**Abstract**

The relationship between endometriosis and subclinical atherosclerosis represents an emerging topic in women's health, as women with endometriosis are at higher risk of cardiovascular disease later in life. We investigated metabolic parameters and indirect endothelial markers related to atherosclerosis, in women suffering from stage III/IV of endometriosis compared with women without endometriosis. The study population comprised 643 women: 92 women (14.3%) with stage III/IV of endometriosis and 551 (85.7%) without endometriosis. By analyzing biohumoral parameters we observed a significant increased total cholesterol (p = 0.01), LDL-C (p = 0.01), triglycerides (p = 0.05) and homocysteinaemia (p = 0.04), lower vitamin B6 and folate (p = 0.07 and p = 0.03, respectively) values, and higher high-sensitive C reactive protein (p = 0.05) concentrations in stage III/IV in comparison to those observed in women without endometriosis. After adjustment for traditional cardiovascular risk factors, the poorer lipid profile (total cholesterol, LDL-C), as well as Lipoprotein (a), remained significantly associated with severity of endometriosis (p = 0.01 and p = 0.03, respectively). Our findings highlight the role of endometriosis as a gender-specific cardiovascular risk factor. The clinical relevance of our study lies in identifying women with stage III/IV of endometriosis at higher risk of atherosclerotic disease, who could benefit from an early cardiovascular screening to control future cardiovascular risk.