Neuroleptic Malignant Syndrome: A Case Report

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Introduction

Neuroleptic malignant syndrome (NMS) is the rarest of the neuroleptic induced movement disorders [1]. It is a life threatening idiosyncratic reaction mostly associated with antipsychotic drugs [2]. The syndrome is usually caused by the addition of a new drug to a preexisting treatment or by increasing the dosage of the used drug. It should be suspected in case of autonomic instability, neuromuscular or central nervous system dysfunction [2]. We report a case of a 7-year-old male with neuroleptic malignant syndrome.

Case Presentation

A 7-year-old male presents to the Emergency Department (ED) with altered mental status, after being found unresponsive. Mother states that during five hours, he was making sounds with his mouth and yelled names of people not present in the room, while kicking and hitting everything. Subsequently he lost consciousness with a reported heart rate of 100 bpm and glucose level less than 20 mg/dL, reason why he received IV glucose during transportation to the ED. Past medical history was remarkable for Attention-Deficit/Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD). Chronic medications use includes Topiramate, olanzapine and amphetamine, and the mother referred a recent dosage change. The family history was remarkable for maternal Anxiety Disorder treated with Buspirone.

On arrival to the ED he was agitated, with slow non-purposeful writhing movements of his arms. Vital signs were temperature of 99.1 F, heart rate of 130 bpm, respiratory rate of 22 rpm, and oxygen saturation of 98 % on room air. His physical and neurological examination was unremarkable. During the evaluation, patient presented a tonic seizure with extension of the arms and legs. He was treated with 2mg of lorazepam and IV fluids. Thirty minutes later, the patient was unresponsive to pain with rubbing the sternum and picking the face. The neurological exam revealed bilateral 1 mm mildly reactive pupils, fixed eyes in middle position with inconsistent diversion, a positive corneal reflex and absence of oculocephalic reflex. Laboratory results were remarkable for elevated AST (803), ALT (149), alkaline phosphatase (205), leukocytosis with white blood cell count of 14,900, and markedly elevated creatine kinase (CK) levels of 33090. While patient was observed in the ED, neurological exam remained unchanged, but he presented fever (101.8 F). The patient was subsequently transferred to the pediatric intensive care unit. He was hospitalized for six days and was placed on hemodialysis for three days with gradual clinical improvement and resolution of all the symptoms.

Discussion

Neuroleptic malignant syndrome is a life-threatening emergency associated with of neuroleptic agents. The incidence is ranges from 0.2 to 3% [3]. The most important risk factor is the exposure to antipsychotic drugs. Other risk factors include malnutrition, dehydration in the context of an organic brain syndrome, simultaneous treatment with lithium and antipsychotic agents [4].

The diagnosis can be difficult especially in the early phase [3]. NMS has four cardinal clinical features that usually presents with a sequence of events starting...
with mental status change, then rigidity, followed by fever and ending with dysautonomia [3]. The mental status changes include anxiety, agitation, delirium and coma. The muscle rigidity is generalized and often extreme, it is generally referred to as lead-pipe rigidity. It is likely caused by blockade of dopamine D2 receptors [3].

The fever is usually more than 38 °C and sometimes can be delayed [2]. The autonomic instability manifests with tachycardia, labile or high blood pressure, tachypnea and profuse diaphoresis [1, 2].

The creatine kinase (CK) level is typically more than 1000 international units/L and can be as high as 100,000 international units/L [5]. The degree of CK elevation directly impacts the severity of the rigidity and the prognosis [5]. In our patient, the CK level was 33090. Leukocytosis is consistent with a white blood cell count of 10,000 to 40,000/mm³ [6]. Other non-specific laboratory findings include mild elevation in lactate dehydrogenase, transaminase and alkaline phosphatase levels, electrolyte disturbances, acute renal failure due to myoglobinuria, and decreased serum iron concentrations [7].

Stopping the offending agent is the single most important treatment in NMS [3, 4]. The rest of the management is supportive treatment of the complications including dehydration, electrolyte imbalance, acute renal failure and cardiac arrhythmias [2].

Most patients recover with optimal management within two weeks, however mortality can occur in 10% of the cases due to systemic complications and autonomic dysfunction [2, 3]. Our patient had a quicker recovery without any neurologic sequelae.

Mortality rate from NMS is decreased by early diagnosis and initiation of treatment [2]. Rates of recurrence of NMS are high, thus it is recommended to wait at least two weeks after complete resolution of symptoms before restarting the neuroleptic medication [8].

Conclusion

Neuroleptic malignant syndrome is a rare life-threatening neurologic emergency associated with the use of neuroleptic agents. A high index of suspicion is required to make an early diagnosis and to initiate rapid treatment focused on cessation of the offending agent and management of potential complications to provide the best possible outcome.

References