Aripiprazole-induced priapism

ABSTRACT

Priapism is a urologic emergency representing a true disorder of penile erection that persists beyond or is unrelated to sexual interest or stimulation. A variety of psychotropic drugs are known to produce priapism, albeit rarely, through their antagonistic action on alpha-1 adrenergic receptors. We report such a case of priapism induced by a single oral dose of 10 mg aripiprazole, a drug with the least affinity to adrenergic receptors among all atypical antipsychotics. Polymorphism of alpha-2A adrenergic receptor gene in schizophrenia patients is known to be associated with sialorrhrea while on clozapine treatment. Probably, similar polymorphism of alpha-1 adrenergic receptor gene could contribute to its altered sensitivity and resultant priapism. In future, pharmacogenomics-based approach may help in personalizing the treatment and effectively prevent the emergence of such side effects.

Keywords: Adrenergic, adverse event, aripiprazole, priapism

CASE REPORT

An adolescent single male belonging to middle socioeconomic status studying in class XII had presented to our outpatient services with 2-month history of acute onset continuous course of illness characterized by third person auditory hallucination – commentary type, delusion of reference, delusion of persecution, poor self-care, insomnia, and irritability leading to significant sociooccupational dysfunction. There was no history of alcohol/drug consumption with insignificant past medical/surgical history. He had a family history of psychosis in his father. Detailed general physical and systemic evaluation was normal. Routine biochemical parameters were within normal limits. Brain imaging also did not reveal any abnormality. He was diagnosed to have paranoid schizophrenia as per the WHO International Statistical Classification of Diseases-10 criteria and was prescribed aripiprazole 10 mg/day and lorazepam 2 mg. Within 7 h, he presented to the emergency services with the complaints of continuous penile erection and pain of 1 h duration. He was examined by the urologist...
on duty who diagnosed him as having priapism. Initial conservative management with ice packs was in vain, following which blood aspiration with saline irrigation was performed. Two milliliters of injection adrenaline was administered in each cavernosal body with which he achieved satisfactory detumescence. His vital parameters were continuously monitored during the entire procedure. No repeat injections or aspiration irrigation procedure were needed. Except for the single dose of aripiprazole, he had not taken any other medication which was confirmed by the family members. He had no previous history of similar incident. No recent alcohol or substance consumption was suspected clinically, which was later confirmed by his urine analysis report. There was no history of any perineal trauma either. The patient was observed in the emergency services for further 24 h. On discharge, the patient was started on tablet amisulpride 400 mg in divided doses with lorazepam 2 mg for sleep. On follow-up, a week later, the patient was tolerating amisulpride well with no untoward incidents reported in the intervening period.

**DISCUSSION**

The potential of antipsychotics to cause priapism is believed to be dependent on their affinity to block alpha-1 adrenergic receptors.[8] Among the older typical antipsychotics, chlorpromazine and thioridazine have the maximum propensity to block alpha-1 adrenergic receptors. While among the newer atypicals, clozapine, quetiapine, and risperidone have a maximum affinity.[9] And as such, virtually, all antipsychotic medications have been reported to cause priapism rarely.[9] However, aripiprazole displays the lowest affinity to alpha-1 adrenergic receptors among all the atypical antipsychotics.[10] Yet, there have been reports of aripiprazole-induced priapism. Two reports suggest an association between the dose of aripiprazole and priapism.[7,8] A report by Mago et al. [11] discusses a case of recurrent priapism with aripiprazole administration.[9] Priapism has also been reported when aripiprazole was used in combination with oxcarbazepine and lithium.[10] Interestingly, a case similar to ours was presented by Togul et al., 2012.[11] They report priapism with 10 mg aripiprazole within 8 h of its first administration to a patient with schizophrenia. However, surprisingly, they shifted their patient to olanzapine, which itself has alpha-1 adrenoreceptor antagonistic action and has been associated with priapism.[11,12] In our case too, the patient developed priapism within few hours of taking the single oral dose of 10 mg aripiprazole, presumably after attaining the peak plasma levels. The patient had no history of any alcohol/substance use, confirmed by his urine analysis report. No other drug consumption was confirmed. With the available evidence, we can conclude that aripiprazole led to priapism in this case. He was duly evaluated by the urologist on duty and managed as per the accepted guidelines.[3] Adrenaline was used in our case as it was immediately available in the emergency tray, and its effectiveness with regard to relieving priapism has been documented earlier.[12] Our choice of amisulpride was based on the fact that sulpiride does not have any alpha receptor affinity, making it a safe drug with regard to priapism. All the other popularly used antipsychotics have at least low affinity to alpha-1 receptors.[4]

**SUMMARY**

In our case, the emergence of priapism does not seem to be related to dose contrary to the previous reports.[7,8] But, the reason why only certain individuals develop priapism requires further elucidation. It could be an idiosyncratic reaction or related to the altered sensitivity of adrenergic receptors in this patient. Polymorphism in alpha-2A adrenergic receptor gene has been associated with sialorrhea in schizophrenia patients on clozapine treatment.[13] Similarly, could alpha-1 adrenergic receptor gene polymorphism in schizophrenia patients be responsible for an increased vulnerability to develop priapism? In future, pharmacogenomics-based approach could help in personalizing the treatment of various mental disorders and hopefully help in avoiding the emergence of such side effects.

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**Conflicts of interest**

There are no conflicts of interest.

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