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A meta-analysis on the association of febuxostat compared to allopurinol on blood pressure and major adverse cardiac events (MACE) among adult patients with hyperuricemia

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Background: Increased uric acid levels have been known to be associated with different cardiovascular and renal diseases. Over the last few years, several studies have examined the role of urate-lowering therapy (ULT) in hypertension and Major Adverse Cardiac Events (MACE) and results are pointing to a potential role of elevated serum uric acid as an emerging independent cardiovascular risk factor.

Objective: To determine if urate-lowering therapy (Febuxostat vs Allopurinol) has an association on blood pressure and MACE among adult patients with hyperuricemia.

Methodology: Randomized controlled trials with outcomes of blood pressure, all-cause mortality, myocardial infarction, and stroke were searched through PubMed and Cochrane database.

Results: Pooled analysis of studies on hyperuricemic patients showed that Febuxostat 40 mg has no significant difference compared with Allopurinol 100/300mg with respect to lowering diastolic (MD -0.56 with 95% CI of -4.28 to 3.15) and systolic blood pressure (MD -0.72 with 95% CI of -4.87 to 6.31). No significant differences were also noted on all-cause mortality (OR 1.21 with 95% CI of 0.35 to 4.12) and myocardial infarction (MI) (OR 1.38 with 95% CI of 0.19 to 9.94). Outcomes on non-fatal stroke were only reported by Becker, et. al (2010) with only 2 events reported in the Febuxostat 80 mg group (0.26%) and no event in the Allopurinol group (CI= 0.082 to 1.155).

Conclusion: The results of this meta-analysis showed that urate-lowering therapy (Febuxostat vs Allopurinol) has no significant association on blood pressure among adult patients with hyperuricemia. No significant association was also found with respect to all-cause mortality and MI. Outcomes on stroke were inconclusive since only one study reported on its events.