Neuroleptic Malignant Syndrome: A Report of Two Cases

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Neuroleptic malignant syndrome (NMS) is an acute, uncommon but life-threatening disease. We require more awareness of this disease, earlier diagnosis and more aggressive treatment can avoid mortality and decrease complications. This study, we report two cases of neuroleptic malignant syndrome, the first one admitted to nephrology ward for further treatment, the other was discharged from emergency department after adequate treatment. This study reminds us that if we can earlier diagnosis and more aggressive treatment of neuroleptic malignant syndrome, the hospitalization and complications will be reduced.

Key words: neuroleptic malignant syndrome (NMS), life-threatening disease

Introduction

Neuroleptic malignant syndrome (NMS) is a serious and rare neurologic emergency due to the complications of use neuroleptic agents. The clinical syndrome are most include (1) hyperthermia; (2) extreme generalized rigidity; (3) autonomic instability; (4) altered mental status.\(^{(1-3)}\) It’s mortality often results from the dysautonomic disorders and systemic complications\(^{(4)}\). However, earlier diagnosis and early accept treatment is able to prevent the mortality and complications. Here, we describe two patients with neuroleptic malignant syndrome, the first one was a case of schizophrenia with consciousness change and generalized rigidity admitted to our ED, the other was diagnosed of bipolar disorder for 7-8 years, he came to ED due to muscle rigidity, palpitation and slurred speech.

Case Report

A 38-years-old man had medical history of schizophrenia, paranoid type which was diagnosed at 18 years old, he admitted to Kaohsiung Kai-Suan Psychiatric Hospital for 4-5 months ago due to queer behavior. Acute onset of consciousness change and generalized rigidity was noted during hospitalization, he was sent to Kaohsiung 802 Hospital emergency department, where hyponatremia (Na=119 mmol/L), leukocytosis (WBC=14610/uL) and CPK=213 IU/L were noted, then he was transferred to our emergency department for further management.

In our emergency department, the initial vital signs were blood pressure: 120/90 mmHg, pulse rate: 95/min, respiration rate approximately: 16 breaths/min, body temperature: 36.5°C, the consciousness level was E3V2M5. Physical
examination revealed bilateral upper limbs rigidity, diaphoresis. Laboratory findings included, white blood cell count 16200/uL, CRP: 1.92 mg/L, hyponatremia (Na: 119 mmol/L) and elevated creatinine kinase 54546 IU/L. The 12-lead electrocardiogram showed sinus tachycardia with a rate of 118 beats/min and no ST-T changes. Brain CT was arranged and no intracranial lesion was noted.

Psychiatric doctor and Neurologist were consulted which recommended to stop antipsychotics and anti-anxiety drug use. They considered that it was caused due to NMS or hyponatremia. He was treated with 3% normal saline intravenous fluid, parlodel (bromocripine) was given and cold packing for all body due to fever developed up to 38.6 degree. Based on clinical symptoms of mental status change, muscular rigidity of bilateral upper limbs, hyperthermia (body temperature: 38.6°C), tachycardia (pulse rate: 118/min) and abnormal blood tests of elevated serum CK (54546 IU/L), leukocytosis (WBC: 16200/uL), hyponatremia (Na: 119 mmol/L), neuroleptic malignant syndrome was impressed. He admitted to nephrology ward for further treatment, his consciousness recovered after few days, after condition was stable, he was transferred to psychiatric ward for further psychotropic drugs adjustment.

The second case was a 28-year-old man, has medical history of bipolar disorder for 7-8 years with irregular PSY OPD follow up. He was just discharged from Kaohsiung Kai-Suan Psychiatric Hospital due to elevated mood, decreased need of sleep, self-talking, queer behavior. He accepted antipsychotic drugs of risperidone for bipolar disorder control and took double dosage of drug by himself due to unstable mood recently. He complained muscle rigidity, palpitation and slurred speech then was sent to our ED, the initial vital signs were blood pressure: 170/113 mmHg, pulse rate: 161/min, respiration rate approximately: 16 breaths/min, body temperature: 37.5°C, consciousness level was E4V5M6.12- lead EKG showed tachycardia (HR: 150 bpm). Laboratory findings included, white blood cell count 16900/uL, CRP: 1.90 mg/L, Na: 140 mmol/L K: 3.6 mmol/L, creatinine kinase 363 IU/L Ca: 4.82 mg/dL. The clinical manifestations included muscle rigidity, motor abnormality (dysarthria), mild fever (body temperature: 37.5°C), autonomic instability (tachycardia: HR: 150 bpm, high blood pressure: 170/113 mmHg) and blood test showed CK (363 IU/L), leukocytosis (WBC: 16900/uL), atypical NMS was suspected. He was treated with normal saline, ice pillow, bromocriptine and lorazepam. Stay at ED for further observation, after several hours the symptoms improved, he was discharged.

