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IN BRIEF

METABOLISM

Calorie restriction for healthy ageing

Prolonged fasting and very low calorie diets are known to extend lifespan and are associated with healthy metabolic ageing in animal models. A study now shows that a fasting-mimicking diet (FMD) is also effective in reducing markers and risk factors of ageing in humans. Compared with participants on an unrestricted diet ($n = 43$), participants on a FMD (low in calories, sugars, and protein, high in unsaturated fat; five consecutive days per month for 3 months; $n = 39$) had lower body weight and body fat, and reduced blood pressure and insulin-like growth factor 1 (IGF1) blood levels, without serious adverse effects. After 3 months, individuals on an unrestricted diet were switched to the FMD. A *post-hoc* analysis of both FMD groups ($n = 71$) showed that fasting decreased BMI, blood pressure, and blood levels of IGF1, glucose, triglycerides, cholesterol, and C-reactive protein, with the effects being more pronounced in people with a higher risk of disease at baseline.

ORIGINAL ARTICLE Wei, M. *et al.* Fasting-mimicking diet and markers/risk factors for aging, diabetes, cancer, and cardiovascular disease. *Sci. Transl. Med.* http://dx.doi.org/10.1126/scitranslmed.aai8700 (2017)

THROMBOSIS

Rivaroxaban, a cost-effective alternative for SVT?

A 45-day course of daily subcutaneous injection with the factor Xa inhibitor fondaparinux or with low-molecular-weight heparin is the recommended treatment for patients with superficial-vein thrombosis (SVT). A clinical trial now shows that rivaroxaban, an oral factor Xa inhibitor, is noninferior to fondaparinux for the prevention of thromboembolic complications in these patients. This open-label, randomized, noninferiority trial included 485 patients with SVT at high risk of thromboembolic complications. The primary end point (a composite of symptomatic deep-vein thrombosis or pulmonary embolism, progression or recurrence of SVT, and all-cause mortality at 45 days) occurred in 3% and 2% of patients in the rivaroxaban and fondaparinux groups, respectively (HR 1.9, 95% CI 0.6–6.4, $P = 0.0025$ for noninferiority), without major bleeding events. Rivaroxaban is cheaper than fondaparinux, and use of an oral anticoagulant might provide a simple and effective alternative to daily subcutaneous injections.

ORIGINAL ARTICLE Beyer-Westendorf, J. *et al.* Prevention of thromboembolic complications in patients with superficial-vein thrombosis given rivaroxaban or fondaparinux: the open-label, randomised, non-inferiority SURPRISE phase 3b trial. *Lancet Haematol.* http://dx.doi.org/10.1016/S2352-3026(17)30014-5 (2017)

VALVULAR DISEASE

DPP4 inhibitors to prevent aortic valve calcification

Mechanisms leading to calcification of the aortic valve are unclear. Dipeptidyl peptidase 4 (DPP4), an enzyme involved in glucose metabolism, might contribute to this process, according to a new study. In human, cultured valvular interstitial cells (VICs), activation of nuclear factor-κB induced the expression of DPP4, which then promoted osteogenic differentiation through inhibition of insulin-like growth factor 1 (IGF1) signalling. Inhibition of DPP4 blocked *in vitro* VIC osteogenic differentiation and *in vivo* aortic valve calcification in *Nos3*$^{-/-}$ mice. In a rabbit model of calcific aortic valve disease, administration of the DPP4 inhibitor sitagliptin improved clinical parameters, reduced calcium deposits in aortic valve cusps, and increased IGF1 levels in plasma.

ORIGINAL ARTICLE Choi, B. *et al.* Dipeptidyl peptidase-4 induces aortic valve calcification by inhibiting insulin-like growth factor-1 signaling in valvular interstitial cells. *Circulation* http://dx.doi.org/10.1161/CIRCULATIONAHA.116.024270 (2017)