

## Use of landiolol in the perioperative management of supraventricular tachycardia

**Hiroaki Ito, Kazuya Sobue, MinHye So, Hiroyuki Hirate, Takeshi Sugiura, Takafumi Azami, Hiroshi Sasano, and Hirotada Katsuya**

Department of Anesthesiology and Medical Crisis Management, Nagoya City University Graduate School of Medical Sciences, 1 Kawasumi, Mizuho-cho Mizuho-ku, Nagoya 467-8601, Japan

*To the Editor:* Supraventricular tachycardia (SVT) is common after cardiac surgery [1]. There is an increasing body of evidence that  $\beta$ -adrenoceptor-blocking drugs given during the perioperative period are effective in the treatment of SVT [2,3]. We report a patient whose hemodynamics improved with landiolol, an ultra-shortacting  $\beta$ -blocker, and intraaortic balloon pumping (IABP).

A 53-year-old woman (height, 155 cm; weight, 51 kg) who had been diagnosed with Ebstein's anomaly, presented for Glenn's operation and right ventricular plication. A permanent pacemaker had been implanted for sick sinus syndrome 4 years before the surgery, and it had been set in DDD mode at a rate of 70 beats per min (bpm). Preoperatively, the administration of dobutamine infusion was required for heart failure.

Anesthesia was provided with air/oxygen (75%/25%), sevoflurane, and fentanyl (total dose, 1300  $\mu$ g), and the surgery was started without difficulty. SVT (heart rate [HR] 160–200 bpm) developed and led to serious hypotension (60/40 mmHg) despite the intravenous infusion of dopamine 10  $\mu$ g·kg<sup>-1</sup>·min<sup>-1</sup>, after the completion of cardiopulmonary bypass. We began IABP to stabilize her hemodynamic status. However, due to her extremely rapid heart rate, the IABP apparatus could not synchronize with her heartbeat which ever trigger mode was chosen. The surgeons performed cardioversion without success. Landiolol 1.25 mg·kg<sup>-1</sup> was given over 10 min as a loading dose, followed by continuous infusion at 0.04 mg·kg<sup>-1</sup>·min<sup>-1</sup>, and her HR decreased to 70–100 bpm. Due to the good HR control, the IABP synchronized with her rhythm, and her blood pressure rose to 100/60 mmHg. She was transferred to the intensive care unit with IABP after the surgical procedure was completed. We decreased the dose of her dopamine infusion because her hemodynamic status

was stable. Her blood pressure then dropped, although the IABP worked well. The vasoconstrictive effect of dopamine appeared to be required for maintaining a stable hemodynamic status. Landiolol was discontinued 10 h after her admission to the intensive care unit. The SVT recurred immediately, resulting in failure of IABP synchronization. Landiolol infusion was recommenced. As a result, her HR decreased to 90–100 bpm and her hemodynamic status improved again. The landiolol infusion was continued for another 50 h, at the same rate. She remained stable and was discharged from the intensive care unit on the tenth postoperative day.

We believe that landiolol is useful for the HR control of perioperative SVT in patients undergoing cardiac surgery and that the resultant slow cardiac rhythm aids the synchronization of IABP with the patient's heartbeat. In this patient, landiolol was safely administered not only intraoperatively but also postoperatively for as long as 3 days.

Landiolol is considered to be effective in treating perioperative SVT because of its similarity to esmolol, another cardioselective and ultra-shortacting  $\beta$ -blocker, which, it is claimed, is safe and efficacious [4,5]. Further, landiolol has been shown to have a less depressive effect on the cardiovascular system than esmolol in animals [6,7]. In humans, it appears that the blood pressure does not significantly decrease at the optimal dose of landiolol required for HR control [8]. This characteristic would be advantageous for administration to a patient with hypotension.

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*Address correspondence to:* K. Sobue

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