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Review

The role of antihistaminic effects in the misuse of quetiapine: A case report and review of the literature

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ABSTRACT

Recent case reports and case series suggest that the atypical antipsychotic quetiapine has the potential for misuse. This includes drug-seeking behaviors motivated by quetiapine as well as inappropriate (intranasal or intravenous) administration. We present an additional case of quetiapine misuse and review other published cases. In general, quetiapine misuse is associated with prior CNS depressant use and is more common in forensic settings. The mechanism of reinforcement for this misuse is unknown, but we hypothesize that it is related to quetiapine's pharmacological profile as an antihistamine with a relative low affinity for dopamine receptors. The risks to individuals and society of exaggerating/simulating symptoms to obtain high-dose quetiapine in the absence of a clinical indication are discussed. This includes the unwelcome possibility of restricting access to this effective medication.

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Contents

1. Introduction

Prescription medications are misused if they are taken in a way other than as prescribed or if symptoms are invented or exaggerated in order to acquire a prescription. No medication is completely harmless and patients can be put at significant risk by misuse of medications. This article presents the case of a patient embellishing symptoms in an attempt to obtain increased doses of the atypical antipsychotic quetiapine. Following the case, we review the literature on quetiapine misuse and discuss possible mechanisms underlying the phenomenon. We conclude with a consideration of the risks of unrecognized quetiapine misuse to individuals and to society at large.

2. Case report

Mr. A was a married, employed, white 53-year-old male. He presented with several weeks of depressed mood following a third arrest for driving while intoxicated (DWI). At intake, he denied any discrete periods of elevated, expansive, or irritable mood, sleeplessness, grandiosity, pressured speech (observed by family or friends), racing thoughts or increased goal-directed behavior. Despite the 3 arrests, Mr. A denied regular alcohol use and his laboratory results (including liver function tests and complete blood count) were within normal limits. Mr. A did report a history of compulsive gambling, which had left him in significant debt. He had never been seen by a psychiatrist or counselor and had never been prescribed any psychotropics. He was started on duloxetine and his mood improved.

Mr. A was extremely intelligent and began investigating a not-criminally responsible defense. As his hearing approached, he began reporting recollections of symptoms consistent with

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previous manic episodes. In contrast to his evaluation visits, he now reported his gambling had come in discrete periods coupled with euphoric mood. He also began reporting the events of the DWI differently making a point of saying he was "manic" when he was stopped that night. Because there was some clinical doubt as to Mr. A's true diagnosis, and duloxetine monotherapy put him at theoretical risk for mood instability, he was started on quetiapine.

Mr. A was allowed to serve his DWI sentence part-time several days/week. He continued to attend the clinic. During his sessions he began pressing for higher and higher doses of quetiapine. Rather than experiencing relief after dose increases, he reported worsening irritability and insomnia. He was finally presented the option of switching to a different mood-stabilizing agent. He then acknowledged quetiapine made him feel "dreamy" and reported he was trying to get the dose high enough that he could "sleep through" his incarceration.

3. Review of the literature

A search of PubMed using the string "quetiapine AND (abuse OR dependence OR misuse OR addiction)" yielded eight published case reports/case series of quetiapine misuse in English (Chen et al., 2009; Hussain et al., 2005; Morin, 2007; Murphy et al., 2008; Paparrigopoulos et al., 2008; Pinta and Taylor, 2007; Reeves and Brister, 2007; Waters and Joshi, 2007) as well as a letter describing a general misuse phenomenon in Los Angeles County Jail (Pierre et al., 2004); see Table 1.

Reports of quetiapine misuse include taking the medication intravenously (Hussain et al., 2005; Waters and Joshi, 2007) or intranasally (Hussain et al., 2005; Morin, 2007; Pierre et al., 2004), taking excessive amounts (Chen et al., 2009; Murphy et al., 2008; Paparrigopoulos et al., 2008; Reeves and Brister, 2007), malingering symptoms to obtain the drug (Murphy et al., 2008; Reeves and Brister, 2007), and acquiring/selling quetiapine "on the street"(-Murphy et al., 2008; Pierre et al., 2004; Pinta and Taylor, 2007; Reeves and Brister, 2007). When the effect of quetiapine is described, it is often similar to the effect described by Mr. A, i.e. "dreamy", calming, or soporific (Chen et al., 2009; Hussain et al., 2005; Morin, 2007; Paparrigopoulos et al., 2008; Pierre et al., 2004; Pinta and Taylor, 2007; Reeves and Brister, 2007). Only one report describes a "hallucinogenic" effect, but this was in response to an intravenous quetiapine and cocaine combination (Waters and Joshi, 2007). Street slang for quetiapine includes "Susie-Q"(Pinta and Taylor, 2007), "baby-heroin"(Waters and Joshi, 2007), and "quell" (Pierre et al., 2004). The intravenous combination of quetiapine and cocaine is referred to as "Q-Ball" in one report (although it is unclear if this is street slang or a label from the authors (Waters and Joshi, 2007)).

