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Azelnidipine
A Viewpoint by Junichi Minami

Department of Hypertension and Cardiorenal Medicine, Dokkyo University School of Medicine, Tochigi, Japan

Azelnidipine is a new dihydropyridine calcium channel antagonist that was jointly developed by Sankyo and Ube Industries. In hypertensive patients, its plasma half-life ($t_{1/2}$) is about 6 hours, which is generally comparable to those of dihydropyridine calcium antagonists commonly used in the treatment of patients with hypertension; amlodipine has the longest $t_{1/2}$ (≈30–50 hours) of drugs in this class.

In a randomised, double-blind study of 45 patients with essential hypertension, the hypotensive effects of azelnidipine 16 mg/day and amlodipine 5 mg/day were similar during both the daytime and the night-time after 6 weeks of treatment.[1] In addition, the 24-hour average pulse rate had a nonsignificant decrease of 2 beats/min in the azelnidipine group, whereas it significantly increased by 4 beats/min in the amlodipine group, suggesting that azelnidipine does not cause reflex tachycardia in association with a decrease in blood pressure.

Recently, some calcium antagonists have been shown to act on types of calcium channels other than the L-type channel, and such calcium antagonists may suppress sympathetic stimulation (N-type) or atrial conduction (T-type). Our group have shown that cilnidipine, which has the L-type and N-type calcium channel-blocking action, has less influence on the autonomic nervous system and heart rate than nifedipine retard after 4 weeks of treatment in hypertensive patients.[2] With regard to this point, preclinical studies have shown that azelnidipine does not act on either the N-type or T-type calcium channel (Azelnidipine Investigators' Brochure 2002: unpublished). It is probable that azelnidipine elicits a persistent hypotensive effect and suppresses reflex tachycardia, even after its disappearance from the plasma, because it is highly lipophilic and retained in the vascular wall.

In conclusion, azelnidipine may avoid the disadvantages of conventional calcium antagonists and their unfavourable effects on the heart, such as sympathetic nervous activation and reflex tachycardia in association with a decrease in blood pressure. ▲

References

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