

**Title:** Phantom Limb Pain Exacerbated by Intravenous Ketamine

**Authors:** Tetsuya Sakai, MD, PhD and Koji Sumikawa, MD, PhD

**Institutions and Affiliations:** Department of Anesthesiology, Nagasaki University

School of Medicine, 1-7-1 Sakamoto, Nagasaki 852-8501, Japan

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**Corresponding Author:** Tetsuya Sakai

Department of Anesthesiology, Nagasaki University School of Medicine, 1-7-1

Sakamoto, Nagasaki 852-8501, Japan.

E-mail: [tscat@fb3.so-net.ne.jp](mailto:tscat@fb3.so-net.ne.jp)

Fax: +81-95-819-7373

Tel: +81-95-819-7370

To the Editor;

Some reports have shown that N-methyl-D-aspartate (NMDA) antagonists attenuate phantom limb pain (PLP) [1, 2]. We report a case of PLP exacerbated by intravenous ketamine.

A 64-year-old man had undergone above-the-right-wrist amputation because of an accident 41 years ago. Two years after the amputation, PLP occurred in the amputated hand. Various medications were ineffective, and his PLP persisted for 39 years. When he was referred to our clinic, antidepressants and benzodiazepine were prescribed. The PLP without stump pain was described as throbbing, and the intensity was 7/10. On the first day, lidocaine 200 mg (3 mg/kg) was infused for 30 min after the placebo test (saline infusion; no change in intensity); the intensity then decreased to 2. However, the PLP recovered 30 min after the completion of lidocaine infusion. Next day, ketamine 5 mg i.v. was administered after the placebo test, because we assumed that NMDA-receptor hyperexcitability plays a role in PLP maintenance. Unexpectedly, he suffered excruciating PLP and a hallucination with a flashback of the previous accident. As he could not tolerate PLP, we administered midazolam 2 mg i.v. 5 min later. This resulted in rapid remission of the PLP and hallucination 2 min later. On the same day, we started mexiletine 300 mg/day, but the PLP did not improve.

Hallucinations sometimes occur after sub-anesthetic doses of ketamine [3], and benzodiazepine markedly reduces them [4]. In our case, midazolam attenuated the exacerbated PLP and hallucination with a flashback following ketamine. Therefore, we speculate that the ketamine-induced hallucination may have been indirectly responsible for PLP exacerbation.

**Conflict of interest:** None

## **References**

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