When a “Routine” Treatment for Agitation Causes Serious Harm: A Case of Rapid Onset Neuroleptic Malignant Syndrome

Kaitlyn Marie Egger*, Christopher Donald Palmer

Internal Medicine Residency Program, Brown University, USA

*Corresponding author: Kaitlyn Marie Egger, Internal Medicine Residency Program, Brown University, USA, Tel: +6312752367; E-mail: kmeagger18@gmail.com

Received date: January 26, 2021; Accepted date: February 09, 2021; Published date: February 16, 2021

Citation: Kaitlyn ME, Christopher DP (2021) When a “Routine” Treatment for Agitation Causes Serious Harm: A Case of Rapid Onset Neuroleptic Malignant Syndrome. Med Case Rep Vol.7 No.2:1.

Abstract

This case study is meant to educate medical personnel on how to recognize and manage neuroleptic malignant Syndrome (NMS), a serious adverse effect due to anti-psychotics and simultaneously highlighting this case as exceptionally rare given the rapidity of onset (<3 hours). We encourage providers to avoid reflexive orders for agitation/restlessness and consider other non-pharmacologic modalities and/or to adopt an initial reduced dosing strategy when appropriate. This case also assists to provide a better knowledge base regarding consequences of NMS and probable risk factors for developing this pathology. We describe a case of an 83-year-old female with a history of dementia who presented for behavioral changes according to her daughter. The patient underwent a recent long and appropriate tapering off of her opiates, which therefore negated any possibility of this being opiate withdrawal. Upon arrival she was quite agitated and subsequently received intravenous haloperidol. Following this, the patient developed an unusually rapid onset of rigidity, tachycardia, fever, and encephalopathy with laboratory findings revealing an elevated serum creatinine kinase. Her deteriorating status was reversed with the muscle relaxant, dantrolene, over the next 24 hours. Given her symptomatology and response to treatment, she was diagnosed with NMS.

Keywords: Neuroleptic malignant syndrome; NMS case; Anti-Psychotics; Agitation; Consequences; Risk factors

Case Report

An 83-year-old female with a past medical history of chronic anemia, significant dementia, acid reflux, and osteoarthritis presents to the emergency room (ER) with behavioral changes at home. Her daughter provides the history and does mention her outpatient doctor tapered the patient off of her chronic opiates for chronic arthritis over the time period of 7 months. The tapering was very slow and appropriate. Her last dose was 10 days prior to this presentation. At the time she stopped her opiates completely, she did develop diarrhea, suffered multiple falls, and was just not acting herself. This prompted the daughter to take her to another hospital for observation. Intravenous (IV) fluids were administered and the patient’s symptoms resolved with only conservative management. Now present day, her daughter felt that her mother was showing signs of increased agitation/distress. At the time she stopped her opiates completely, she did develop diarrhea, suffered multiple falls, and was just not acting herself. This prompted the daughter to take her to another hospital for observation. Intravenous (IV) fluids were administered and the patient’s symptoms resolved with only conservative management. Now present day, her daughter felt that her mother was showing signs of increased agitation/distress. The daughter described clinical symptoms revealed in the patient’s room, which was unlike how the patient conducts herself. Her daughter thought her mother was in pain, possibly due to headache, abdominal pain or generalized arthritic pain as the patient was no longer on opiates. However, pinpointing the cause of her behavioral change proved difficult given her baseline dementia.

Upon presentation to the ER, the patient was found to be have an automated blood pressure of 200/120 mmhg, HR 90, RR 18, Temperature 36.5°C. She also appeared to be in an agitated state. She was very restless, uncooperative, and pulling at her IV line, presenting a danger to herself. A 2 mg dose of IV haloperidol was given to the patient as well as 10 mg IV labetalol.

Introduction

Our case presentation below is meant to educate medical personnel on how to recognize and manage neuroleptic malignant Syndrome (NMS), a serious adverse effect to anti-psychotics. Also, we highlight this case as exceptionally rare given the rapidity of onset. We also use this case as a way to encourage providers to avoid reflexive orders for agitation/restlessness and consider other modalities or an initial reduced dosing strategy when appropriate. We attempt to better supplement providers’ knowledge base regarding consequences of NMS and probable risk factors for developing this pathology.
Two-three hours later, the patient’s vital signs and exam changed significantly. Blood pressure 190/90, HR 130, RR 24, Temperature 37.1°C. On exam she was in distress, encephalopathic, and could not follow commands. Her jaw was clenched. No JVD. No nystagmus. She was tachycardic with regular rhythm without murmur. She was tachypneic with clear lung sounds. Abdomen was soft without exhibiting a pain response. She had no extremity edema with pulses intact. Her fists were clenched, salivating, upper and lower extremities were severely rigid, pedal clonus was exhibited, but not spontaneous. Two consecutive doses of 1 mg benztropine were administered to treat possible extrapyramidal dystonic reaction secondary to haloperidol. The patient did not improve. Soon after the patient developed a fever of 40°C.

