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Case Report

Lithium Induced Extrapyramidal Symptoms-A Parkinson's Disease in Elderly Patient

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Abstract

Lithium is a drug which is used to treat the psychiatric conditions like bipolar or unipolar disorder which includes mania and depression. Here we present a case of 70 years male patient who is suffering with the psychiatric disorder on the usage of lithium carbonate since 6 years. So after the chronic use of this drug patient developed the extrapyramidal symptoms like the signs of tremors, fever with muscle stiffness, weakness of lower limbs, giddiness, generalized body pains etc. Cogwheel is also a sign that is seen in the patient. By the above symptoms it could be termed as a Parkinson's disease. Lithium is the drug which should have to be given in a low dose in the elderly patients due to the decreased renal activity. These symptoms could be reduced by holding or decreasing the dose of the drug. Proper monitoring of the elderly patients should have to be done who are using the lithium treatment to avoid the side effects.

Keywords: *Lithium; Psychiatric Disorder; Extrapyramidal Symptoms; Parkinson's Disease; Dose Tapering in Elderly*

Introduction

Lithium is available in a number of salt forms which are used as mood stabilizers [1]. It is used in the treatment of mania, to reduce the suicidal tendency, depression etc. When compared to depression it is more effective in preventing mania [2]. Lithium toxicity is seen in the elderly patients which can leads to renal disorder, electrolyte imbalance, dehydration etc. Generally the anti-psychotic drugs are the dopamine blocking drugs which can result in the movement disorders. There are serious adverse drug reactions due to lithium toxicity like dizziness, vomiting, diarrhea, tremors, weakness, muscle stiffness etc. which can be termed as the extrapyramidal symptoms. Cogwheel is the sign found in the patient namely the tremors and muscle rigidity. It could be seen with the chronic use of lithium in the elderly patients. Here we discuss about the lithium toxicity which includes the above side effects in the elderly patients and could be treated by reducing the dose of the drug or by hold.

Case Report

A 70 years old male patient was admitted in the hospital with the chief complaints of giddiness since 1 month. History of tremors, weakness of lower limbs since 2 months. The other complaints included the fever with muscle stiffness, generalized body pains since 2 months. He is a psychiatric patient who is using the drug lithium carbonate in the tablet form, 300 mg thrice daily without tapering the dose of the drug since 6 years and now he came with these complaints which had appeared from 9 weeks. He has no complaints of vomiting's, loose stools, slurred speech. He is not a smoker and alcoholic. He is not having hypertension or diabetes mellitus. He has a history of varicose veins which is not relevant to this disease condition treated with a surgery. His family history was nil significant. He has the sign of cog wheel. It indicates the presence of tremors and the muscle rigidity known as the earlier sign of the Parkinson's disease. Here according to the complaints of extrapyramidal symptoms and with presence of the cogwheel the patient could be diagnosed as having Parkinson's disease with the use of lithium for a chronic period. Lithium induced Parkinson's disease is very common in people using the antimanic therapy majorly in elderly.

The patient is suffering from the psychiatric disorder treated with lithium carbonate drug since 6 years. So that the lithium toxicity led to the extrapyramidal symptoms and the Parkinson's disease. The extrapyramidal signs seen in him are giddiness, weakness in the limbs, cogwheel sign etc. The lab investigations include the WBC count as 1.9×10^3 cells/cumm, Hb is 13.6 g/dl, B. urea is 38 mg/dl, s. creatinine is 1.4 mg/dl, SGOT is 52 U/L, ALP is 142 IU/L, Na^+ is 152 mEq/L, K^+ is 5.2 mEq/L, Cl- is 112 mEq/L, serum proteins is 6.8 g/dl, s. albumin is 4.8 g/dl, total bilirubin is 1.5 mg/dl, direct bilirubin is 0.5 mg/dl. These are the investigations done so far. Here the WBC levels are increased, Electrolyte alterations are seen, and bilirubin concentrations are increased and majorly the creatinine values are increased. In this patient the lithium therapy was withdrawn so that he could be relieved from the symptoms.

Discussion

Generally lithium drug is used as a mood stabilizer, as an antimanic drug. It is acted by inhibiting the dopamine receptors but the pathophysiology is not vivid yet. The patient was primarily diagnosed with the symptoms of tremors, weakness of limbs, cogwheel etc. These could be due to the chronic usage of the lithium, we can state them as the lithium induced extrapyramidal symptoms besides Parkinson's disease. Some of the thesis states that the lithium induced Parkinson's is common in elderly. Dopamine receptors in the striatum or limbic system are reduced due to the lithium use according to Engel 1980 hypothesis [3]. Though recent treatment reviews recommends lithium for the elderly patients [4]. The majority of lithium induced Parkinson's disease consists of elderly patients (age 60 - 79) who have been on chronic lithium therapy [1]. The WBC count in the patient increased due to the peripheral apoptosis which is common in the Parkinson's disease [5]. The use of lithium includes the change in the renal appearance, electrolyte alternations etc [6]. Serum creatinine levels are increased in this patient which could be due to the renal impairment. A retrospective study in Israel revealed that 21% of patients have renal insufficiency [7]. As he is an elderly patient the dose should have to be monitored from time to time while he is in the psychiatry therapy. The increased bilirubin levels are due to hepatic disease or hemolytic anemia. The patient is suffering from weakness of the lower limbs which could be termed as akinesia, generalized body weakness, dizziness, cogwheel which is termed as the tremors and rigidity of the muscles because of the lithium toxicity. This condition is seen due to decreased lithium clearance. Chronic lithium use can cause extra pyramidal symptoms [8]. Cog wheeling could be seen related to the length of the therapy with lithium [9]. The elderly patients who are receiving the lithium therapy should have to be monitored for the side effects which can be caused by the continuous usage. The dose of lithium should have to be lowered in the elderly patients to avoid the adverse events of the drug or if the symptoms persist the drug should have to be kept at hold.

Conclusion

Here we conclude that the patient is suffering from the extrapyramidal symptoms besides Parkinson's disease due to the chronic use of lithium. According to the laboratory data, he is having the decreased renal clearance, electrolyte imbalances, increased creatinine levels which states the renal disorder so far and the cogwheel sign shows the sign of Parkinson's disease. Mood stabilizer therapy is having more acute and long term adverse events. Narrow therapeutic index remains a major limitation. So the drug is prescribed based on the pharmacokinetic and dynamic parameters in the elderly. When these extrapyramidal symptoms are seen in the patient the drug should have to be kept on hold or the dose should have to be reduced.

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