



Amlodipine toxicity and lipid emulsion

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We read the interesting article ‘Amlodipine toxicity complicated by concurrent medications’ in the *Korean Journal of Anesthesiology* [1]. In addition to the supportive treatment of amlodipine toxicity reported by Gupta and Kerai [1], the following should be considered in the treatment and interpretation of this case. First, amlodipine is a dihydropyridine L-type calcium channel blocker and mainly produces vasodilation in the treatment of hypertension [2]. Toxic doses of amlodipine produce not only vasodilation but also severe cardiac depression [2]. It has been reported that lipid emulsion alleviates the severe cardiovascular depression induced by toxic doses of amlodipine [2–4]. In addition, the widely accepted underlying mechanism associated with lipid emulsion-mediated treatment of local anesthetic toxicity is a scavenging effect (lipid sink and shuttle), in which a drug with high lipid solubility is absorbed into a lipid emulsion of plasma from tissue and then transported into the liver and muscle for detoxification [5]. Moreover, lipid emulsion alone causes a direct inotropic effect [5]. Taking into consideration the above comments, as amlodipine is highly lipid soluble (log [octanol/water partition coefficient]: 3.0) and a toxic dose of amlodipine additionally produces myocardial

depression, lipid emulsion treatment should be considered for the treatment of cardiovascular depression induced by a toxic dose of amlodipine [2,5]. Second, Gupta and Kerai [1] emphasized successful treatment of amlodipine toxicity complicated by concurrent medication. Following a suicide attempt using a specific drug, additional agents other than the drug used in the attempt are concurrently administered in some cases of drug toxicity. In some cases of amlodipine toxicity with other concurrent medication (ethanol, simvastatin, and trazodone), as in this case report, lipid emulsion treatment partially contributes to recovery from cardiovascular depression induced by a toxic dose of amlodipine [2,4]. We believe that timely treatment including activated charcoal and supportive care in this case also contributed to recovery from amlodipine-induced cardiovascular depression.

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