

Mother's obesity and high child's waist circumference are predictive factors of severe child's obesity: an observational study in French Guiana

Falucar Njuieyon¹, Emma Cuadro-Alvarez¹, Elise Martin¹, Noémie Lachaume¹, Yajaira Mrcsic¹, Fanny Henaff¹, Chimène Maniassom¹, Antoine Defo¹ and Narcisse Elenga^{1,2}

BACKGROUND AND AIM

- ❖ The field observations show that the prevalence of overweight and obesity among children in French Guiana is almost twice that in metropolitan France.
- ❖ Newly diagnosed cases of childhood type 2 diabetes in French Guiana are severely obese.
- ❖ Fight against obesity prevent childhood type 2 diabetes
- ❖ The aim of this study was to identify clinical factors predictive of severe child's obesity.

SUBJECTS AND METHODS

Study population:

- Cohort of obese child
- Included at diagnosis
- Multigene crossbreeding population
- Facing demographic transition

Methods:

- 1- Guianese Childhood Obesity Group (GuiChOG)
 - Prospective inclusion of overweight or obese child
 - Physical exam and measurements performed by the same pediatrician
 - Blood analyses performed after an overnight fast
- 2- Definitions
 - Overweight: 85th Percentile \leq BMI < 95th percentile
 - Obesity: BMI \geq 95th percentile
 - Metabolic syndrome for children: Abdominal obesity (Waist Circumference Percentile) + two or more criteria (hyperglycemia, elevated triglycerides, low HDL-cholesterol, high blood pressure)
- 3- Metabolic risk
 - Metabolically Normal Obesity (MNO): No criteria
 - Metabolically Abnormal Obesity (MAO): \geq 2 criteria

RESULTS:

Clinical characteristics	MNO n=114 (%)	MAO n=36 (%)	P-value	p*
Male/Female (ratio)	63/51	12/24	0.09	
Age (years, range)	8.85 (5.85-11.1)	11.1 (9.93-13,36)	<0,001	
Mother's Obesity	44(38.6)	23(64)	0.003	0.02
BMI (Z-score, range)	4.42[3.94-5.28]	4.9[4.05-5.38]	<0.001	
Systolic Blood Pressure (mmHg, Range)	111(106-121)	133.5(123.5-138.5)	0.001	
Diastolic Blood Pressure (mmHg, Range)	70(66-77)	79.5(72.5-84.5)	0.06	
Waist Circumference (cm, range)	85(78-96)	103(94-109)	<0.001	<0.001
Waist-to-Height ratio	0.62[0.58-0.67]	0.66[0.61-0.69]	0.3	

p* value obtained after multivariate analysis

Biological characteristics	Metabolically Normal Obesity (MNO) n=114 (%)	Metabolically Abnormal Obesity (MAO) n=36 (%)	P-value
Triglycerids (mmol/l) median, range	0.76 (0.62-1.27)	0.99 (0.70-1.58)	0.2
HDL cholesterol (mmol/l) median, range	1.19 (0.99-1.36)	1.22 (0.96-1.39)	0.5
Total cholesterol (mmol/l) median, range	4.1 (3.64-4.70)	4.07 (3.50-4.62)	0.7
HbA1C (%)	5.2 (4.9-5.35)	5.5 (5.1-5.8)	0.1
Leptin hormone (ng/ml)	26.95 (17.82-40.96)	35.6 (28.85-48.75)	0.02
IGF1 (ng/ml) median, range	221 (185-267.7)	276.2 (237.9-325.7)	0.3
IGFBP3 (mg/l) median, range	4.6 (3.7-25.7)	4.8 (4.7-5.4)	0.4
Insulin level (μ U/ml)	12.8 (6.9-20.7)	24.4 (15.65-38.05)	0.01
Glycemia (mmol/l) median, range	4.6 (4.3-5.1)	4.8 (4.5-5.05)	0.3
25 OHD Vitamin (μ g/l) median, range	28.2 (24-33)	25 (22-31)	0.03
Urinary free cortisol (nmol/24h)	43 (21-60)	42 (24.5-67)	0.7

CONCLUSION

- The findings suggest the value of early and careful monitoring of BMI and WC in order to identify in time the children most at risk of severe obesity and metabolic syndrome in adolescence.
- They indicate the need to incorporate waist circumference into routine clinical practice, in addition to traditional measures of weight, height, BMI and WHTR.
- Further studies on the risk factors for severe obesity are needed, the factors described in our study could be considered in screening, monitoring, and interventions to reduce severe childhood obesity.