

# Disulfiram Induced Psychosis

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Disulfiram is the commonly prescribed drug for the treatment of alcohol dependence. Its major metabolite (diethyldithiocarbamate) is an inhibitor of dopamine-β-hydroxylase, an enzyme that catalyzes the metabolism of dopamine to norepinephrine resulting in psychosis. We recommend that disulfiram should be used at the lowest effective dose, possibly 250 mg daily and caution should be taken while prescribing disulfiram for patients with personal and familial antecedents of psychosis.

KEY WORDS: Disulfiram; Psychosis; Side effect.

## INTRODUCTION

For the past 50 years disulfiram is the commonly prescribed drug for the treatment of alcohol dependence. Important side effects of disulfiram are hepatological, dermatological, neurological (polyneuritis, encephalopathy)<sup>1,2</sup> and psychiatric in nature. Psychiatric manifestations include confusion, loss of memory, psychosis,<sup>3-6</sup> mania with psychotic symptoms.<sup>7,8</sup> Disulfiram's major metabolite diethyldithiocarbamate is an inhibitor of dopamine-β-hydroxylase (DBH), an enzyme that catalyzes the metabolism of dopamine (DA) to norepinephrine (NE).<sup>9</sup> By inhibiting this metabolic pathway from DA to NE in the central nervous system, disulfiram results in an increase of DA concentrations in mesolimbic system resulting in psychosis. Alcoholics who developed psychotic symptoms during disulfiram treatment are found to have low levels of amine and monoamine oxidase, suggesting DBH blockage.<sup>10</sup> We present a case of 32-year-old male who developed psychosis with the use of disulfiram.

## CASE

A 32-year-old male without past of psychiatric and neurological illness reported to psychiatry outpatient department with complaint of daily alcohol intake of 250-750 ml

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(40% alcohol by volume) for the last 5 years. With the informed consent of the patient, disulfiram was administered at the dosage of 250 mg twice daily for 1 month, while the patient abstained from alcohol. Then the patient presented complaint of fearfulness, suspiciousness, easy irritability, muttering to self, decreased sleep for last one month. Detailed medical evaluation revealed no significant findings. Haematological and biochemical indices were within normal limits. On mental status examination delusion of persecution and auditory hallucinations were elicited. He has family history of schizophrenia and comorbid alcohol dependence in his father. The patient has no history of any other substance abuse. The patient was hospitalised and possibility of psychosis induced by disulfiram was kept. Disulfiram was stopped. Symptoms of alcohol withdrawal and disulfiram-alcohol reactions were not observed during hospitalization. He was started on tablet lorazepam 4 mg per day. His fearfulness, suspiciousness, irritability, muttering to self and impaired sleep gradually improved over a period of 10 days. After 2 weeks he improved completely and lorazepam was stopped.

## DISCUSSION

Risk factors for development of disulfiram related psychotic symptoms include past history or family history of psychosis, overly rapid increase in dosage or greater than recommended total dosage, old age, impaired liver function and concurrent dopaminergic medications or psycho-stimulant abuse.<sup>5,11</sup> Our patient has family history of schizophrenia in his father. His psychotic symptoms im-

proved after stoppage of disulfiram and use of lorazepam tablet only without any additional requirement of anti-psychotic treatment. These factors support the association between with disulfiram use and emergence of psychotic symptoms in our patient.

The usual recommended initial dosage is 500 mg per day for the first 1 or 2 weeks, followed by a maintenance dosage of 250 mg per day.<sup>12)</sup> Disulfiram related psychosis usually involve either therapeutic or higher than recommended dosages.<sup>13)</sup> Our patient has developed psychotic symptoms with 500 mg per day of disulfiram. We recommend that disulfiram should be used at the lowest effective dose, possibly 250 mg daily. Our case highlights the relevance of a careful history of patient's symptoms and family history that should be performed before starting treatment with disulfiram and caution should be taken while prescribing disulfiram for patients with personal and familial antecedents of psychosis. Disulfiram-related psychiatric complications are reported to be more prevalent in eastern countries,<sup>3)</sup> which suggests that genetic factors may play a role in disulfiram induced psychosis.

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