Case Report

Carisoprodol withdrawal syndrome resembling neuroleptic malignant syndrome: Diagnostic dilemma

Gunchan Paul, Gautam L Parshotam, Rajneesh Garg[1]

Departments of Critical Care Medicine and [1]Orthopedics, Dayanand Medical College, Ludhiana, Punjab, India

Abstract

Soma (Carisoprodol) is N-isopropyl-2 methyl-2-propyl-1,3-propanediol dicarbamate; a commonly prescribed, centrally acting skeletal muscle relaxant. Neuroleptic malignant syndrome (NMS) is a potentially life-threatening adverse effect of antipsychotic agents. Although diagnostic criteria for NMS have been established, it should be recognized that atypical presentations occur and more flexible diagnostic criteria than currently mandated, may be warranted. We wish to report a postoperative case of bilateral knee replacement who presented with carisoprodol (Soma) withdrawal resembling NMS that was a diagnostic dilemma. Subsequently, it was successfully treated with oral baclofen in absence of sodium dantrolene.

Key words: Carisoprodol, carisoprodol abuse, carisoprodol withdrawal, neuroleptic malignant syndrome, soma

Introduction

Soma (Carisoprodol) is a commonly prescribed, centrally acting skeletal muscle relaxant that inhibits interneuronal transmission in the descending reticular formation and spinal cord.[1] A few case reports have now been reported in the literature suggesting the addiction potential of carisoprodol.

Case Report

A 57-year-old chronic alcoholic, diabetic, hypertensive, hypothyroid male was admitted to a tertiary hospital for bilateral knee replacement. His daily medications included losartan (50 mg), metformin (1 g) and eltroxin (0.75 mg) for the last 2 years. Surgery was performed under combined spinal epidural anesthesia. On 2nd postoperative day, he developed altered sensorium with irrelevant speech. Gradually, he also developed visual hallucinations, restlessness, insomnia, and profuse sweating. With the possibility of metabolic disturbance, routine biochemistry was sent. In view of worsening delirium intravenous haloperidol was given in escalating doses (15 mg/day). In spite of treatment with haloperidol and zolpidem his condition worsened and was shifted to the critical care unit for assessment of need of mechanical ventilation. In the Intensive Care Unit (ICU), his pulse rate was 112/min, blood pressure of 128/74 mmHg, respiratory rate of 30/min, temperature 101°F and SpO_2 94% on oxygen supplementation. He had generalized rigidity with distal upper limb myoclonus. His general condition kept on deteriorating with increasing tachypnoea up to 40/min, tachycardia (130/min), and worsening delirium (detected using the confusion assessment method - CAM score). Laboratory investigations showed an elevated white blood cell count (19,000/mm^3), creatinine phosphokinase -11560 units/dL, (MB isoenzyme 45 units/dL), serum glutamic oxaloacetic transaminase -238 units/dL, serum glutamic pyruvic transaminase -154 units/dL and lactate dehydrogenase-124 units/dL, blood urea-45 mg/dL. Serum creatinine was 0.7 mg/dL and arterial blood gas showed metabolic acidosis. Urine analysis, serum electrolytes, chest roentgenogram, electrocardiography, computed tomography head, drug screen, blood cultures, lumbar puncture, and thyroid profile were all unremarkable. The other differential diagnoses considered in the ICU were an infectious pathology, pulmonary embolism, alcohol withdrawal or NMS. The whole case was re-evaluated, and it was revealed that the patient was consuming Soma to alleviate his knee pain. Over time, he

Address for correspondence: Dr. Gunchan Paul,
Assitant Professor, Department of Critical Care Medicine,
Dayanand Medical College, Ludhiana, Punjab, India.
E-mail: gunchan@gmail.com

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became dependent and consumed double the indicated dose (6-7 tablets) daily since last 10 years. Due to the presence of a generalized rigidity, high-grade fever, fluctuations in sensorium, autonomic dysfunction, distal myoclonus, and marked elevated creatine phosphokinase (CPK) possibility of possible NMS was considered and he was started on baclofen (30 mg/day) and lorazepam (6 mg/day). Over the next 48 h, he was calm and oriented though sedated. In the next two days, myoclonus and rigidity disappeared, CPK levels dramatically declined (189 mg/dl), and his condition completely stabilized. He was discharged from hospital 10 days thereafter in a satisfactory condition.

Discussion

Soma (Carisoprodol) is N-isopropyl-2 methyl-2-propyl-1,3-propanediol dicarbamate; and is routinely used in primary care settings for the treatment of musculo-skeletal disorders associated with muscle spasms and back pain.[2] It exerts its effect through central sedation and has an indirect agonist effect on the gamma-aminobutyric acid-A receptors.[3]

Carisoprodol undergoes hepatic transformation to metabolites which are excreted by the kidneys. It is accepted that therapeutic effects of carisoprodol and its abuse potential are due to its conversion to meprobamate.[4] Half-life of carisoprodol and pharmacologically active metabolite, meprobamate is 2-3 h and 11 h, respectively, but may increase to 48 h with chronic use.[5]

To the best of our knowledge, there are only five case reports reported till date.[6] Withdrawal symptoms have occurred when intake of 700-2100 mg/day of carisoprodol was suddenly stopped after 9 months.[7] Propose that carisoprodol withdrawal may have precipitated NMS when daily intake of large doses was abruptly stopped in this case. This diagnosis was supported by clinical features and laboratory parameters with complete resolution of the syndrome after institution of treatment and normalization of laboratory parameters. Long-term consumption of heavy doses induces neural adaptation to their presence and rebound resurgence of neural electrical activity occurs after its sudden withdrawal.[8] The rebound leads to symptoms ranging from anxiety, jitteriness to delirium, depending on the severity of withdrawal and degree of neuronal hyperactivity. The typical meprobamate withdrawal syndrome may involve various degrees of insomnia, vomiting, tremors, muscle twitching, overt anxiety, anorexia, ataxia, and bizarre behavior. Our patient was consuming 2100 mg daily for the last 10 years. He had insomnia, delirium, hallucinations, and cold sweating after 48 h of drug cessation with associated features like fever, rigidity, myoclonus, and high CPK levels.

In our patient, the initial features resembled postoperative delirium. As he developed respiratory distress, pulmonary embolism in the setting of postoperative period was a differential. When he developed fever, muscular rigidity, leukocytosis, altered consciousness, and elevated CK levels diagnosis of NMS was considered.

Our patient had possible NMS as there were clinical features to suggest the syndrome and normalization of the laboratory parameters after start of specific treatment. However, in our patient, it was the cessation of Soma abuse which led to NMS as the symptoms appeared prior to administration of haloperidol. As dantrolene was not readily available baclofen was used for controlling muscular rigidity. It resolved the rigidity in few hours with improvement in sensorium, general condition, and CK levels.

Conclusion

Our patient was addicted to Soma, and sudden withdrawal may have precipitated NMS in the postoperative period which was successfully managed with supportive therapy and specific treatment with baclofen and benzodiazepine. Thus, clinicians should exercise high degree of suspicion in managing postoperative psychosis and NMS.

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