Relationship between dilated cardiomyopathy and the E23K and I337V polymorphisms in the Kir6.2 subunit of the $K_{\text{ATP}}$ channel

H.L. Xi\textsuperscript{1}\textsuperscript{*}, J.F. Liu\textsuperscript{1}\textsuperscript{*}, L. Li\textsuperscript{2} and J. Wan\textsuperscript{1}

\textsuperscript{1}Institute of Cardiovascular Research, Renmin Hospital of Wuhan University, Wuhan, China
\textsuperscript{2}Department of Psychiatry, University of Alabama at Birmingham, Birmingham, AL, USA

*These authors contributed equally to this study.
Corresponding author: J. Wan
E-mail: wanjun1963@hotmail.com

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ABSTRACT. ATP-sensitive potassium channels play an important role in myocardial electrical activity. Genetic disruption of these channels predisposes the myocardium to cardiac diseases. Herein we investigated whether two polymorphisms, E23K and I337V, located in the Kir6.2 subunit of ATP-sensitive potassium channels are associated with dilated cardiomyopathy (DCM) in a Chinese population. Blood was collected from DCM patients and controls. DNA was extracted for polymerase chain reaction, which was followed by DNA sequencing. The 2 polymorphisms were present in both DCM patients and normal controls. The frequencies of both the E23K and the I337V polymorphisms were not significantly different between DCM patients and normal controls. However, in DCM patients carrying the E23K polymorphism, the left ventricular end diastolic dimension (LVEDD) and the left atrial dimension (LAD) were significantly greater than those in DCM patients without the E23K polymorphism. Moreover, the occurrence of ventricular arrhythmias in DCM patients was...
also slightly increased in the presence of the E23K polymorphism (P < 0.05). We failed to identify an association between the I337V polymorphism and LVEDD, LAD, or ventricular arrhythmias in patients with DCM. The Kir6.2 E23K polymorphism in DCM patients of Han ethnicity may increase the risk of negative outcomes such as congestive heart failure and sudden cardiac death by affecting LVEDD and LAD.

**Key words:** E23K; I337V; Polymorphism; Dilated cardiomyopathy; ATP-sensitive potassium channels