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Editorial

Can a Simple Physical Questionnaire Detect Metabolic Syndrome?

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The present study is aimed at finding a suitable scientific mechanism that allows MS to be monitored from childhood. This has motivated us to perform analytical and deductive processes that have then required the mathematical rigor of laboratory confirmation tests. We have considered the Metabolic syndrome, because it is a set of risk factors, capable of generating inflammation, and cardiovascular disease since childhood, and has already been described in children with obesity [1]. At the moment, there are more than 40 definitions described in Pediatrics, although all are based on the existence of dyslipidemia, hypertension, adiposity, and IR, together with impaired glucose tolerance.

De Ferranti proposes to modify the criteria of the NCEP-ATP III to evaluate the existence of MS in adolescents: waist circumference > P 75, blood pressure > P 90, blood glucose > 100 mg/dl, Triglycerides > 100 mg/dl, HDL <45 mg/dl [2]. However, the definition requires establishing the hormonal stability and for this, we need to demarcate it over time. We have taken the recommendation described by Tanner, who at the end of 1969, assigned 5 stages from stage I, which represents the body immaturity, to stage V, which represents complete sexual maturity [3-5].

Stage V of Tanner, must coincide with the endocrine and metabolic response that allows hormonal stability and a stable screening can be performed to the diagnosis of MS. For this reason, we are looking for a study of overweight Hispanic youth and a history of diabetes mellitus in one of their parents, in whom insulin sensitivity is studied in relation to the Tanner period and BMI [6]. The study in question recognized that to demonstrate the decrease in sensitivity and an increase in insulin secretion, known as IR, in these overweight adolescents and family history of diabetes mellitus (DM) whenever they are in the Tanner V stage, and that this stage is the first occasion in which a child responds to the glucose load at 2 hours with increased glycaemia values, a condition known as glucose intolerance due to dysfunction of beta cells of the pancreas (future marker of diabetes mellitus) [6].

With this background, we submitted the 3 factors mentioned: hypertension, w/h (Waist to height I) index and sedentary lifestyle to the deductive analysis of MS (Principle of Hills) [7] and its laboratory confirmation: and we made the following conjectures:

1. We already know that arterial hypertension is the most prevalent chronic disease in humanity, and nowadays, it has been related to sedentary life since childhood. The HTA, does not discern between social classes or race, or sex. Its existence since childhood plays a leading role due to the high probability of persistence and of coexisting with innumerable NCDs (non-communicable diseases). Its presence will have a future impact, increasing morbidity and mortality, increasing the costs of its control in the economic scenario of the Public Health Systems of the World. The elevation of blood pressure over P 90, if repeated in 3 times measured, demonstrates an unequivocal change in the arterial vascular tone of a child, which we have used as a risk marker in the present study [8].

2. The w/h indicator is a surrogate marker of central adiposity that is linearly related to the BMI [9-11]. Although the skin fold is the best indicator of adiposity, it usually loses its sensitivity with age and sex, and when there are no calipers, the w/h indicator becomes an easy tool to use in the daily practice of pediatrician work [9]. Today, the w/h indicator is becoming the best metabolic cardio indicator because it bases its principle on visceral adiposity. We would like to emphasize that the study carried out in Ecuador, sought the prevalence of MS, in children with a low prevalence of 1.8% of obesity, overweight 15.2% and normal BMI 57.8%. Malnutrition was in the range of 25%. The adult and malnourished patients have a high general and cardiovascular mortality, so in the Paradox of Obesity, the comparison of the obese should be with the normolynous (18.5 kg/m^2 BMI at 25 kg/m^2) and not with the heterogeneous subgroup of BMI less than 25 kg/m^2, which has not been included in the present study [10].

Our study discriminates the child with w/h > 0.50 as long as his BMI is normal or overweight. If a child has a normal weight, and the w/h is <0.5, there is no RR of presenting MS. However: if the BMI is normal and the w/h is > 0.5, the RR increases twice (2.2). If the BMI is overweight, and the w/h is < 0.50 there will be no RR of the SM but, if the w/h is > 0.5, the RR is raised to 9% with a sensitivity of 100% in both genders. This observation suggests that the w/h indicator is sensitive to detect MS in normal weight and overweight children, from an early age, and that BMI is very useful for classifying anthropometry [8-9].

3. The IDEFICS study is the first to observe a direct correlation between daily physical activity and pre-hypertension in European children, emphasizing the importance of recognizing a sedentary lifestyle since childhood, as a promoter of hypertension [12]. Children who did not complete one hour of physical activity per week, demonstrated a 40% risk of developing hypertension in the subsequent 2 years [10]. Our study arbitrarily defined as sedentary if the child only performed 1 hour weekly of compulsory physical activity in school vs active children to children who practice 3 h/s or more, which configures an attitude that becomes a habitual behavior pattern [8].

Placing the present objective in childhood carries an implicit message to the academy. 1.- We have understood where the disease starts. 2.- Obesity is no longer a factor required to present MS since childhood. Therefore, the present study seeks to group these 3 elements: sedentarysm, hypertension and w/h index > 0.50, and these 3 factors, has become predictors of MS. With this background, we believe that the present methodological finding needs to be replicated in a new multicenter study, which will subject a child population to a simple revision of the present phenotype, for the detection of MS from childhood, before it has been established with its deleterious consequences in adult life.

The present phenotype of MS, if confirmed in other studies, becomes a valuable tool to predict rheological and inflammatory changes, which can be reversed with intervention in primary health prevention. Global health prevention plans can prolong life and mitigate the disease in humanity.

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