

CASE REPORT/CASO CLÍNICO

Anticholinergic Plant Misuse and Schizophrenia: Regarding a Case Report Abuso de Plantas Anticolinérgicas e Esquizofrenia: A Propósito de um Caso Clínico

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Abstract

Anticholinergic medication abuse is common in patients with schizophrenia. The recreational use of anticholinergic plants for their euphoria inducing and hallucinogenic properties is a rising concern in America and Eastern Europe, but rare in Portugal. Anticholinergic misuse poses a challenge to Psychiatrists treating patients with dual pathology, for its addictive potential. In managing antipsychotic medication and its side effects in this population one must have in mind the potential for abuse of anticholinergics.

We present a case report of a patient with schizophrenia and abuse of anticholinergic plants, after receiving biperiden to treat extrapyramidal symptoms. Later we discuss anticholinergic effects and potential for addiction and explore ways to prevent and treat drug misuse in this context.

Resumo

O abuso de medicação anticolinérgica é comum em pacientes com esquizofrenia. A utilização recreativa de plantas com efeito anticolinérgico pelo seu potencial alucinogénico e indutor de euforia, é um problema crescente na América e Europa de Leste, mas raro em Portugal. O uso inadequado de anticolinérgicos coloca um desafio no tratamento de pacientes com patologia dual, pelo seu potencial aditivo. A gestão da medicação antipsicótica e dos seus efeitos laterais nesta população tem que ter em conta o potencial de abuso de anticolinérgicos.

Apresentamos um relato de caso de um paciente com esquizofrenia e abuso de plantas com ação anticolinérgica, após ter recebido biperideno para o tratamento de sintomas extrapiramidais. Posteriormente discutimos os efeitos dos anticolinérgicos e o seu potencial aditivo e exploramos formas de tratar e prevenir o abuso de substâncias neste contexto.

Keywords: Antipsychotic Agents; Behavior, Addictive; Cholinergic Antagonists, Schizophrenia; Substance-Related Disorders

Palavras-chave: Antagonistas Colinérgicos; Antipsicóticos; Comportamento Aditivo; Esquizofrenia; Perturbações Relacionadas ao Uso de Substâncias

INTRODUCTION

Anticholinergic agents are useful in psychiatry, mainly in the treatment and prophylaxis of extrapyramidal symptoms (EPS) secondary to antipsychotic medication.^{1,2}

Acetylcholine (ACh) is the main parasympathetic neurotransmitter, influencing circulation, motor function, smooth muscle activity, vision, gland secretion, alertness,

memory and learning.³ Anticholinergics act by competitive inhibition of ACh synaptic receptors in both central and peripheral nervous systems.⁴ In the central nervous system (CNS) they stimulate the medulla and higher structures, eliciting euphoria, excitement, restlessness, irritability, disorientation, memory impairment, hallucinations and delirium at toxic doses (>10 mg). Severe intoxication results in

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CNS depression symptoms and circulatory and respiratory collapse.^{5,6}

Anticholinergic misuse is rarely reported and mainly in patients with severe mental illness.^{1,6,7}

Anticholinergic agents such as atropine and scopolamine naturally occur in several plants that are recreationally consumed for their hallucinogenic and euphoria-inducing properties and misuse of anticholinergic plants is a growing concern in America and Eastern Europe, rarely reported in Portugal.^{1,8} We present a case report of a patient diagnosed with paranoid schizophrenia and previous drug addiction, currently misusing anticholinergic plants.

CASE REPORT

A 41-year-old male was referred to an addiction treatment unit in Portugal for misuse of plants *Datura stramonium* and *Brugmansia suaveolens*. He had history of drug addiction and paranoid schizophrenia with three psychotic episodes requiring hospitalization.

He started using drugs at 16 years of age, including THC, heroin, cocaine and sporadically LSD and MDMA. He began pharmacological and psychotherapeutic treatment at 26 years of age for drug-related problems, attending a rehabilitation clinic for six months. At this clinic, he developed acute dystonia after 10 mg of intramuscular haloperidol, which reversed with 10 mg (2 mL) of intramuscular biperiden.

His first psychotic episode occurred at 20 years of age, with severely disorganized thought and behavior and bizarre paranoid delusions. Remission was achieved after a week of inpatient treatment with antipsychotic medication. He had a similar episode at 23 years of age. Both were interpreted as drug induced psychosis.

