

## Postinjection Delirium/Sedation Syndrome (PDSS) before Discharge from the Ward in a 33 Year Old Male

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**Abstract:** The postinjection delirium/sedation syndrome (PDSS) after injection of the antipsychotic olanzapine depot formulation (ZypadheraR) is a very rare complication. In general, the symptoms develop within 3 hours and need clinical admission including monitoring. Although the delirium may be marked, the outcome is excellent. The present case report shows an excited delirium state starting 3 hours after injection which responded to benzodiazepines with adequate monitoring. Further studies are needed to standardize treatment and understand the pathophysiology.

**Keywords:** olanzapine depot formulation, antipsychotic, postinjection delirium, treatment, postinjection syndrome, excited delirium, olanzapine long acting injection formulation

### 1. INTRODUCTION

Olanzapine is offered as a sustained-release formulation for deep intramuscular injection every 2 to 4 weeks (Heres et al., 2014). Unfortunately, a delirium-sedation syndrome may occur due to intravascular uptake even following correct technique with an incidence of 0.7 %, male gender and higher doses being risk factors (Sarangula et al., 2016; Meyers et al., 2017; Uglesic et al., 2017). Approximately 90 % of the syndromes develop within 1 hour after injection, so that the recommended observation time of 3 hours appears to be reasonable. The symptoms include sedation – even coma – and delirium with confusion, desorientation, agitation, anxiety and cognitive impairment. Slurred speech, dysarthria, dizziness, cardiovascular complications or aggression may also be present. Apart from hospital admission and IUC treatment, no specific treatment options are recommended. However, some authors work with low doses of benzodiazepines which requires control of cardiovascular and respiratory function.

In the following case report slurred speech was the only initial symptom 3 hours after injection leading to the full syndrome within 2 to 3 hours.

### 2. CASE REPORT

The author thanks the patient for his informed written consent. A 33 year old man received every 4 weeks 405 mg ZypadheraR (Olanzapine long acting injection; LAI), changing between

right and left gluteal region. He suffered from schizophrenia with drug and alcohol misuse in his history. Prior to his admission to the outpatient clinic he was treated in a forensic department for 9 years. Somatically, he was in good health and he did not take any medication apart from ZypadheraR, which he well tolerated in the forensic department since 2011. He was then referred to the outpatient clinic of our department.

After the 24th injection in our outpatient clinic he was referred to the final talk with the consultant after 3 hours at 3.00 p.m. He felt slightly dizzy and had a slurred speech. He wanted to leave the clinic but was convinced to stay in the IUC unit. Within 2 hours he started to sweat and developed a reddish warm skin, tachycardia and became increasingly confused and agitated. He became slightly aggressive and probably had optical hallucinations corresponding to an excited delirium. He was monitored carefully and got intravenous fluid and a 1:1 care.

As he showed marked excitation and aggression, we decided to administer 0.5 mg doses of lorazepam (up to 2 mg per day) under continuous monitoring of vital signs, which he well tolerated. The serum level of olanzapine was 500 ug/l and that of desmethyl-olanzapine was 12 ug/l. Levels of previous controls showed values between 30 and 40 ug/l or less than 10 ug/l for the desmethyl-metabolite, respectively.

Clinical laboratory and drug screen were completely normal apart from a leucocytosis of  $14.4 \times 10^9/L$  (4-10 normal range). During the following night he recovered from the delirium with a complete amnesia starting from admission to hospital up to the morning hours. He was again fully oriented but due to the autonomous reactions we decided to keep him on the ward for another night. He was discharged in good health on the 3rd day after admission. After discussion of the adverse event with the consultant the patient decided to take oral medication thereafter, with which he is still doing quite well.

### **3. CONCLUSION**

The PDSS after injection of olanzapine LAI is a complication which can occur after every injection even after perfect technique. The pathophysiology of the adverse event is still not fully understood. Some similarities exist with the Nicolau syndrome (Koch et al., 2003; Nayci and Gurci, 2003; Chagas et al., 2016), where – after gluteal injection – the circumflex artery may be affected. Although the Nicolau syndrome often causes dermatological necrosis (Embolica cutis medicamentosa), additional neurological deficits may occur. However, in contrast to the Nicolau syndrome, no cases with continuous sequelae of the PDSS are known and the prognosis is good after clinical observation for up to 70 hours. As no evidence-based treatment exists, we decided to use lorazepam to treat delirium and aggression, which was well tolerated under monitoring conditions, being aware of the interaction potential (Sarangula et al., 2016). Nevertheless, further observations are

necessary to substantiate the management of the PDSS.

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