Discussion

Neuroleptic malignant syndrome (NMS) was first described in 1960, due to patient accepted haloperidol for therapy, then fever and rigidity were noted. This syndrome was an uncommon but life-threatening side-effect of dopamine-blocking medications (specifically D2-receptor blockade), usually be found at patient with high-potency antipsychotic drugs (e.g. haloperidol, fluphenazine, and thiothixene)\(^5-6\), but it can also occur at other antipsychotic agents\(^7-8\). NMS is an idiosyncratic reaction to neuroleptic therapy and is not the result of medication overdose. If patients with NMS, the serum levels of neuroleptic drug are often in the normal range. The major symptoms of NMS are fever, muscular rigidity, altered mental status, and autonomic dysfunction. Other are included tachycardia, hypertension or hypotension, tachypnea or hypoxia, diaphoresis, tremor, incontinence, seizures\(^9\). The laboratory data of NMS are often nonspecific. Common laboratory abnormalities include elevated
creatinine phosphokinase (CPK), increased white blood cell (WBC) count, myoglobinuria, low serum iron levels. Electrolyte disturbances include hypocalcemia, hypomagnesemia, hypokalemia and hyperkalemia. Urinalysis often reveals proteinuria and myoglobinuria from rhabdomyolysis. In our first case, consciousness change may be due to hyponatremia, but it would not cause muscle rigidity, increased body temperature and tachycardia. Moreover, hyponatremia can be found at the patient of NMS. The secondary case, adjust the dosage of risperidone by himself, which may be the cause of NMS.

The mortality of NMS usually results from the severity of hyperthermia and the degree of alteration of consciousness, cardiac arrhythmias including torsades de pointes and cardiac arrest, myocardial infarction, cardiomyopathy, renal failure, pulmonary embolism, respiratory failure, acute respiratory distress syndrome, or disseminated intravascular coagulation (DIC), seizures from hyperthermia and metabolic derangements, hepatic failure, sepsis. Several risk factors may related to NMS, it included high neuroleptic dose, rapid dosage increase, parenteral administration, a switch from one agent to another, dehydration, a history of underlying brain abnormalities, low serum iron levels, and combine use of lithium. We should note that the symptoms of NMS is like some of medical illnesses (eg, central nervous system infection, systemic infections, malignant hyperthermia, anticholinergic delirium, heat stroke, and other drug-induced dysautonomias.), it make difficult to diagnose NMS.

The most important of treat NMS is stop neuroleptic agents. Then give supportive care, these include use of antipyretics and cooling blankets for high fever, rehydration and treatment of autonomic instability. Be careful maintain cardiorespiratory stability, sometimes should consider mechanical ventilation for use, give antiarrhythmic agents or pacemakers if needed. High volume intravenous fluids with urine alkalinization supply will help prevent renal failure from rhabdomyolysis when elevated CPK was noted. Lower fever can using cooling blankets. Some medications was considered use in treat NMS, benzodiazepines (clonazepam, lorazepam) can control agitation, nitroprusside will cause vasodilation and help control high fever Specific medical treatments in NMS include dantrolene, bromocriptine, and amantadine. The dantrolene will reduce muscle rigidity, bromocriptine and amantadine will improve dopamine system.

Conclusion

Neuroleptic malignant syndrome (NMS) is an life-threatening disease, the diagnosis of NMS requires emergency physicians awareness, we should keep in mind if patient with neuroleptic agents history and have fever, rigidity, autonomic instability or altered mental status, neuroleptic malignant syndrome should be suspected. Earlier diagnosis and more aggressive treatment will reduce hospitalization and complication.

References

抗精神病藥物惡性症候群：二病例報告

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抗精神病藥物惡性症候群是一急性不常見但俱生命危險的疾病，對此疾病我們需提高警覺，早期的診斷與更積極的治療能夠降低死亡率與併發症。本文報告抗精神病藥物惡性症候群二病例。第一個病人住進腎臟科病房接受進一步治療，另一病人在急診接受適當治療後就出院。本文提醒我們，如果對於抗精神病藥物惡性症候群，能夠早期的診斷與更積極的治療，就能降低住院時間與併發症。

關鍵詞：抗精神病藥物惡性症候群，威脅生命的疾病