Initially, her lab values were within normal limits, except for a mild anemia, comparable to the patient’s labs 2 months ago. However, following the onset of fever, repeat labs revealed: (Table 1)

<table>
<thead>
<tr>
<th>Laboratory test</th>
<th>Patients’ value</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC</td>
<td>16,000 per ml</td>
<td>5,000-10,000 per ml</td>
</tr>
<tr>
<td>HGB</td>
<td>11.0 g/dl</td>
<td>12-16 g/dl</td>
</tr>
<tr>
<td>PLT</td>
<td>323,000 per ml</td>
<td>150,000-400,000 per ml</td>
</tr>
<tr>
<td>Na</td>
<td>133 mmol/L</td>
<td>136-145 mmol/L</td>
</tr>
<tr>
<td>K</td>
<td>4.2 mmol/L</td>
<td>3.5-5.0 mmol/L</td>
</tr>
<tr>
<td>Cl</td>
<td>96 mmol/L</td>
<td>98-106 mmol/L</td>
</tr>
<tr>
<td>HCO3</td>
<td>26 mmol/L</td>
<td>22-32 mmol/L</td>
</tr>
<tr>
<td>BUN</td>
<td>23 mg/dl</td>
<td>9-23 mg/dl</td>
</tr>
<tr>
<td>Cr</td>
<td>1.24 mg/dl</td>
<td>0.9-1.5 mg/dl</td>
</tr>
<tr>
<td>Creatinine Kinase (CK)</td>
<td>2,784 Intnl</td>
<td>10-80 Intnl</td>
</tr>
<tr>
<td>Troponin-I</td>
<td>4.81 ng/ml</td>
<td>&lt;0.03 ng/ml</td>
</tr>
<tr>
<td>BNP</td>
<td>2,071 pg/ml</td>
<td>&lt;100 pg/ml</td>
</tr>
</tbody>
</table>

Table 1 Onset of fever and Repeat labs


An Echocardiogram confirmed anterior wall and anterior septal hypokinesis with an ejection fraction of 45%. Given her age and underlying dementia, her daughter decided to treat her conservatively rather than with percutaneous intervention. Her blood pressure improved once her agitation subsided. The patient continued to improve back to her baseline and was subsequently discharged to the care of her daughter.

Discussion

NMS can be a life-threatening adverse reaction due to antipsychotic medications. It is described more often with the use of the 1st generation antipsychotics such as Chlorpromazine, Fluphenazine or Haloperidol [1]. Over the past decade the incidence has dropped from about 1/500 to 1/5000 as new agents have been released less associated with NMS (i.e. second-generation antipsychotics) [2]. The time of onset following the offending drug is typically within 2 weeks. Our patient’s onset of typical NMS symptoms began within 3 hours following administration of Haloperidol. Only 16% of NMS cases begin within one day of initiation of an antipsychotic [2]. The rapid onset observed in this case is far less common. After an extensive search of PubMed cases of NMS, a similar documented rapid onset of NMS was not found.

NMS is often suspected when the triad of muscle rigidity, fever, and altered mentation appears. Altered mentation can present as catatonia with akinesis and mutism similar to what was seen in our case [3]. However, not all patients will exhibit all three of these findings simultaneously.

Diagnosis of NMS is based on the following [4]:

- Severe Muscle rigidity and fever following use of an antipsychotic.
- Two (or more): Sweats, Difficulty Swallowing, Tremor,
Although acute dystonia could explain the initial rigidity, the patient also was experiencing tachycardia and fever. As sepsis was ruled out, NMS was the most likely diagnosis. This case further expands the medical literature regarding the rapid onset of NMS, as most cases develop 24 hours or later.

Our case highlights the importance of considering all options to treat agitation and encourages providers to be aware of adverse effects. In our case, the patient was recently weaned from opiates, but given her dementia, she was unable to communicate chronic pain she may have been experiencing. This in combination of being in a new and noisy environment without the comfort of her daughter given COVID-19 visiting limitations was very challenging for her. Although Haldol may have been warranted in this case, starting low and titrating slow would have been wise. (i.e. 0.5 mg Haldol IV to start).

Finally, our case highlights the importance of controlling the autonomic symptoms of NMS as severe complications can develop such as myocardial infarction, especially in fragile populations as is the patient in our case.

Financial Support and Sponsorship
Nil.

Conflict of Interest
There are no conflicts of interest.

References