Expression and clinical significance of obesity-associated gene STEAP4 in obese children

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ABSTRACT. The aim of this study was to investigate the expression and clinical significance of the obesity-associated gene STEAP4 in obese children. Fifty-three obese children and 33 children with a standard body weight (control) from our hospital were recruited to this study. The expression of STEAP4 mRNA and protein in the adipose tissue were detected by reverse transcriptase polymerase chain reaction and
enzyme-linked immunosorbent assay, respectively, in order to analyze the relationship between \textit{STEAP4} mRNA and protein levels and blood pressure, blood lipid profile, blood glucose levels, and inflammation in obese children. Obese children showed significantly lower levels of \textit{STEAP4} mRNA and protein in the adipose tissue compared to the control subjects (\(P < 0.05\)). The obese subjects exhibited significantly higher diastolic blood pressure (DBP), systolic blood pressure (SBP), total cholesterol (TC), triglyceride (TG), low-density lipoprotein (LDL), fasting plasma glucose (FPG), interleukin (IL)-6, and tumor necrosis factor (TNF)-\(\alpha\) levels, and a significantly lower high-density lipoprotein (HDL) level, compared to the control subjects (\(P < 0.05\)). Correlation analysis revealed that \textit{STEAP4} expression was negatively correlated with the DBP, SBP, TC, TG, LDL, FPG, IL-6, and TNF-\(\alpha\) levels, and was positively correlated with the HDL level (\(P < 0.05\)). In conclusion, the expression of \textit{STEAP4} was significantly downregulated in the adipose tissue of obese children and was closely related to the blood pressure, blood lipid, blood glucose, and inflammation in these patients; therefore, these results could provide a theoretical basis for the treatment of childhood obesity.

**Key words:** \textit{STEAP4}; Obese children; Lipid; TNF-\(\alpha\); IL-6; Blood pressure