J Pediatr (Rio J). 2015;91(5):464–470

Jornal de Pediatria
www.jped.com.br

ORIGINAL ARTICLE

Fibrinogen: cardiometabolic risk marker in obese or overweight children and adolescents☆,☆☆

Waldeneide F. Azevedo[a,b], Anajás S.C. Cantalice[c], Nathalia C. Gonzaga[d], Mônica O. da S. Simões[c,e], Anna Larissa V. Guimarães[a], Danielle F. de Carvalho[e], Carla Campos Muniz Medeiros[e,*]

[a] *Universidade Estadual da Paraíba (UEPB), Campina Grande, PB, Brazil*
[b] *Universidade Federal de Campina Grande (UFCG), Campina Grande, PB, Brazil*
[c] *Universidade Federal da Paraíba (UFPB), João Pessoa, PB, Brazil*
[d] *Universidade Federal do Ceará (UFC), Fortaleza, CE, Brazil*
[e] *Master Post-graduation Program in Public Health, Universidade Estadual da Paraíba (UEPB), Campina Grande, PB, Brazil*

Received 18 July 2014; accepted 24 November 2014
Available online 10 June 2015

KEYWORDS
Fibrinogen;
Obesity;
Atherosclerosis;
Children;
Adolescents

Abstract
Objectives: To determine the prevalence of increased serum fibrinogen levels and its association with cardiometabolic risk factors in overweight or obese children and adolescents.
Methods: Cross-sectional study with 138 children and adolescents (overweight or obese) followed at a reference outpatient clinic of the public health care network. Fibrinogen concentration was divided into quartiles, and values above or equal to the third quartile were considered high. The association between high fibrinogen values and cardiometabolic risk factors was assessed using Pearson's chi-squared test or Fisher's exact test, as necessary. Logistic regression was used to adjust variables predictive of fibrinogen levels. Analyses were performed using SPSS version 22.0 and SAS software, considering a confidence interval of 95%.
Results: Serum fibrinogen levels were elevated in 28.3% of individuals, showing association with the presence of high CRP ($p = 0.003$, PR: 2.41, 95% CI: 1.30–4.46) and the presence of four or more risk factors ($p = 0.042$; PR: 1.78, 95% CI: 1.00–3.17). After a logistic regression, only elevated CRP remained associated with altered fibrinogen levels ($p = 0.024$; PR: 1.32; 95% CI: 1.09–5.25).

☆ Please cite this article as: Azevedo WF, Cantalice AS, Gonzaga NC, Simões MO, Guimarães AL, de Carvalho DF, et al. Fibrinogen: cardiometabolic risk marker in obese or overweight children and adolescents. J Pediatr (Rio J). 2015;91:464–70.
☆☆ Study conducted at Núcleo de Estudos em Pesquisas Epidemiológicas (NEPE), Centro de Obesidade Infantil (COI), Universidade Estadual da Paraíba (UEPB), João Pessoa, PB, Brazil.
* Corresponding author.
E-mail: carlamunizmedeiros@hotmail.com (C.C.M. Medeiros).

http://dx.doi.org/10.1016/j.jped.2014.11.007
0021-7557/© 2015 Sociedade Brasileira de Pediatria. Published by Elsevier Editora Ltda. All rights reserved.

Conclusions: Increased fibrinogen was prevalent in the study population and was associated with ultrasensitive C-reactive protein and the presence of four or more cardiovascular risk factors; it should be included in the assessment of individuals at risk.
© 2015 Sociedade Brasileira de Pediatria. Published by Elsevier Editora Ltda. All rights reserved.

