

## Original Article

### A case report of paranoid schizophrenia having symptomatic hyperprolactinemia with aripiprazole

<sup>1</sup>Ardaaspreet Singh Sandhu, <sup>2</sup>Mantaz Kaur Dhillon, <sup>3</sup>Guryodh Singh Sidhu

<sup>1</sup>PG Resident, Department of Psychiatry, DMC &H, Ludhiana, Punjab, India

<sup>2</sup>Senior Resident, Department of Psychiatry, BR Ambedkar Medical College and Hospital, Mohali, Punjab, India

<sup>3</sup>PG Resident, Department of Orthopaedics, DMC &H, Ludhiana, Punjab, India

#### ABSTRACT:

Hyperprolactinemia is often associated with first generation antipsychotics due to blockade of D2 receptors. Dopamine inhibits prolactin release by stimulating D2 receptors and serotonin induces prolactin release by 5HT-2A receptors. Here; we present the case of a 28 years old female with paranoid schizophrenia who developed symptomatic hyperprolactinemia with aripiprazole.

**Key words:** Paranoid, Schizophrenia

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**Corresponding Author:** Ardaaspreet Singh Sandhu, PG Resident, Department of Psychiatry, DMC &H, Ludhiana, Punjab, India

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#### INTRODUCTION

Hyperprolactinemia is often associated with first generation antipsychotics due to blockade of D2 receptors. Dopamine inhibits prolactin release by stimulating D2 receptors and serotonin induces prolactin release by 5HT-2A receptors. Aripiprazole which has partial agonist activity at D2 receptors and full antagonist at 5HT-2A receptors is often used as adjunct or alternative therapy for patients who develop hyperprolactinemia on other antipsychotics. However, here, we present the case of a 28 years old female with paranoid schizophrenia who developed symptomatic hyperprolactinemia with aripiprazole.

#### CASE REPORT

A 28-year-old married female patient presented to the Psychiatry Outpatient Services with 6 years history of suspicious behaviour towards father in law, self-muttering, self-smiling, neglect for personal care, poor sleep and appetite with worsening for last 6 months. Mental Status examination (MSE) revealed delusion of persecution, reference and an insight of grade 1. The score on Positive and Negative syndrome scale

(PANSS) came out to be Positive -29 Negative-27 General psychopathology-55. Family history was negative for any psychiatric illness. Vitals were stable, systemic examinations revealed no abnormality and her menstrual cycles were regular. A diagnosis of paranoid schizophrenia was made. Aripiprazole was started at an initial dose of 5 mg at night, then increased to 15 mg after 7 days and optimised to 20 mg continued as maintenance. Her psychotic symptoms improved and no weight gain or extrapyramidal symptoms were observed. However, her menstrual cycles were prolonged by 7 days. Patient was investigated with urine pregnancy test which came out to be negative. As thyroid dysfunction and pituitary adenoma may cause irregular menstrual bleed, thyroid function tests and MRI brain was done to rule out the same. Her serum prolactin levels were measured as 4413 IU/ml. The possibility of aripiprazole-induced hyperprolactinemia was considered and aripiprazole was tapered to 10mg. As she was otherwise asymptomatic, no other medication was started and she was sent home. This allowed

remission of the psychotic symptoms and simultaneous achievement of psychiatric stability.

#### DISCUSSION

The synthesis and release of the hormone prolactin from the lactotrophs of the anterior pituitary regulated by various neurotransmitters.[1] The hypothalamic prolactin is inhibited by dopamine.[1,2] Dopamine regulates prolactin secretion by acting as a tonic inhibitor of prolactin secretion through the tuberoinfundibular and the tuberohypophysial dopaminergic systems. The dopamine after binding to the D2 receptors present on the membrane of the lactotroph cells inhibit the prolactin gene transcription, synthesis and release of prolactin, and lactotroph proliferation.[3] .The D2 receptor blockade by antipsychotics elevate serum prolactin levels by counteracting the tonic inhibitory effect of dopamine .(4) More the penetrability of the drug through the blood-brain barrier and the strength of the dopamine blockade more is the degree of hyperprolactinemia .(2,5,6) The quicker the drug dissociates from the receptor, the lesser is the increase in plasma prolactin.[1] Aripiprazole has partial agonist activity at DRD2, DRD3, 5HT1A and 5HT2C receptors and antagonist activity at 5HT2A receptors . Aripiprazole has a lower intrinsic activity at the D2 receptor than dopamine, allowing it to act as both, a functional agonist and antagonist, depending on the surrounding levels of dopamine.[7] Aripiprazole acts as a functional antagonist under hyperdopaminergic conditions, while it acts as a functional agonist under hypodopaminergic conditions at DRD2. This DRD2 stimulation provokes a suppression of prolactin secretion; therefore, aripiprazole's high DRD2 occupancy does not induce hyperprolactinemia in the majority of subjects.(8) Functional activity of

aripiprazole in this pathway is dependent solely on the dopamine levels. Therefore, it is likely that in the absence of any competing D2 antagonist and the presence of dopamine (the natural agonist), aripiprazole could act as a functional antagonist at lower doses also, and thus, elevate prolactin levels.

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