

CASE REPORT

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Use of lithium in clozapine-induced neutropenia: a case report

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Abstract

Background: The literature describing the long-term use of lithium carbonate to reinstate reduced levels of white blood cell counts in patients treated with clozapine is scarce. We describe a case of successful recommencement of clozapine on a patient who developed risk level of neutropenia which was corrected by lithium carbonate. He was followed up for a period of one year.

Case presentation: We report a 40-year-old Sri Lankan male who developed neutropenia and low white blood cell counts following commencement of clozapine. We were successful in restarting clozapine after the addition of lithium carbonate to increase the cell counts. Clozapine was increased to 700 mg a day with 500 mg of lithium carbonate. The patient remains stable after one year with no further episodes of neutropenia.

Conclusion: Lithium carbonate can successfully be used to treat clozapine-induced neutropenia.

Keywords: Neutropenia, Clozapine, Lithium carbonate

Background

It is estimated that approximately 30% of patients with schizophrenia are resistant to typical and atypical antipsychotics and warrant treatment with clozapine. Clozapine should be offered to patients with treatment resistant schizophrenia (TRS) as it is the antipsychotic with most robust evidence for improving psychopathology and the quality of life [1]. However, clozapine carries a 0.9% risk of causing agranulocytosis and 2.7% risk of neutropenia [2] which could be fatal. Over 80% of such cases are seen within the first 18 weeks of treatment. Some patients who develop agranulocytosis may be genetically predisposed [3].

As a result, most clinicians are reluctant to initiate clozapine on patients. Lithium carbonate has been known to increase the white blood cell (WBC) counts in patients with leucocytopenia due to oncological causes. This has prompted clinicians to explore the possibility of using lithium carbonate in clozapine-induced neutropenia.

Case presentation

Our patient is a 40-year-old Sri Lankan male who was diagnosed with paranoid schizophrenia at the age of 22

years and was resistant to adequate trials of trifluoperazine, olanzapine and risperidone. Therefore, he was started on clozapine. The patient had delusions of reference, delusional perception and commanding hallucinations which affected his day to day functioning to a great degree. He lost his job as a result of ongoing psychopathology.

His baseline white cell counts were only marginally higher than the levels recommended before initiating treatment with clozapine. The effect of clozapine and lithium carbonate on the leucocyte count of the patient is given in Table 1.

In order to initiate clozapine, patients must have a baseline WBC count of $4.0 \times 10^3/\mu\text{l}$ and a neutrophil count of $2.5 \times 10^3/\mu\text{l}$. Clozapine must be withheld if the WBC count drops below the 'red' cut-off of $3.0 \times 10^3/\mu\text{l}$ or the neutrophil count falls below $1.5 \times 10^3/\mu\text{l}$.

In patients with benign ethnic neutropenia, the neutrophil count before commencement of clozapine is low and persistently tends to be around the risk level. Our patient had a low baseline WBC count of $6.02 \times 10^3/\mu\text{l}$ and a neutrophil count of $2.82 \times 10^3/\mu\text{l}$ before initiation of clozapine. The WBC and neutrophil counts decreased to $4.9 \times 10^3/\mu\text{l}$ and $2.0 \times 10^3/\mu\text{l}$ respectively, at a clozapine dose of 62.5 mg on day 9. In such patients lack of exercise, being a non-smoker or simply having blood drawn at the wrong time of day could result in clozapine treatment

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