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COMMENTARY

Journal of Cardiology Research

Is There Value in Assessing Carotid Intima Media Thickness (CIMT) in Obese Children

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Introduction

CIn the article we would like to discuss the potential value of using CIMT to help motivate children and parents to begin to make healthy life style choices as it pertains to childhood obesity. As we are aware, childhood obesity has been and continues to be a major health concern in children, with approximately 1 out of every 5 children and adolescents between the ages of 2-19y in the obese category [1]. Though we might not consider this alarming until we realize that obesity has tripled in our society since the 1970s [2].

At the onset of the obesity epidemic, there was not a great deal of concern because we didn't know the ramifications of associated health issues and there was a general thought that most overweight or obese children would outgrow this health concern. However, the literature would support that overweight and obese children are at a greater risk of being overweight/obese adults. As the obesity epidemic has grown since the 1970s we now have greater concern on a child's health because we have learned the negative impact obesity has on children's cardiovascular and metabolic risk factors (hypertension, dyslipidemia, hyperinsulinemia, and adipokines that address inflammation and vascular function).In addition to physical health concerns, there is psychological consequences associated with obesity in children that include- poor self-esteem, depression, lower scores on health-related quality of life, and emotional and behavioral disorders [3]. The Bogalusa Heart Study showed in autopsy studies in individuals 2-15y of age an increase in fatty streaks in individuals with elevated BMI, cholesterol and blood pressure, clearly making the point that this disease begins at an early age [4].

The use of ultrasound has been in existance for a while to assess carotid artery disease, typically reserved for older patients. However, more recently ultrasound can be used to assess Carotid Intima Media Thickness (CIMT) which has been observed to be associated with atherosclerotic plaque development. More recently, there have been a number of studies that have observed a positive relationship between obesity by BMI and elevated Waist Circumference (WC) and increased CIMT in individuals 10 to 18y of age [5,6]. However, it should be noted that these studies are cross-sectional and don't prove cause and effect. However, with the use of CIMT assessment in children, we have learned that when obese children participate in an intervention program that includes physical exercise, nutrition education and behavior therapy which included individual psychological care, significant improvements were observed in children with substantial weight loss, in respect to metabolic risk factors, and a significant reduction in the child's CIMT compared to the obese children that did not lose weight [7].

Though childhood obesity is recognized as a major health concern we recognize the complexity and the numerous variables associated with it (family, culture, society, environment, and genetics). In saying that, we continue to ask ourselves, what can be done at an early age that may help motivate families and individuals to try to make positive lifestyle changes. It would appear that if individuals are aware that they have an elevated BMI or WC or identified with MBS, this would motivate change. However, due to the complexity of obesity, having this information is normally not enough to make positive changes, especially if no other co-morbidities are detected. However, knowing that you have a greater than normal CIMT, a physical structural change that can be observed in a picture, this may be the catalyst that could provide the seriousness to make change in an individual and family.

To assess CIMT, one's individual values would need to be compared to normative data and to determine if an individual's values are abnormal. Currently there are a number of studies with different age groups in healthy children and in children with different co-morbidities that have assessed CIMT [8,9]. However, it is recognized that additional research is needed in this area that addresses, age, gender, race and similar techniques in measuring CIMT.

In summary, use of CIMT may be a very helpful tool to promote awareness and potentially a catalyst to promote change in obese children because currently it is the only physical marker we can identify at an early age that can show negative changes in one's blood vessels. For this assessment to be more commonly used, it will be important that we can determine normative values across different age groups. Secondly, it would be of value to complete a case-control study that identifies obese children with an elevated CIMT that receive and don't receive their CIMT value, to confirm if knowing one's CIMT helps in promoting healthy lifestyle changes that promotes weight loss and an improvement in their CIMT.

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Rec: Nov 2, 2019; Acc: Nov 24, 2019; Pub: Nov 28, 2019

J Cardio Res. 2019;2(4):24
DOI: gsl.jcr.2019.000024