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Case Report

Drug-Induced Neuroleptic Malignant Syndrome: A Case Report

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Abstract: Neuroleptic malignant syndrome (NMS) causes fever, muscle rigidity, and impaired mental status. Drugs that influence central dopaminergic neurotransmission and almost all neuroleptics, including newer atypical antipsychotics, are also associated with it. While uncommon, NMS remains a critical differential diagnosis for patients with fever and mental status changes due to the requirement for prompt resuscitation to prevent morbidity and mortality. We present a case of a 21-year-old man with schizophrenia who attended the emergency room with generalized muscle rigidity, high-grade fever, and disturbed mental status for 12 days. His serum creatine phosphokinase was elevated (CPK). The computed tomography (CT) of the brain was normal, and the CSF was clear and cell-free. The patient was given muscle relaxants, dopamine agonists, and biperiden. After three days, rigidity, fever, and consciousness improved. A few cases of antipsychotic-induced NMS have been reported. Healthcare professionals should be aware of this fatal side effect.

Keywords: Antipsychotic; Neuroleptic; Dopamine; Haloperidol

Introduction

An unfavorable reaction to drugs with dopamine receptor antagonist characteristics or the abrupt discontinuation of dopaminergic treatments might result in the severe illness known as a neuroleptic malignant syndrome (NMS). In 1956, the first instance of NMS was documented shortly after the release of the antipsychotic medication chlorpromazine (Thorazine) (1). Additional case reports soon followed, and in

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a 1960 report, French clinicians reported the negative effects of the recently developed neuroleptic haloperidol and described a "disease malin des neuroleptiques," giving the syndrome its current name (2). Pooled data from 1966 to 1997 suggested that the incidence of NMS ranged from 0.2% to 3.2% of psychiatric inpatients receiving neuroleptics (3). However, more recently, the incidence has decreased to roughly 0.01% to 0.02% as doctors have become more aware of the syndrome and newer neuroleptic agents have become available. Even though NMS is rare, physicians must be able to recognize it as a neurological disorder because early diagnosis and proper medical treatment are essential for better patient outcomes.

Case report

A 21-year-old man with a history of schizophrenia presents to the emergency room with generalized muscle rigidity, a high-grade fever, and a change in the mental state that has persisted for 12 days after he received haloperidol and risperidone. His temperature was 39.10°C, but all other vital signs were normal. The semiconscious patient's muscles were all tense on physical and neurological testing. His laboratory results significantly elevated serum creatine phosphokinase (CPK). The CT scan of the brain was normal, and his CSF was cell-free. The patient was admitted to the neurology department after receiving an NMS diagnosis. The patient was given Biperiden, dopamine agonists, and muscle relaxants. After three days, the stiffness and fever diminished, along with an improvement in the level of consciousness. The patient's NMS symptoms subsided, and his CPK level returned to normal after a short period. The dosage of the biperiden and dopamine agonists was reduced when his symptoms subsided. The patient's symptoms of continuing psychosis were managed with valproic acid 500 mg twice daily. He was discharged from the hospital without experiencing any more complications.

Discussion

Many medical diseases, including heat stroke, central nervous system infections, serotonin syndrome, status epilepticus, and more benign drug-induced extrapyramidal symptoms, might mimic the presentation of NMS (2). Heatstroke differs from other causes of fever and altered levels of awareness by its more abrupt onset and more frequent occurrence of dry skin. The prodromal phases of CNS infections have historically included headache, meningeal symptoms, and frequently positive CSF and neuroimaging findings, both of which are negative in this instance (3). Numerous similarities exist between NMS and serotonin syndrome, which manifests as altered mental status, autonomic alterations, and motor symptoms associated with

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excessive serotonin. However, gastrointestinal symptoms, the absence of leukocytosis, a raised CPK, and the patient's medical history can usually help separate them.

Additionally, the patient had no seizures before and after admission. As a result, status epilepticus is ruled out. Extrapyramidal disorders brought on by drugs were disregarded because there was no prior use of these drugs. Only antipsychotic drugs were identified as the cause of this illness.

Conclusion

Neuroleptic malignant syndrome is considered a neurologic emergency requiring prompt treatment to prevent complications and impending death. A few incidences of NMS caused by antipsychotics have been documented. Healthcare professionals should understand the risk of NMS.

Consent

Written and informed consent was obtained from the patient for publication of this case.

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