Neuroleptic Malignant Syndrome : Case report

*Pornpirun Leeyangyuen**

Abstract

We report a case of Neuroleptic malignant syndrome in 25-year old man. He was diagnosed substance induced psychosis and controlled by antipsychotic drugs. This admission he had developed alteration of consciousness. By his medication history, clinical symptoms, autonomic instability signs and investigation, Neuroleptic Malignant Syndrome was diagnosed in this patient. It was essentially a diagnosis of exclusion, and treatment was mainly supportive in form of withdrawal of the neuroleptic medication (haloperidol, fluphenazine and chlorpromazine) and administration of bromocriptine. Although, relatively uncommon, NMS can be fatal.

Key Words : Neuroleptic Malignant Syndrome, substance induced psychosis, autonomic instability

* M.D., Medical Division,, Aouluk Hospital E-mail : pleeyangyuen@icloud.com

Introduction

Neuroleptic malignant syndrome (NMS) is a life-threatening neurologic emergency associated with the use of antipsychotic (neuroleptic) agents and characterized by a distinctive clinical syndrome of mental status change, rigidity, fever, and dysautonomia.

Mortality results directly from the dysautonomic manifestations of the disease and from systemic complications. Mortality has declined from the earliest reports in the 1960s of 76 percent and is more recently estimated between 10 and 20 percent.[1,2]

Case report

A 25-year-old man with a past medical history was substance induced psychosis for 1 month and controlled on haloperidol (10 mg/day), trihexyphenidyl (10 mg/day), chlorpromazine (300 mg/day), Sodium Valproate (1000 mg/day) fluphenazine 100 mg IM every 15 days. He was initially presented to his primary care with a chief complaint of alteration of consciousness for 3 days. He had developed rigidity with speechless for 8 days and had high graded fever and shortness of breath for 1 hr.

In the Emergency Department, the patient initially appeared in respiratory discomfort. The temperature was 40.2 C, the pulse 162 bpm, the blood pressure 180/100 mmHg, the respiratory rate 24 breaths per min, and oxygen saturation 85% requiring endotracheal intubation for hypoxic respiratory failure. The physical examination was notable for E4V1M3, pupil 2 mmBRTL, terminal stiff neck sign positive, normal breath sound, no adventitious sound of lung, no pitting edema both legs.

His investigations revealed WBC count of 28100 cells, serum CPK levels of 517, BUN 56 mg/dL, Creatinine 1.33 mg/dL. His liver and thyroid function tests, serum electrolytes, blood gases, chest X-ray and electrocardiogram were within normal limits.

He was initially aggressive hydration and received cooling blanket. He was started with intravenous antibiotics Ceftriaxone 2 mg every 12 hours and Intravenous Acyclovir 500 mg every 8 hours at first sight that bacterial and herpes meningoencephalitis cannot be excluded.

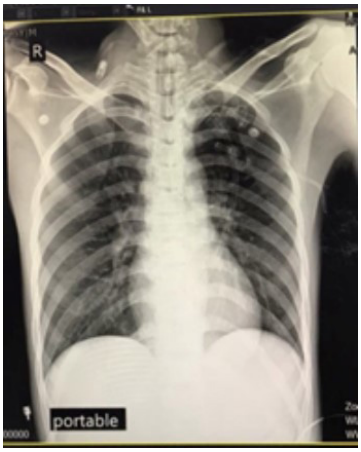

Figure 1. Chest X-ray showed no significant infiltration and appropriate endotracheal tube site.

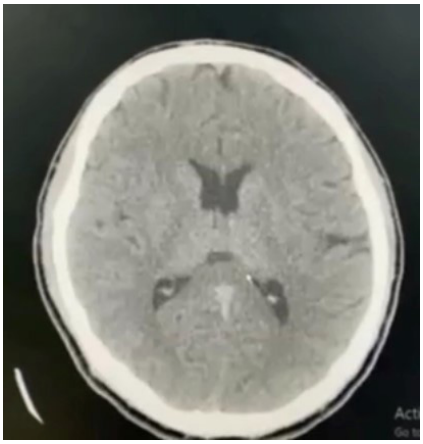

Figure 2. Axial view of emergency contrast enhanced CT of the brain showed no demonstrable abnormality in this study

Report of emergency contrast enhanced CT of the brain

Findings : The study reveals normal brain attenuation. No enhancing lesion or leptomeningeal enhancement is observed. No brain herniation is seen.