In most cases, misuse of quetiapine was connected to a forensic setting such as incarceration (including the present report (Hussain et al., 2005; Pierre et al., 2004; Pinta and Taylor, 2007)), court-ordered hospitalization (Morin, 2007), or other oversight by the legal system (e.g. monitoring urines (Reeves and Brister, 2007)). In almost every report, the person misusing quetiapine is described as having a prior drug or alcohol problem. Prior drug misuse was mainly polysubstance abuse/dependence or problems with opiates, alcohol, or benzodiazepines (Hussain et al., 2005; Morin, 2007; Paparrigopoulos et al., 2008; Pinta and Taylor, 2007; Reeves and Brister, 2007; Waters and Joshi, 2007). Quetiapine does not seem to be substitute for more activating drugs such as cocaine or amphetamines.

4. Possible mechanism

The reinforcing properties of quetiapine have not been examined in human or non-human behavioral research, but its pharmacology suggests two plausible explanations for its misuse. Although it was initially believed quetiapine had minimal anticholinergic activity (Goldstein and Brecher, 2000), trials of high-dose quetiapine have demonstrated anticholinergic effects in humans (Boggs et al., 2008; Pierre et al., 2005) and there are multiple case reports of anticholinergic drug abuse/misuse in the

Table 1
Summary of case reports of quetiapine misuse[a].

Reference	Sex	Race	Age	Diagnosis (non-substance related)	Prior addictive behavior	Route of administration	Comments
Fischer and Boggs (present report)	M	W	53	Mood disorder not otherwise specified	Yes (alcohol abuse, gambling)	Oral	Related to incarceration
Hussain et al. (2005)	F	–	34	Borderline personality disorder, depressive episodes	Yes (polysubstance dependence)	Intranasal; IV	Related to incarceration
Morin (2007)	F	W	28	Schizoaffective disorder (bipolar type)	Yes (polysubstance abuse)	Intranasal	Court-ordered hospitalization
Waters and Joshi (2007)	M	W	33	–	Yes (polysubstance dependence)	IV with cocaine	Combination reported as "hallucinogenic"
Pinta and Taylor (2007)	M	–	39	Generalized anxiety disorder	Yes (opiate abuse)	Unreported (oral assumed)	Related to incarceration
Reeves and Brister (2007)	M	–	49	None	Yes (alcohol dependence, benzodiazepine abuse)	Unreported (oral assumed)	Urine being monitored after multiple DUIs
Reeves and Brister (2007)	M	–	23	None	Yes (benzodiazepine dependence)	Unreported (oral assumed)	Stole quetiapine from girlfriend with schizophrenia
Reeves and Brister (2007)	M	–	39	Bipolar disorder	–	Unreported (oral assumed)	Outpatient misuse
Paparrigopoulos et al. (2008)	M	–	48	Generalized anxiety disorder; "depressive reaction"	Yes (alcohol dependence, benzodiazepine dependence)	Oral with benzodiazepines	Reported to augment benzodiazepine feeling; preferred to alcohol
Murphy et al. (2008)	M	W	29	Probable malingering	None known (negative urine toxicology)	Oral	Outpatient misuse
Chen et al. (2009)	F	–	59	Bipolar disorder	Yes (concurrent benzodiazepine dependence)	Unreported (oral assumed)	Outpatient misuse
Pierre et al. (2004)	–	–	–	–	Yes	Oral; intranasal	Report of widespread misuse in Los Angeles County Jail

[a] M: male, F: female; W: White, Caucasian; DO: disorder; IV: intravenous; DUI: driving while under the influence; "–" indicates information not reported or not applicable.

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