

VASCULAR DISEASE

Metabolic syndrome increases risk of peripheral artery disease in women

A new analysis of data from the Women's Health Study has revealed that the metabolic syndrome (MetS) is associated with an increased risk of peripheral artery disease (PAD) in apparently healthy, middle-aged females. Markers of inflammation (high-sensitivity C-reactive protein [hsCRP]) and endothelial activation (soluble cellular adhesion molecule-1 [sICAM-1]) appear to have an important role in this relationship.

MetS has been identified as a risk factor for other cardiovascular conditions, including stroke and coronary artery disease, in several studies published during the last decade. However, a lack of prospective data on patients with PAD has meant that the association between MetS and this disease has remained unclear.

Conen and colleagues examined data from a subset of 27,111 female health professionals, aged 45 years or older without overt cardiovascular disease, who were enrolled in the Women's Health Study. Of these participants, 25.5% were found to have MetS (according to a previously validated, modified Adult Treatment Panel III definition).

During the follow-up period for this study (median 13.3 years), 114 incident PAD events occurred (defined as peripheral artery revascularization, intermittent claudication, or both). The results of a multivariate analysis, adjusted for other risk factors such as smoking status and age, demonstrated that the risk of PAD was three times higher in women who met three or more MetS criteria than in those without MetS. Individuals with

one or two MetS characteristics had a 2.5-fold increase in risk. Each of the MetS traits carried a 21% increase in risk for PAD. Of the MetS criteria, dysglycemia was associated with the highest risk (hazard ratio [HR] 2.05), followed by low HDL cholesterol (HR 1.60), and hypertension (HR 1.50). However, smoking was by far the most powerful risk factor for PAD, and was associated with a 12.7-fold increased risk.

“Each of the MetS traits carried a 21% increase in risk for PAD”

Plasma levels of hsCRP and sICAM-1 were significantly elevated in women with MetS (median 4.0 mg/l versus 1.5 mg/l compared with those without MetS). The risk model indicated that these biomarkers are strongly associated with the relationship between MetS and PAD. As the researchers write, “the excess risk associated with MetS may be mediated through heightened inflammation and/or endothelial activation.”

These data underscore the importance of controlling MetS risk factors, such as obesity, diabetes, high lipid levels, and high blood pressure, in the prevention of PAD.

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Original article Conen, D. *et al.* Metabolic syndrome, inflammation, and risk of symptomatic peripheral artery disease in women: a prospective study. *Circulation* **120**, 1041–1047 (2009).



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