The ventricular system and cisterns, cortical sulci and gyri are within normal limit.

The paranasal sinuses and mastoid air cells are clear.

The bony structures appear unremarkable.

Conclusion : No demonstrable abnormality in this study.

Table 1. CSF studies showed normal profile.

Color	Colorless
Appearance	Clear
RBC count	5 cell/mm^3
WBC count	2 cell/mm^3
CSF glucose	120.0 mg/dL
Blood glucose	180 mg/dL
CSF protein	42.1 mg/dL
Gram stain	Not found
Culture	No growth

Report of MRI scan brain

Findings :

The study reveals no detectable acute brain infarction, hemorrhage or abnormal mass lesion.

No abnormal enhancing lesion is seen.

No ventricular dilatation is noted.

No shifting of the midline structure is seen.

The brainstem and cerebellum have normal signal.

No abnormal restriction diffusion lesion is noted.

No abnormal microbleed is seen on T2wGRE.

The pituitary gland and posterior bright spot are unremarkable.

Mucosal thickening at bilateral sphenoid sinuses could be sinusitis.

Mucosal thickening at bilateral mastoid air cells could be mastoiditis.

Impression :

- No detectable acute brain infarction, hemorrhage or abnormal mass lesion is seen. However, correlation with clinical context is needed.
- No abnormal enhancing lesion is seen.
- Mucosal thickening at bilateral sphenoid sinuses could be sinusitis.
- Mucosal thickening at bilateral mastoid air cells could be mastoiditis.

After results of CT brain and CSF profiles, He was diagnosed as a case of NMS and started orally on bromocriptine 2.5 mg qid and gradually titrate to 10 mg qid (40 mg/day) and lorazepam along with ventilator and nutritional support and serial monitoring of serum CPK and renal function test. Over the next two days the patient became afebrile, alert and his vital signs stablished.

The serum CPK levels , renal function tests and WBC count fell concomitant with clinical recovery. Bromocriptine was tapered off and the patient was discharged on diazepam 2 mg tid and 5 mg hs (12 mg/day), quetiapine 100 mg bid and 200 mg hs (400 mg/day) Benztropine 5 mg qid (20 mg/day)

Discussion

As this case, new onset alteration of conscious was approached by intracranial and extracranial causes. In physical examination, it was no evidence of focal neurological deficit and investigations of CT , MRI brain and CSF profile revealed normal. Consequently, we considered extracranial causes like metabolic such as thyrotoxicosis, electrolyte imbalance, extrapyramidal side effects (NMS) or tetanus disease. Other problem list was new onset fever, autonomic instability, rigidity and his personal underlying disease - substance induced psychosis with medication.

Table 2. Neuroleptic medications associated with neuroleptic malignant syndrome[3]

Typical neuroleptics	Atypical neuroleptic
Haloperidol (+++)	Clozapine (+)
Chlorpromazine (++)	Olanzapine (+)
Fluphenazine, long acting (++)	Quetiapine (+)
Levomepromazine (+)	
Loxapine (+)	

While carefully reviewing his medication list, high-potency first-generation antipsychotic agents such as haloperidol and fluphenazine are commonly indicated in causing NMS and Low-potency as chlorpromazine has been implicated.[3-5]

NMS is a diagnosis of exclusion alternative causes. Clinical signs and symptoms in this case completed all the three Levenson's major criteria along with fever, rigidity and elevated CPK and minor criteria as tachycardia, abnormal arterial pressure, altered consciousness, diaphoresis and leukocytosis.

Table 3. Levenson's criteria for the diagnosis of Neuroleptic Malignant Syndrome (Presence of 3 major or two major and four minor signs indicate a high probability of NMS)[6]

Major criterin	Minor criteria
Fever	Tachycardia
Rigidity	Abnormal arterial pressure
Elevated CPK	Altered consciousness
	Diaphoresis
	Leukocytosis

Conclusion

NMS can be diagnosed with carefully paying attention to medication history, clinical symptoms, autonomic instability signs and particular physical examination. Because NMS can causes high mortality rate (76% in the past) and poor prognosis if missed diagnosis, So it is necessary to consider this syndrome in differential diagnosis. Therefore, Early detection and proper management significantly improves survival and clinical outcomes.

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