PALAVRAS-CHAVE
Fibrinogênio;
Obesidade;
Aterosclerose;
Crianças;
Adolescentes

Fibrinogênio: marcador de risco cardiometabólico em crianças e adolescentes obesos ou com sobrepeso

Resumo
Objetivos: Verificar a prevalência de níveis séricos elevados de fibrinogênio e sua associação com os fatores de risco cardiometabólicos em crianças e adolescentes com sobrepeso ou obesidade.
Métodos: Estudo transversal com 138 crianças e adolescentes (obesos ou com sobrepeso) acompanhados em um ambulatório de referência da rede pública. A concentração do fibrinogênio foi distribuída em quartis, sendo considerada elevada quando os valores eram iguais ou superiores ao terceiro quartil. A associação entre o valor elevado do fibrinogênio com os fatores de risco cardiometabólicos foi verificada através do teste qui-quadrado de Pearson ou teste exato de Fisher, quando necessário. A regressão logística foi utilizada para ajuste das variáveis preditoras do nível do fibrinogênio. As análises foram realizadas no SPSS 22.0 e SAS, considerando-se o intervalo de confiança de 95%.
Resultados: Os níveis séricos de fibrinogênio estiveram elevados em 28.3% dos indivíduos, apresentando associação com a PCR elevada (RP: 2.41; IC 95%: 1.30–4.46, $p = 0.003$) e com a presença de quatro ou mais fatores de risco (RP: 1.78; IC 95%: 1.00–3.17; $p = 0.042$). Após a regressão logística, apenas o PCR elevado continuou associado ao fibrinogênio alterado (RP: 1.32; IC 95% 1.09–5.25; $p = 0.024$).
Conclusões: O aumento do fibrinogênio foi prevalente na população estudada e esteve associado à proteína C reativa ultrassensível e ao número igual ou superior a quatro de fatores de risco cardiovasculares, devendo ser incluído na avaliação de indivíduos sob risco.
© 2015 Sociedade Brasileira de Pediatria. Publicado por Elsevier Editora Ltda. Todos os direitos reservados.

Introduction

The prevalence of excess weight has increased in all age groups in Brazil, similar to what has occurred worldwide.[1] Data from the Family Budget Survey[2] show that the proportion of obese children has increased four-fold in the last 20 years and three-fold in adolescents in the same period, findings similar to those observed in developed countries.[3,4]

Obesity represents a subclinical inflammatory condition that results in a considerable number of cardiometabolic risk factors.[5] Stoopa et al.,[6] when assessing the inflammatory and prothrombotic status of children and adolescents with obesity or normal weight, found elevated fibrinogen levels at an age as young as 6 years in the obese children, regardless of pubertal status.

Inflammation in atherogenesis is caused by the synthesis, secretion, and storage of proinflammatory cytokines by adipocytes, producing a state of low-grade inflammation with vascular and metabolic complications[7] that leads to vascular endothelial dysfunction, considered to be the onset of the atherogenic process.[8] Coagulation factors, such as fibrinogen, blood flow, and inflammatory factors, have gained importance in establishing the atherosclerotic process and are considered important risk factors for cardiovascular disease.[7,9]

Fibrinogen, an acute phase protein, is part of the group of inflammatory biomarkers produced by hepatocytes and is considered an important marker to monitor the atherosclerotic inflammatory process evolution,[10] as it acts on the genesis of the atherothrombotic process through regulation of cell adhesion and proliferation, vasoconstriction at the site of endothelial injury, stimulation of platelet aggregation, and blood viscosity.[7,8]

Although the association of obesity with hyperfibrinogenemia has been reported in children, the association of fibrinogen with cardiometabolic risk factors is not yet well-established.[11,12] The search for biomarkers for early identification of individuals at higher risk of developing atherosclerosis and the knowledge of its association with other cardiometabolic risk factors is critical for the understanding and development of interventions aimed at reducing morbidity and mortality from cardiovascular disease.

Thus, this study aimed to determine the prevalence of elevated serum levels of fibrinogen and its association with cardiometabolic risk factors in overweight or obese children and adolescents.

Download English Version:

https://daneshyari.com/en/article/4153901

Download Persian Version:

https://daneshyari.com/article/4153901

Daneshyari.com