

Endothelial dysfunction in young adults born small for gestational age

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Objective

To evaluate vascular function in young adults born small for gestational using *ex vivo* and *in vitro* approaches.

Methods

Follow-up of a perinatal cohort of 104 young adults aged between 16 to 25 years at tertiary university hospital in Spain, stratified by birthweight as adequate for gestational age (AGA, n=59) or small for gestational age (SGA, n=45). In the *ex vivo* approach, soluble tumor necrosis factor- α receptor 1 (TNFR1), vascular cell adhesion molecule-1 (VCAM-1), intercellular adhesion molecule-1 (ICAM-1), Von Willebrand factor (VWF), terminal complement complex (C5b-9) were quantified in peripheral blood samples. In the *in vitro* model, VCAM-1, ICAM-1, VWF, vascular endothelial cadherin (VE-Cadherin), reactive oxygen species (ROS) were evaluated on cultured endothelial cells exposed to patients' serum.

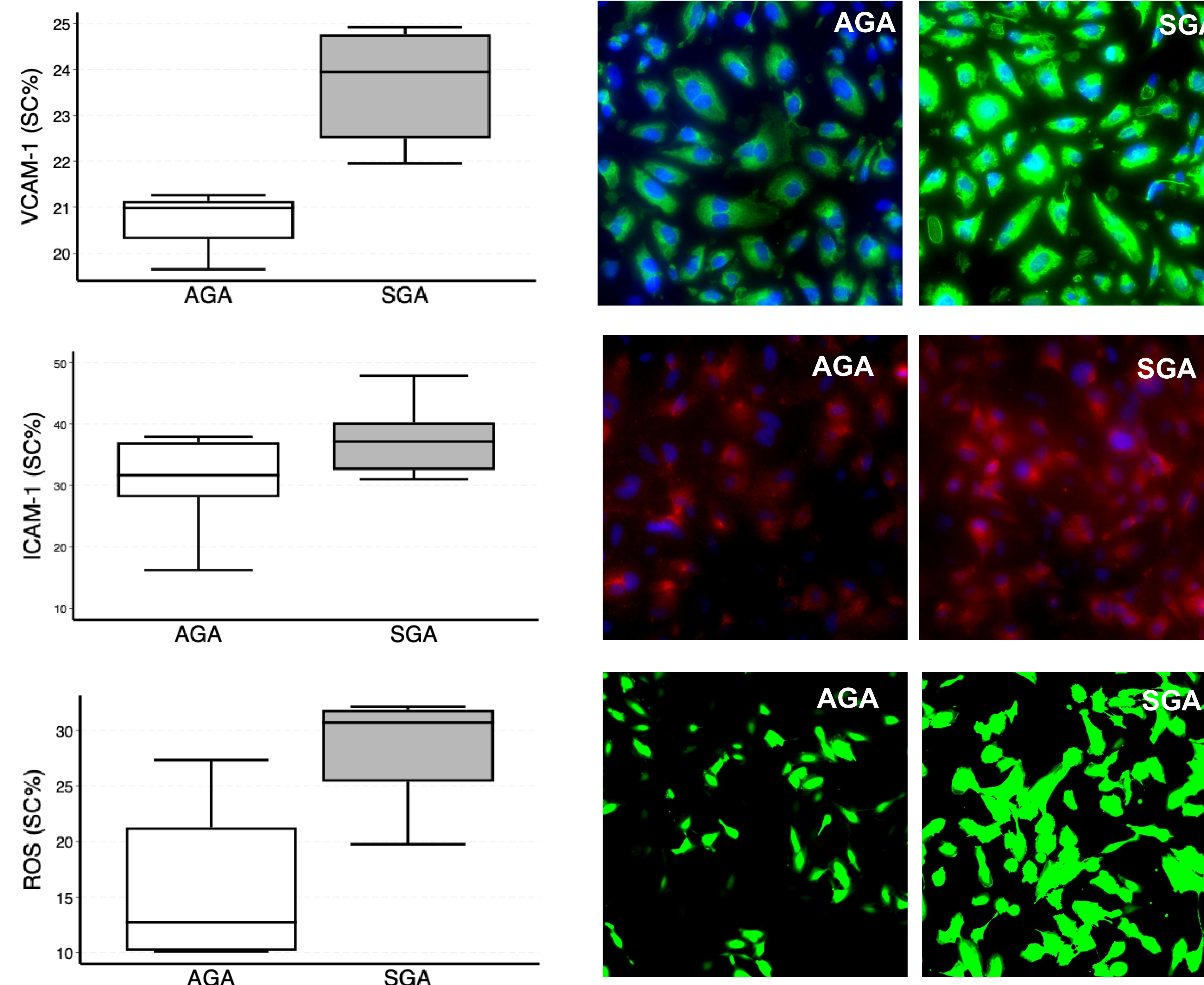


Figure 1. Boxplots showing surface cover of endothelial damage biomarkers in the study populations.

Results

Compared with AGA, young adults born SGA had a significant increased of sVCAM-1 and sTNFR1 with similar results in sICAM-1, sVWF and sC5b-9. Cultured endothelial cells exposed *in vitro* to SGA sera showed incremented expression of VCAM-1, ICAM-1 and ROS as compared to AGA (see Figure 1), with similar results in VWF and VE-Cadherin.

Conclusions

Young adults born with SGA show signs of higher endothelial adhesion and oxidative stress, suggesting persistence of vascular endothelial dysfunction into adulthood.