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CHARACTERISTICS OF ELECTROPHYSIOLOGY AND EFFECTS OF OUABAIN ON TRANSIENT OUTWARD POTASSIUM CURRENT AND L-TYPE CALCIUM CURRENT OF LEFT ATRIUM POSTERIOR WALL OF RABBITSTeng Wang, Congxin Huang, Hong Jiang, Qizhu Tang, Gengshan Li *Department Of Cardiology* 10.1136/heartjnl-2011-300867.33

Objective To investigate properties of electrophysiology and effects of ouabain on transient outward potassium current (I_{to}) and L-type calcium current (I_{Ca-L}) of left atrium posterior wall (LAPW) and left atrium appendage tissue (LAA) of rabbit, it could provide the scientific explanations that LAPW and ouabain could enhance atrial fibrillation (AF) vulnerability via increasing electrophysiological heterogeneity and electrical remodelling of different region of left atrium in rabbits.

Methods Atrial myocytes coming from LAPWs and LAAs of rabbits perfused via vitro heart perfusion system were obtained by enzymatic dissociation. The whole-cell patch-clamp technique was used to assess effects of ouabain on I_{to} and I_{Ca-L} . The current-voltage (I-V) curves of I_{to} and I_{Ca-L} on LAPW and LAA myocytes were fitted before and after of ouabain administration.

Results (1) With holding potential -50 mV and commanding potential $+50$ mV, the current densities of LAPW I_{to} were decreased slightly less than that of LAA I_{to} in control groups ($p>0.05$). After administration of ouabain, the current densities of LAPW I_{to} were significantly larger than that of LAA I_{to} ((10.97 ± 0.58) pA/pF vs (9.39 ± 0.83) pA/pF, $p<0.05$, respectively). The I-V curve of LAPW I_{to} was gently lowered

to I-V curve of LAA I_{to} in control groups. But with perfusion of ouabain, the I-V curve of LAPW I_{to} opposed to I-V curve of LAA I_{to} was significantly changed from the bottom to the top with same upward direction. (2) At voltage clamp protocol of I_{Ca-L} , the current densities of LAPW I_{Ca-L} were markedly decreased compared with that of LAA I_{Ca-L} in control groups ($p < 0.05$). With the addition to ouabain, the peak of amplitude of LAPW I_{Ca-L} at +20 mV was obviously increased to that of LAA I_{Ca-L} (-11.13 ± 0.99 pA/pF vs -8.86 ± 0.51 pA/pF, $p < 0.01$, respectively). At the control groups, the I-V curve of LAPW I_{Ca-L} was arranged the bottom of all I-V curves of I_{Ca-L} . The I-V curve of LAPW I_{Ca-L} , but through effects of ouabain, was completely upgraded to the top of other I-V curves of I_{Ca-L} . However, all shapes and directions of current peak of I-V curves of I_{Ca-L} were not changed between the control group and ouabain groups.

Conclusion The distribution properties of I_{Ca-L} have significant difference on LAPW of rabbit. Ouabain could accentuate the electrophysiological heterogeneity and electrical remodeling of I_{to} and I_{Ca-L} in LAPW of rabbits. It might contribute trigger and persistence factors to AF vulnerability.