of overweight and/or obesity as well as its comorbidities. This helps to better understand the mechanisms involved in the aetiology of obesity as well as to establish primary prevention interventions and identify potential targets to fight against this pathology.

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