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Malignant Neuroleptic Syndrome: From Diagnosis to Management. Experience at Ar-Razi Hospital

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Abstract **Original Research Article**

Neuroleptic malignant syndrome' (NMS) is a diagnostic and therapeutic emergency that poses a threat to a patient's life. It represents a rare but severe complication of neuroleptic treatment. It can occur with any antipsychotic, regardless of dosage or administration route. Its exact cause remains unknown. We present a series of 20 cases of MNS in patients hospitalized at Ar-Razi Hospital. We describe the clinical characteristics of MNS in these patients, the treatments received, the management, and the outcome of this syndrome. The clinical presentation of MNS is heterogeneous, with some patients not meeting all the criteria for MNS. 85% of the patients experienced a favorable outcome without complications. Early recognition of MNS can save lives. In the presence of fever, altered consciousness, generalized rigidity, tachycardia, and labile blood pressure in a patient taking antipsychotics, consider malignant neuroleptic syndrome and discontinue any suspect medication.

Keywords: Malignant Neuroleptic Syndrome; hyperthermia; CK (creatine kinase).

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1. INTRODUCTION

Malignant Neuroleptic Syndrome is a diagnostic and therapeutic emergency that can jeopardize a patient's prognosis. It is a rare but severe complication of neuroleptic treatment. It can occur with any antipsychotic, regardless of dosage or administration route. The exact cause of Malignant Neuroleptic Syndrome remains unknown. The main symptoms of MNS include muscle rigidity, fever, elevated CK levels, and altered consciousness.

2. METHODOLOGY

In our study, we examined a series of 20 cases of Malignant Neuroleptic Syndrome that occurred in patients hospitalized at Ar-Razi Psychiatric University Hospital in Salé over a 2-year period, from November 20, 2019, to November 20, 2021.

The data collection form used for this study includes the patient's age and gender. Additionally, we specified the DSM-5 diagnostic criteria for the disease for each patient. We identified the antipsychotic responsible for the MNS and described the current symptoms of this side effect. We discussed the care provided to these patients, the treatment, and the progression.

DSM-5 criteria for MNS: exposure to antagonists, alterations in mental status (confusion, stupor, coma), muscle rigidity, hyperthermia (>38 °C), dysfunction of the autonomic nervous system, such as sweating, tachycardia, labile blood pressure, tachypnea, urinary incontinence, along with an elevation in white blood cell count and elevated CK levels.

In our hospital, the sudden appearance of at least one key symptom, such as fever, rigidity, fluctuating blood pressure, or altered consciousness, systematically leads to the discontinuation of the current antipsychotic treatment. It also involves oral or IV rehydration, administration of Diazepam, and immediate CK testing, with close monitoring of the patient's condition.

3. RESULT AND DISCUSSION

Neuroleptic malignant syndrome' (NMS) is infrequent [1]. According to some studies, its estimated prevalence varies from 0.7% to 2.2% among individuals receiving neuroleptics [2]. In our case, we identified 20 patient records with MNS out of 2601 hospitalizations over a 2-year period, resulting in a prevalence of 0.77%. This reaffirms the rarity and diagnostic challenges associated with this syndrome.

The average age in our group was 30 years (ranging from 19 to 60 years). Literature data has shown that MNS can occur across all age groups [3].

In our study, the majority of patients suffered from schizophrenia. In another study, all MNS cases occurred in schizophrenic patients [4]. In a separate article covering 20 MNS cases, this syndrome was more common in patients with schizophrenia. This may be related to the increased and prolonged exposure of this patient group to antipsychotics.

In our case series, 3 patients had a history of MNS. In the literature, patients with a history of MNS are at a higher risk of developing a second MNS episode [5].

We were unable to determine whether our patients had a family history of Malignant Neuroleptic Syndrome. Some research suggests a genetic risk factor, and antipsychotics must be used with greater caution in patients with a family history of MNS [6].

In our study, Risperidone (40%), Amisulpride (35%), Chlorpromazine (25%), and Haloperidol (15%) were implicated in the occurrence of MNS, in that order. For some patients on a combination of an atypical antipsychotic and Chlorpromazine, it was difficult to specifically assign blame to one antipsychotic, and in such cases, both treatments were attributed to MNS. Literature data on the most common causative molecules for MNS are highly divergent.

Muscle rigidity was observed in 100% of our patients. According to some authors, rigidity was found in 91% to 96% of cases [7], but there were cases in which no rigidity was reported.

Hyperthermia (T > 38°C) was observed in 60% of MNS patients. Fever noted in MNS is typically higher than 38°C, sometimes exceeding 41°C [1]. However, this hyperthermia was absent in 9% of cases [8]. In our study, it was absent in 40% of patients, which can complicate the diagnosis of MNS.

Elevation of CK was present in almost 90% of our patients. For most authors, CK levels are one of the most reliable indicators of MNS occurrence, which is present in the majority of MNS cases, but not all [9].

Altered consciousness was mentioned in 25% of patients in our sample. Stupor, coma, and catatonia are cognitive impairments associated with MNS, according to authors [7]. 45% of patients had abnormal or labile blood pressure.

Atypical features of MNS may encompass cases where patients do not exhibit the major criteria of the syndrome. In our study, we found patients without fever or increased CK. It may be necessary to revisit the diagnostic criteria for this syndrome.

85% of patients had a favorable outcome without complications. Admission to the intensive care unit was necessary in only 10% of cases, and a single death was reported in a patient with a complex medical history, where the specific cause of death was not designated. Discontinuation of antipsychotic treatment, rehydration, and administration of Diazepam were the primary treatments for MNS in our sample. The low rate of MNS complications in our study could be attributed to early recognition of the syndrome, leading to prompt and appropriate intervention, ultimately ensuring a rapid and complete recovery for our patients.

4. CONCLUSION

The clinical presentation of Neuroleptic malignant syndrome' (NMS) is heterogeneous. Some patients do not meet all the criteria for MNS. Early diagnosis and favorable outcomes may be the result of clinicians' vigilance in detecting MNS before all symptoms fully manifest.

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Authors Contributions

YA was responsible of the patient recruitment, data collection, and literature review. ZB participated in the literature review besides that she wrote the manuscript with YA and NE. YA analyzed the data. SB and AO supervised the research overall and revised the manuscript.

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