

## Neuroleptic Malignant Syndrome

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### Abstract:

**Background:** Neuroleptic malignant syndrome (NMS) is a rare but potentially fatal, an idiosyncratic reaction to neuroleptics/anti psychotics characterised by rigidity, fever, autonomic dysfunction and altered consciousness with elevated levels of creatinine phosphokinase (CPK) and leucocytosis. It occurs in 0.4% of newly treated patients and carries mortality risk of 22%.

**Abstract:** with the above background, we report a case of 48 yr old female with diagnosis of paranoid schizophrenia started on parenteral haloperidol, oral quetiapine and risperidone, amisulpride developed fever, rigidity and altered sensorium after 2 days of initiation of above drugs which was later diagnosed as neuroleptic malignant syndrome. Early recognition of syndrome, immediate discontinuation of the offending agent and treatment with lorazepam and other supportive measures resulted in prompt recovery of patient without any complications.

**Keywords:** NMS (Neuroleptic malignant syndrome), Neuroleptics, CPK (creatinine phosphokinase).

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### I. Introduction

Neuroleptic malignant syndrome (NMS) is a rare but potentially fatal, an idiosyncratic reaction to neuroleptics and other medications characterised by rigidity, fever, autonomic dysfunction and altered consciousness with elevated levels of creatinine phosphokinase (CPK) and leucocytosis. Neuroleptic malignant syndrome was first described after the introduction of chlorpromazine<sup>1</sup> and all antipsychotic agents have had reports of the syndrome.

### II. Case History

A 48 yr old female with history of paranoid schizophrenia brought to psychiatry opd with complaints of wandering tendency, aggressive behaviour, insomnia, and refused to take food/medication. patient was admitted in psychiatry ward and started on parenteral haloperidol 5mg IM BD, and oral quetiapine 100mg BD, risperidone 2mg BD, amisulpride 200mg BD, lorazepam 2mg BD developed fever, rigidity and altered sensorium within 2 days of initiation of above drugs. Medicine consultation was sought for the same. on examination agitated, uncooperative, tremulous, diaphoretic, temperature: 103°F, Pulse Rate: 140/min, Blood pressure: 160/100mmHg, Respiratory rate: 35/min, SpO<sub>2</sub>: 84%, on Central nervous system examination showed persistent cogwheel rigidity, no focal neurological deficit, kernig sign negative, no neck rigidity/clonus, no evidence of infection, On examination of Chest, Cardiovascular system, Per abdomen examination showed no abnormality. Patient was shifted to medicine ward.

On investigation found to be total blood count with significant leucocytosis: 19000/mm<sup>3</sup>, S.Iron: (22ug/dL). HbsAg: negative, HCVAb: negative, HIV: negative, VDRL: non reactive. Chest X-ray, NCCT and MRI Brain showed normal study. Blood and urine cultures were sterile. Fever profiles including malaria, typhoid, scrub, dengue, Japanese encephalitis were negative. Na: 140mEq/L, K: 3.7mEq/L, Serum Creatinine: 0.8mg/dl, serum urea: 49mg/dl, Ca+2: 8.2, SGPT: 45, SGOT: 48, ALP: 217 U/L, Total Bilirubin: 0.8mg/dl, Direct Bilirubin: 0.2mg/dl, Random blood sugar: 112mg/dl. Creatinine phospho kinase (CPK): 1184 U/L. Given that most common infectious causes for these symptoms had been ruled out, we considered neuroleptic malignant syndrome (NMS). Supportive care was started which involved stopping all antipsychotic medications and she was treated supportively with lorazepam, IV fluids, antipyretics. Within 1week of hospitalization, her symptoms improved and CPK level gradually came down to 211. Family was informed of the diagnosis and the need for close monitoring. On Psychiatrists advice, decided not to restart antipsychotic drugs. Her behavioural abnormalities were to be managed with counselling sessions. She was discharged without further complications.

### III. Discussion

Diagnosing NMS can be difficult because of its vague presentation, therefore a high clinical suspicion is needed. There are a number of diagnostic criteria that have been proposed, including those proposed by Levenson, Pope et al, and the DSM-V. Currently there is no agreed evidence based diagnostic criteria used in clinical practice<sup>2</sup>. NMS is a rare condition as reported in the two studies done in neurology and psychiatric units of teaching hospitals in India with an incidence of 1.40–1.41/1000 cases treated with antipsychotics<sup>3</sup>.

Overall NMS presents with four clinical features. A diagnosis is mainly based on the clinical findings, supported by laboratory tests and ruling out other possibilities such as infections, brain lesions etc. An increase in CK certainly helps with the diagnosis. It is reported that 90% of NMS patients present with a raise in CK<sup>4</sup>. This is due to myonecrosis secondary to intense muscle contractions. Treatment of NMS is mainly supportive, involves stopping the causative agent until the drug levels are normalised in the blood, rehydration, anti pyretics. Benefits of specific treatments such as dantrolene, dopamine agonist, such as bromocriptine and ECT are still debated, but can be considered if there is no clinical improvement<sup>5,6</sup>.

No single laboratory test result is diagnostic. Laboratory abnormalities may include leucocytosis, electrolyte disturbances, and elevated CPK secondary to muscle damage. Diagnostic tests for fever may include urine analysis, chest radiography, and lumbar puncture. Imaging studies of brain are not diagnostic of NMS, however, may rule out other causes of altered mental status. Possible complications include dehydration from poor oral intake, renal failure secondary to rhabdomyolysis, and coagulation abnormalities. Mortality in NMS has decreased from 76% to between 10% and 20%, however, complete recovery is noted in most patients.<sup>7</sup> Mortality is caused by complications such as respiratory failure, cardiovascular collapse, renal failure, arrhythmias, and thromboembolism.

Complete resolution of symptoms takes around 2 days to 2 weeks. Symptoms may last for a month in patients who were on depot preparations. Restarting antipsychotics in patients with history of NMS if needed is done on consultation with psychiatrist. Depot preparations are generally not recommended, however, a 2 weeks interval is to be considered between recovery and restarting antipsychotic agents<sup>8</sup>. No complications with anaesthesia have been reported in post- NMS patients.

### IV. Conclusion

NMS can only be diagnosed with close attention to clinical symptoms, a detailed physical exam, and a high suspicion of culprit medications. History on medical therapy that develop high grade fevers, altered mental status, dysautonomia, elevated CPK levels in blood, and neuromuscular hyper or hypo activity. A high clinical suspicion is needed for the diagnosis of this condition, management is mainly supportive and stopping all antipsychotics. Treatment should be started without delay which prevents serious complications and decreases mortality<sup>9</sup>.

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