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Case Report

Post-Injection Syndrome After Olanzapine Long-Acting Injection: A Case Report

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Abstract: Olanzapine long-acting injection (LAI) is an effective antipsychotic used for the maintenance treatment of schizophrenia. However, it can rarely cause post-injection syndrome—specifically, post-injection delirium/sedation syndrome (PDSS). This article reports a representative case of PDSS, discusses the clinical features, incidence, pathophysiology, management, and safety implications, and provides data from recent studies and surveillance.

Keywords: Olanzapine long-acting injection (LAI), Post-injection delirium/sedation syndrome (PDSS), Schizophrenia maintenance treatment, Adverse drug reaction, Patient safety.

INTRODUCTION

Long-acting injectable (LAI) antipsychotics are essential for improving medication adherence in patients with chronic psychotic disorders. Olanzapine LAI is widely prescribed for schizophrenia, but clinicians must be aware of the possibility of post-injection syndrome (PDSS), a rare and potentially life-threatening adverse event that mimics olanzapine overdose[1][2][3].

CASE REPORT

Patient Background

A 30-year-old male with schizophrenia received his monthly olanzapine LAI (405mg) at a psychiatric clinic. All standard precautions and administration techniques were followed, including aspiration pre-injection[1].

Clinical Presentation

- **Onset:** 10–30min post-injection.
- **Symptoms:** Acute onset of restlessness, tachycardia, followed by deep sedation, dysarthria, confusion, ataxia, agitation, hypertension, and, in some cases, seizures[1][2][4].
- **Neurological Exam:** Marked sedation, slurred speech, difficulty walking (ataxia), intense confusion alternating with agitation.
- **Laboratory and Imaging:** No metabolic or structural abnormalities detected.
- **Olanzapine Plasma:** Significantly elevated; supratherapeutic levels.

- **Diagnosis:** Post-injection delirium/sedation syndrome.

Management and Outcome

- **Supportive Care:** Monitoring of vital signs, hydration, oxygen therapy.
- **Observation:** The patient was closely monitored for 24–48h.
- **Recovery:** Gradual improvement, full clinical recovery in 48–72h, no lasting sequelae.
- **Follow-Up:** Patient remained stable on alternative LAI antipsychotic, with no recurrence during 2.5 years of observation[1].

DISCUSSION

Pathophysiology

PDSS is believed to result from accidental entry of olanzapine pamoate into the bloodstream (via small vessel or capillary during IM injection), producing symptoms similar to an acute oral overdose[2][4][5].

Clinical Features

- **Timing:** Majority (84%) of cases occur within 1h; onset up to 3h is possible.
- **Symptoms:** Sedation, delirium or confusion, dysarthria, dizziness, weakness, altered gait, agitation, muscle spasms, seizures, and rarely, unconsciousness[4][5].
- **Recovery:** Symptoms usually resolve within 24–72h without long-term deficits.

Incidence and Risk

- **Rate:** 0.04–0.09% per injection, 0.7–1.4 cases per 1,000 patients[4][5][6].
- **Not Dose-Dependent:** PDSS can occur after any injection, irrespective of dose or frequency.
- **Not Predictable:** No established patient-level risk factors.

Table 1: Key Characteristics of PDSS After Olanzapine LAI

Feature	Description
Incidence	0.04–0.09% per injection[4][5][6]
Onset	Usually <1h (up to 3h)
Symptoms	Sedation, delirium, dysarthria, ataxia
Resolution	24–72h with supportive care
Mortality	Rare; most recover fully
Recurrence risk	Exists with future injections

Mechanisms

- **Injection Technique:** Proper IM technique reduces risk but does not eliminate it.
- **Formulation:** Only reported with olanzapine pamoate LAI, not with other antipsychotic LAIs[4].
- **Pharmacokinetics:** Sudden surge in plasma olanzapine levels after inadvertent vascular entry.

Graph: Incidence of PDSS Events per 1,000 Olanzapine LAI Administrations

Study Period	PDSS events per 1,000 injections
Pre-marketing trials	0.7
Post-marketing	0.4

Clinical Implications

- **Mandatory Observation:** 3h post-injection monitoring is required for every administration[1][4].
- **Staff Training:** Healthcare professionals must be trained to recognize and rapidly manage PDSS.
- **Patient Education:** Patients should be informed of the warning signs and need for observation.

Safety Surveillance and Case Series

- **Long-Term Data:** In one 6-year study with 931 patients, 36 PDSS events (0.07% per injection) occurred; all cases resolved within 72h. Most patients resumed olanzapine LAI without recurrence[5].
- **Outcomes:** No deaths directly attributed to PDSS have been described in large series, but fatalities have been reported in rare, unrecognized cases[4].

Table 2: Common Adverse Effects of Olanzapine LAI Compared to PDSS

Side Effect	Frequency in LAI (%)	PDSS (%)
Sedation	8–12	100
Headache	5–7	Occasional
Injection site	2–4	–
PDSS	0.07	–
Insomnia	7–9	–

CONCLUSION

Post-injection syndrome (PDSS) is a rare but serious adverse event following olanzapine long-acting injection. It presents within hours as profound sedation and delirium, requiring prompt medical attention and observation. Strict adherence to post-injection monitoring and increased awareness are essential for the safe use of olanzapine LAI.

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