Case Report

Neuroleptic malignant syndrome in critical care unit

I. Shukla, O. Singh*, N. Rehman

Abstract

A 23 yrs old patient presented in unconscious state with subsequent development of extrapyramidal symptoms and hyperthermia.On investigations ,he was found to have high CPK levels.He was treated with dopaminergic drugs and improved.Later history of intake of stemetil and antipsychotics was found.

Key words: Neuroleptic malignant syndrome, hypodopaminergic state, antipsychotics.

A 23 years old patient was brought to the hospital in an unconscious state, with a history of being found by the bedside, at nighttime. There were no tonic clonic movements, or frothing. There was no history of vomiting, fever. No history of suspected alcohol intoxication, or drug intoxication given by relatives, at the time of admission. Relatives later revealed (after 4 days of admission), that there was history of psychiatric illness in the past, but no history of regular medication. His father was also affected with psychiatric illness and was being treated with antipsychotics. The patient used to take Tab Prochlorperazine (Stemetil) frequently, for his headache. There was suspicion of the patient, taking his father medications.

On examination, his BP was 130/80 mmHg, HR was 120/min. His bilateral pupils were of normal size and reacting to light. He was unresponsive to verbal commands and was intermittently having increased tone of the body, which was thought to be decereberating posture. Temperature at admission was 37 degrees celsius. He was intubated and put on ventilator, as there were increased secretions and inability to maintain oxygen saturation. MRI head, CSF examination and EEG were done, which were normal. The patient was extubated on the fourth day. He was still unresponsive to verbal commands and had spontaneous eye opening. There was intermittent increased tone of limbs, extension of trunk and neck (opisthotonus posturing), up rolling of eyeballs, protrusion of tongue, fever (recorded from third day of hospitalization and reached as high as 40 C), persistent tachycardia and HR 150-160/min.

Due to these symptom complex, a possibility of neuroleptic malignant syndrome was considered. High CPK levels supported the diagnosis. The initial CPK level was 322, but the second reading after 2 days, was 61153. The second sample was sent since, suspicion of NMS was strong. The repeat samples showed a downward trend with CPK level going to 31747, 3660 and 365 U/L. Urine myoglobin level was 50 mg/l (normal till <5 mg/l. MRI head was normal. EEG showed mild slowing. Total leukocyte count was also elevated, 18600. He was started on Diphenhydramine, Amanteral, Bromocriptine, Trihexyphenidyl and Diazepam. Bromocriptine was increased to 25 mg/day. There was improvement in abnormal posturing, he was opening eyes on commands and occasionally understanding verbal commands, but there was no expression of language. At discharge, HR was still high 100/min and the patient was afebrile. The patient was referred to the psychiatrist, for treatment of psychiatric illness.

From:
Departments of Neurology and *Intensive Care Unit, Escorts Hospital and Research Centre, Faridabad, Haryana, India

Correspondence:
Dr. Isha Shukla, Department of Neurology, Escorts Hospital and Research Centre, Neelam Bata Road, Faridabad - 121 001, Haryana, India.
E-mail: isha.shukla@doctor.com

Discussion

Neuroleptic malignant syndrome is characterized by severe rigidity, tremor, fever, altered mental status, autonomic dysfunction and elevated serum creatine phosphokinase (CPK) and white blood count (WBC).[1] NMS is a hypodopaminergic state of the brain. Neuroleptics cause dopamine receptor blockade at the striatum and hypothalamus, which account for motor manifestations and impaired heat dissipating mechanisms. Dopamine plays a major role in the hypothalamic regulation of temperature. There may also be a hypernoradrenergic state in NMS, accounting for cardiovascular instability. NMS has been described with conventional, as well as atypical antipsychotics.[2-6] Newer drugs like Clozapine, Risperidone and Olenzapine have all been implicated.[7] Other drugs like Paroxetine, Donepzil, Maprotiline, Fluvoxamine, Metoclopramide and Levodopa withdrawal (in Parkinson patient), can also cause this syndome. The frequency of NMS with conventional antipsychotic agents, has varied from 0.02 to 2.44%.

Caroff *et al*[8] highlighted the fact that NMS is underreported in critical care practice though the use of Haloperidol, Olenzapine and Risperidone, for delirium and Metclopramide and Prochlorperazine as antiemetics, is common. In the ICU, concomitant use of sedatives and muscle relaxants may obscure mental status changes, rigidity and tremors. Thus, it may only manifest as hyperthermia and autonomic dysfunction. Berardi *et al*[9] studied different risk factors in development of NMS, in a case control cohort. These could be large doses of high potency antipsychotic drugs, parenteral administration, depot preparation, sudden escalation of antipsychotic drugs, use of other medications like Lithium along with antipsychotics and other host factors like dehydration, old age, mental retardation, psychomotor agitation and organic brain syndrome. A high index of suspicion is required in case a patient has rigidity, fever, leucocytosis and tachycardia, on the background of intake of the usually incriminated drugs. Other differential diagnosis include[1] malignant hyperthermia,[2] lethal or malignant catatonia[3] and heat stroke. Treatment mainly consists of dopaminergic drugs like Bromocriptine and Amanteral. Our patient received Bromocriptine (maximum dose 25 mg/day) and Amanteral 200 mg/day. Diazapam 20 mg/day was given for sedation, as the patient was very restless. IV Dantrolene was not given in this case, as the patient showed improvement with these drugs and hyperthermia was easily controlled.

The history of preceding psychiatric illness and intake of antipsychotic drugs was not available in our patient for the first few days, but as the patient was having extra pyramidal symptoms with oculogyric crisis, retrocollis and tongue protrusion, we continued to ask for history of any incriminating drugs, or any psychiatric illness. The diagnosis of neuroleptic malignant syndrome was not supported by the first CPK report, but subsequent reports showed very high levels, thus highlighting the importance of recognizing clinical signs and symptoms. The patient showed improvement in extra pyramidal symptoms with dopamine agonists. It took another one month for drooling of saliva and for swallowing to improve. At discharge he was mute, occasionally understanding commands. Later, psychiatry consultation was also sought for his basic psychiatric illness.

In conclusion, the intensivist should be aware about the extra pyramidal manifestations in form of tremors, rigidity, opisthotonus posturing, oculogyric crisis and drooling of saliva, in a critically ill patient. This abnormal posturing should be differentiated from seizure. Appropriate history of previous illness and incriminating drugs should be asked and timely treatment be started.

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Residents and Staff of Critical Care Unit, Escorts Hospital, Faridabad.

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