



Invited Commentary

Commentary on: 'In Vitro Identification of Distinctive Metabolic Signatures of Intact Varicose Vein Tissue via Magic Angle Spinning Nuclear Magnetic Resonance Spectroscopy'

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In the study of varicose vein pathophysiology, there has been much attention focussing on the venous epidemiology, symptoms and risk factors,^{1–3} identification of histologic abnormalities in the venous wall,⁴ the structural changes that occur in collagen, elastin, laminin, fibronectin and tenascin,⁵ the differential expression of smooth muscle cell collagen I versus collagen III expression and the post-transcriptional modification of collagen by matrix metalloproteinases (MMPs) that take place affecting the production of collagen III,^{6,7} the presence of MMPs in varicose veins^{8–10} and how MMPs affect venous dilation and the mechanisms involving the endothelium and smooth muscle.^{11–13} What is unknown in the complex puzzle of varicose vein pathology, are the metabolic abnormalities that are critical to venous function. In this exciting new field of study called metabonomics (the study of metabolism in biologic systems in response to pathophysiologic responses), Anwar and colleagues use nuclear magnetic resonance spectroscopy, and determined that in patients with varicose veins there are significant differences in three important metabolic products involving creatine, lactate and myoinositol metabolites. The importance of this research is its ability to analyse cellular metabolism in varicose veins, with signature end products, that reflect the metabolism of the tissue and hold key information to the disease processes. Although it is not exactly clear what the function and role of these metabolites are in varicose veins, they do provide a 'window' into possible abnormal or compensatory metabolic pathways that have adapted due to the physiological stresses imposed by chronic venous disease. However, future research will need to define which cells (endothelial, smooth muscle and fibroblast) are involved in altered metabolism and how these metabolites are involved in the aetiology of varicose veins, to have the understanding in the disease pathway that will ultimately provide the best possible treatment to the involved cellular structures.

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