In 2017, his third psychotic episode presented with persecutory and hypochondriacal delusions, auditory hallucinations and mildly disorganized thought and behavior. After a month of inpatient antipsychotic treatment, he was discharged with a diagnosis of paranoid schizophrenia.

At his first appointment the patient was abstinent of illegal drug use for 13 years but consumed *Brugmansia suaveolens* and *Datura stramonium*, which he had in his garden, for at least 4 years, after biperiden tablets were suspended for misuse. Plant species were confirmed by patient provided photographs and samples.

Initially he ingested 3 *Brugmansia* or 2 *Datura* seeds daily, increasing gradually over the years to 6 or 5 seeds due to tolerance.

After 24 hours without anticholinergics he developed increasing agitation, anxiety, profuse sweating, sialorrhea and feelings of emptiness. He reported past episodes of acute intoxication, disorientation, memory impairment, ataxia, loss of motor coordination, blurred vision and emotional instability coupled with hallucinations and delusions when taking higher doses.

He also complained about chronic feelings of worthlessness and abulia, present since his first psychotic episode and worsening over the last three years with increasing functional impact.

Physical examination showed increased sweating and mild mydriasis. He was alert and cooperative, exhibiting a bizarre demeanor. Mood was anxious and affect flattened. Speech was spontaneous, circumstantial and sometimes inadequate although logical and coherent. He showed no signs of delusions and did not report hallucinations, auditory or otherwise. The patient underwent pharmacological treatment, switching from haloperidol 10 mg daily to quetiapine 400 mg divided by two daily administrations in order to reduce EPS and sedation. He received individual cognitive behavioral therapy to address substance addiction and was enrolled on a Day Care Center to promote rehabilitation. After three months of treatment he stopped using anticholinergics or other substances.

DISCUSSION

Hallucinogenic and euphoria-inducing plants have been used for millennia in different cultures for spiritual, medical and recreational reasons.⁹ *Datura* and *brugmansia* species are among the most popular plants used recreationally for their psychotropic properties in America and Eastern Europe where intoxication is a growing concern.¹⁰

The patient described the experience of receiving biperiden to treat EPS as extremely pleasant, prompting subsequent abuse. He regularly consumed leaves or seeds of *Brugmansia* and *Datura* to elicit feelings of happiness, euphoria and hallucinations. He met ICD-10 criteria for dependence syndrome, increasing doses to maintain the desired effects, withdrawal symptoms and inability to reduce consumption despite recognizing its negative impact on his health and functioning.¹¹ He also suffered from paranoid schizophrenia undergoing antipsychotic treatment. Negative symptoms were apparent mainly through a flattened mood and affect, circumstantial and stilted speech, and disproportionate interest in botanic and pharmacology. It should be noted that chronic anticholinergic use is associated with cognitive decline over time that overlaps with cognitive symptoms of schizophrenia.¹²

Consumption of anticholinergic agents by schizophrenic patients looking for feelings of euphoria or energization has been previously reported. These patients show increased risk for anticholinergic abuse or dependence as they often need anticholinergic drugs to ameliorate EPS.^{1,13}

According to the dopaminergic-cholinergic model of schizophrenia, cholinergic hyperactivity and muscarinic receptor downregulation relate to negative symptoms. By blocking muscarinic receptors, anticholinergics could reduce negative symptoms which helps understand the increased incidence of anticholinergic misuse in severely mentally ill patients.^{13,14,15} Blocking muscarinic receptors also inhibits dopamine reuptake and storage, enhancing its transmission, which may account for its euphoric and hallucinogenic actions, and its potential for dependence.¹⁶ This is, to our knowledge, the first reported case of anticholinergic plant addiction in Portugal. The fact that it occurs in a schizophrenic patient highlights the need for psychiatrists dealing with dual pathology to recognize emerging addictive agents and consumption patterns. Optimization and

monitoring of anticholinergic drug prescription, educating patients and caregivers about the risks of anticholinergic addiction and misuse and favoring second generation antipsychotics to reduce EPS are strategies that can reduce anticholinergic addiction risk in severely mental ill patients.

When dependence develops, it can be useful to pharmacologically manage comorbid symptoms and withdrawal induced anxiety, and reduce anticholinergics over a 2-week period while using adjunctive CBT.^{6,17}

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