Post-injection delirium/sedation syndrome after olanzapine pamoate intramuscular injection confirmed by serum olanzapine concentrations

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Objective:
This is a report of a very rare case of a serious adverse event termed "post-injection delirium/sedation syndrome" (PDSS) due to olanzapine pamoate intramuscular injection, with symptoms similar to those of serious acute oral olanzapine intoxication confirmed by serum olanzapine concentrations using Liquid Chromatography – Tandem Mass Spectrometry (LC-MS-MS).

Case report:
A 60-year-old schizophrenic female, underweight (BMI 18.2 kg/m²), was admitted to the Toxicology Department with a suspicion of olanzapine intoxication. The patient lost consciousness 10 minutes following the fourth intramuscular injection of 405 mg olanzapine pamoate, which was administered every four weeks. She was unresponsive with bilateral miosis, periodically agitated with rigidly and asymmetric abnormal flexion in all four extremities. Vital signs included BP (140/75 mmHg), sinus tachycardia (HR 112-130/min) and increased body temperature (38.2°C). Due to upper airway obstruction intubation was performed, but mechanical ventilation was not necessary. After 24-hour symptomatic therapy, patient was extubated. She remained moderately somnolent, confused, with slurred speech, unable to carry out simple commands. Forty-eight hours after the injection, the patient was fully conscious but significantly weakened. She was discharged from the hospital after 5 days. Blood laboratory tests were in the normal range. Quantitative determination of serum olanzapine levels were performed by LC-MS-MS. 5, 14, 24 and 48 hours post-injection drug levels were 698, 530, 544 and 271 ng/mL, respectively (recommended therapeutic concentration 20-80 ng/mL).

Conclusions:
PDSS is a rare (0.07% of injections) but serious adverse event of therapy with olanzapine pamoate in which olanzapine levels are observed exceeding 600 ng/mL, such as in the presented case. Because of a wide inter-individual variability in the olanzapine pharmacokinetics and no identifiable risk factors, therapeutic drug monitoring may be a valuable tool for both safety and effectiveness of therapy (1,2). Lower BMI and a higher age of the patient could increase the risk of PDSS, as in our case. Reporting all cases of PDSS with a careful description of symptoms and assessment of drug concentrations may contribute to deepen the knowledge about this rare syndrome.