



## Letter to the Editor

## Anti-gout drugs as potential therapy for atrial fibrillation

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Atrial fibrillation (AF) is an important cardiovascular disease in the elderly [1]. Noticeably, it has been increasingly demonstrated that serum uric acid (UA) is associated with AF [2–9]. In a recent meta-analysis performed by Tamariz and coworkers, the authors concluded that high levels of UA and AF are clearly associated [10]. Interestingly, serum UA has been linked to AF in obstructive sleep apnea patients [11], whereas it has been also associated with thromboembolic risk in patients with nonvalvular AF [12].

The treatment of gout, a metabolic disorder caused by chronic hyperuricemia, is based on administration of colchicine, xanthine oxidase (XO) competitive inhibitors such as allopurinol, and most recently, febuxostat [13]. In the Colchicine for Prevention of the Postpericardiotomy Syndrome and Postoperative Atrial Fibrillation (COPPS) randomized clinical trial, Imazio et al. reported that colchicine prevents both postpericardiotomy syndrome and postoperative AF when colchicine was given 48 to 72 h before cardiac surgery [14]. Singhal et al. also reported that colchicine may reverse atrial remodeling and suppress AF in failing heart [15]. Interestingly, allopurinol has recently been associated with a reduced risk of myocardial infarction (MI), while no decreased risk of MI has been found with colchicine administration [16].

Although increasing evidence suggests that purine metabolism is implicated in the pathophysiology of AF, mechanistic explanations have not been described so far. The exact mechanism of action of colchicine is not completely understood, even for the treatment of gout, whereas the high rate of adverse effects is regarded as an important hurdle for its prescription. On the other hand, higher UA reflects upregulated XO activity, an important source of reactive oxygen species (ROS) which may trigger cardiac tissue injury. It is well-known that allopurinol improves endothelial function, reduces blood pressure in essential hypertension and also exerts significant anti-ischemic effects in patients with stable angina. These effects are probably attributable to decreases ROS levels. Finally, there are no data on the cardiovascular effects of the newly released non-purine XO inhibitor febuxostat.

It is likely that the metabolism of purines is involved in the pathophysiology of AF, and therefore, anti-gout therapy represents a potential strategy to prevent this type of arrhythmia. At this point in time, however, the lack of knowledge about precise molecular mechanisms by which it operates greatly limits its applicability in the cardiology arena. Further studies that clarify these mechanisms are needed to allow further progresses in this field.

## Conflicts of interests

The authors declare that no conflict of interest exists.

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