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HIGH DOSE ALLOPURINOL IMPROVES ENDOTHELIAL DYSFUNCTION IN PATIENTS WITH ISCHAEMIC HEART DISEASE AND LEFT VENTRICULAR HYPERTROPHY BUT DOES NOT MATCH AGE AND GENDER MATCHED CONTROLS

S Rekhraj, A Noman, B Szwejkowski, A D Struthers *University of Dundee, Ninewells hospital*

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Background Endothelial dysfunction is a poor prognostic marker in patients with ischaemic heart disease (IHD). Superoxide free radicals, which are generated by xanthine oxidase, contribute to oxidative stress and leads to the development of endothelial dysfunction. Aim of this sub-study was to investigate if high dose allopurinol, a xanthine oxidase inhibitor, could improve endothelial function in patients with IHD and left ventricular hypertrophy (LVH) to the same level of age and gender matched healthy volunteers.

Methods 66 patients with IHD and LVH were recruited into a randomised, double blind, placebo controlled parallel study. They received 600 mg/day allopurinol or placebo therapy over a 9 month follow up period. Endothelial function tests were performed at baseline, 6 months and 9 months visit. In addition, thirty age and gender matched healthy volunteers (HV) attended a single study visit for endothelial function tests. Endothelial function was assessed using flow-mediated dilatation (FMD) of the brachial artery and arterial stiffness measured using pulse wave analysis.

Results 60 patients completed the main study (31 active, 29 placebo). At baseline, the HV had a significantly greater FMD and lower AIx compared to the allopurinol group. Allopurinol significantly improved brachial artery FMD (ΔFMD: +0.82%±1.8% allopurinol vs—0.69%±2.8% placebo; p=0.017) and central augmentation index (Δ AIx: −2.8%±5.1% allopurinol vs +0.9% ±7% placebo; p=0.02). However, after 9 months of allopurinol therapy, their absolute endothelial function did not match that of age and gender matched healthy volunteers (FMD: 4.94±2.2% allopurinol vs 6.3±3.74% HV, p=0.092; AIx: 17.4±8.6% vs 12.8±11% HV, p=0.071).

Conclusions In conclusion, high dose allopurinol improves endothelial dysfunction in patients with ischaemic heart disease and left ventricular hypertrophy but their absolute endothelial function does not match age and gender matched healthy volunteers.