Efficacy of bepridil as a periprocedural support drug in atrial fibrillation patients with left ventricular systolic dysfunction undergoing catheter ablation

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We previously reported that sinus restoration either with drugs or DC cardioversion prior to catheter ablation (CA) was associated with a better outcome in persistent atrial fibrillation (AF). As an antiarrhythmic agent for persistent AF, amiodarone is recommended for patients with structural heart disease. Bepridil, a unique multichannel inhibitor, has a comparable defibrillation efficacy and fewer extracardiac complications than amiodarone, although safety and efficacy of bepridil has not been established in those with left ventricular (LV) systolic dysfunction. We compared the safety and efficacy of bepridil and amiodarone as periprocedural support drugs for CA in patients with persistent AF with LV systolic dysfunction.

**Method and result:** Persistent AF patients with LVEF \(\leq 50\%\) taking bepridil or amiodarone as periprocedural support drugs for CA were retrospectively analyzed; 51 patients in the bepridil group and 17 patients in the amiodarone group. There were 20 (39\%) in the bepridil group and 17 (100\%) in the amiodarone group with LVEF less than 40\%. The amiodarone group had more history of heart failure hospitalizations, higher BNP, and lower LVEF than the bepridil group (HF; Bep 35.8\% vs Amio 94.1\% \(p < 0.01\), BNP; Bep 306.4\(\pm\)422.8 pg/ml vs Amio 645.2\(\pm\)456.3 \(p < 0.01\), LVEF; Bep 39.9\(\pm\)8.4\% vs Amio 26.7\(\pm\)7.9\% \(p < 0.01\)). Bepridil was used at a dose of 126\(\pm\)39 mg and amiodarone at 153\(\pm\)60 mg before CA. Successful pharmacological defibrillation before CA was more prevalent in the bepridil group (Bep; 15:29.4\% vs Amio; 2:11.8\%, \(p = 0.14\)). The time from drug induction to CA was 41\(\pm\)38 days in the bepridil group and 66\(\pm\)59 days in the amiodarone group. At 1-year after CA, doses of both drugs could be reduced (Bep: 72\(\pm\)53mg, Amio: 67\(\pm\)49mg), and 12 (23.5\%) in the bepridil group and 3 (17.6\%) in the amiodarone group were able to discontinue the drug. AF recurred in 6 (11\%) in the bepridil group, and 2 (11\%) in the amiodarone group. QTc was the longest immediately before CA in the both groups (Bep: 462\(\pm\)36ms, Amio: 462\(\pm\)32ms), but was shortened at 1-year with the drug dose reduction (Bep: 435\(\pm\)40ms, Amio: 444\(\pm\)29ms). LVEF significantly improved following maintenance of sinus rhythm in the both groups (Bep: 39.9\(\pm\)8.4\% to 52.6\(\pm\)10.2\% \(p < 0.01\), Amio: 26.7\(\pm\)7.9\% to 49.5\(\pm\)14.5\% \(p < 0.01\)), which was comparable between the 2 groups. Fatal ventricular arrhythmia occurred in 1 (5\%) in the amiodarone group but not in the bepridil group. Hospitalization for heart failure occurred in 2 (3.9\%) in the bepridil group.

**Discussion:** Bepridil could be used safely at a short-term high dose before ablation and then reducing the dose after ablation. There is also a trend toward selecting bepridil in patients with relatively preserved cardiac function and less severe conditions.

**Conclusion:** Bepridil can be used rather safely in AF patients with LV systolic dysfunction undergoing CA as a periprocedural support drug.