Randomized Study of Propofol Effect On Electrophysiological Properties of the Atrioventricular Node in Patients with Nodal Reentrant Tachycardia

PAULO WARPECHOWSKI, M.D., M.Sc., GUSTAVO G. LIMA, M.D., Ph.D., F.A.C.C., CLAUDIO M. MEDEIROS, M.D., ARI TADEU L. SANTOS, M.D., M.Sc., MARCELO KRUSE, M.D., MARCELO H. MIGLORANSA, M.D., and RENATO A.K. KALIL, M.D., Ph.D.

From the Post Graduate Program in Cardiology, Institute of Cardiology of Rio Grande Do SUL/FUC and Fundac¸˜ao Faculdade Federal de Ciências Médicas de Porto Alegre, Porto Alegre, Brazil

Background: Atrioventricular nodal reentrant tachycardia (AVNRT) is probably the most common form of paroxysmal supraventricular tachycardia. Percutaneous catheter ablation is a technique to interrupt cardiac conduction pathways selectively. The anesthetist is challenged to provide a safe anesthetic which takes into account the electrophysiologist’s requirements for minimal cardiac conduction interference. Propofol is an ideal drug. However, previous studies have shown that the infusion of propofol has sometimes been associated with bradyarrhythmias or conversion of arrhythmias to sinus rhythm. The purpose of this report is to verify the interferences of propofol in the electrophysiological properties of the atrioventricular(AV) node conduction system in patients with AVNRT.

Methods: Patients were randomly assigned to receive either a placebo or propofol at sedative doses. An electrophysiological study was performed consisting of measuring the anterograde (AERPFP) and retrograde effective refractory period of the fast (RERPFP) and the anterograde effective refractory period of the slow (AERPSP) AV nodal pathway. Reciprocating tachycardia was induced and the cycle length (CL) and atrial-His (AH), His-ventricular (HV), and ventriculoatrial (VA) intervals were measured.

Results: Propofol did not cause alteration (P > 0.05) in the AERPFP or RERPFP and the AERPSP AV nodal pathway. The AH, HV, and VA intervals were not affected. Sustained reciprocating tachycardia could be induced in all patients. All slow pathways were successfully identified and ablated.

Conclusion: Propofol has no effect on the electrophysiological properties of the AV node conduction system. It is thus a suitable anesthetic agent for use in patients undergoing ablative procedures. (PACE 2006; 29: 1375–1382)

Address for reprints: Dr. Paulo Warpechowski, Instituto de Cardiologia do RS/FUC, Unidade de Pesquisa, Av. Princesa Isabel, 370 Porto Alegre, RS 90.620-001, Brasil. Fax: 55-51-32192802–ext. 23; e-mail: pwar2002@terra.com.br

Received March 29, 2006; revised July 6, 2006; accepted August 25, 2006.

PACE, Vol. 29 December 2006.