P1-35. THE POSSIBLE ASSOCIATION OF THE APOPTOTIC MARKER APO1/FAS WITH PREDISPOSITION TO METABOLIC SYNDROME AND MEAN PLATELET VOLUME IN CHILDREN

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INTRODUCTION

APO1/Fas is a glycosylated surface protein, which is increased during the process of apoptosis[1]. APO1/Fas signaling in endothelial cells plays a significant role in angiogenesis. Platelets also participate in the process of angiogenesis[2]. In addition, increased MPV is an important marker for platelet activation[3].

AIM

The aim of the present study was to investigate the possible relationship between APO1/Fas, components of metabolic syndrome and platelet activity, indicated by Mean Platelet Volume (MPV), in a healthy paediatric population.

METHOD

185 children, aged 5-17 years old, were enrolled to the study. The participants were divided into subgroups according to their age and body mass index percentile (BMI%). APO1/Fas was measured by ELISA and MPV by the MEK-6410K.

RESULTS

Eighty-one children (43.8%) had excess weight (overweight: 27.5%, obesity: 16.2%), which was more prevalent in children ≤9 years of age. Sixty-five children (35.1%) exhibited a predisposition to metabolic syndrome. A negative correlation was found between APO1/Fas and predisposing factors for metabolic syndrome, such as glucose, cholesterol, uric acid, LDL and triglycerides. In contrast, a positive correlation was found between APO1/Fas and CRP (Table 1). ROC analysis showed a predisposition to metabolic syndrome when APO1/Fas was<78,46pg/ml. A negative correlation was also observed between APO1/Fas and MPV. MPV was also positively correlated with predisposing factors for metabolic syndrome, such as BMI%, glucose, cholesterol, uric acid, LDL and negatively with HDL.

Table 1. Correlations between APO1/Fas and studied parameters. Spearman correlations are presented. NS= no significant.
HDL=High Density Lipoprotein, LDL=Low Density Lipoprotein, SGOT=serum glutamic-oxaloacetic transaminase, CRP= C-reactive protein, MPV= Mean platelet volume.

Correlations of Apo1/fas	Total population N=182	Group A: Children ≤9 years old N=91	Group B: Children>9 years old N=86	BMI<85% N=91	BMI≥85% N=80
Age	r=-0.155, p=0.047	NS	r=-0.334, p=0.003	NS	r=-0.241, p=0.038
Weight	NS	NS	NS	NS	NS
Glucose	r=-0.350, p=0.000	r=-0.276, p=0.012	r=-0.427, p=0.000	NS	r=-0.538, p=0.000
Cholesterol	r=-0.255, p=0.001	NS	r=-0.390, p=0.000	r=-0.278, p=0.010	NS
Uric acid	r=-0.274, p=0.000	NS	r=-0.387, p=0.001	NS	r=-0.393, p=0.001
LDL	r=-0.284, p=0.000	NS	r=-0.395, p=0.000	r=-0.348, p=0.001	NS
HDL	r=0.255, p=0.001	r=0.427, p=0.000	NS	r=0.275, p=0.011	r=0.238, p=0.043
Triglycerides	r=-0.217, p=0.005	NS	r=-0.346, p=0.002	NS	r=-0.263, p=0.023
CRP	r=0.540, p=0.000	r=0.576, p=0.000	r=0.522, p=0.000	r=0.479, p=0.000	r=0.599, p=0.000
MPV	r=-0.524, p=0.000	r=-0.517, p=0.000	r=-0.538, p=0.000	r=-0.448, p=0.000	r=-0.649, p=0.000

CONCLUSIONS

APO1/Fas expression may have a protective role against metabolic syndrome in the paediatric population, through its involvement in endothelial homeostasis, induction of apoptosis of cells involved in atherosclerosis and increased platelet activity. It may also enhance CRP-mediated non-inflammatory clearance of apoptotic cells. Close monitoring of all the components of metabolic syndrome in children with excess weight is important in order to prevent metabolic and cardiovascular complications.

REFERENCES

1. Schulze-Osthoff K, et al. Apoptosis signaling by death receptors. Eur J Biochem 1998; 254: 439–459.

2. Golebiewska EM, et al. Platelet secretion: From haemostasis to wound healing and beyond. Blood Rev 2015; 29: 153–162.

3. Park Y, et al. Mean platelet volume as an indicator of platelet activation: methodological issues. Platelets2002;13(5-6): 301-6.

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