Dextromethorphan & Brief Delusional Psychosis: Case Report

by Seth Many, MD

Abstract:
A case is presented of a 57 year old white male who developed unusual behavior, dissociative phenomena, and delusions of death and suicide in the presence of a clear sensorium after several days of excessive consumption of over-the-counter cough control medications whose common ingredient was dextromethorphan. While reports of mental state change with such agents are infrequent, their widespread availability suggests a heightened level of diagnostic scrutiny in patients presenting with excessive self-administration of poly-pharmaceuticals or multiple risk factors. Drug related psychiatric disorders deserve consideration even in the absence of acute delerium and negative drug screens. The use of on-line search methodology is of considerable value in the review of differential diagnosis.

Introduction

Many of the most popular preparations for the relief of cold and/or cough contain dextromethorphan, the non-narcotic dextro-isomer of the narcotic levorphanol. Although widely available over-the counter drug for over 25 years, CNS side effects are rarely encountered.[1] Hyperexcitability, increased muscle tone, and ataxia have been recorded.[2] One previous case of toxic psychosis was briefly noted in Australia in 1967.[3] An unusual case of organic delusional psychosis in the presence of otherwise clear sensorium is reported here.

Case Description:

A 57 year-old white male was admitted on voluntary status to the acute psychiatric care unit of a general hospital. He was initially seen in the ER with suicidal ideation, auditory hallucinations and the delusion that his son was going to commit suicide. Ethanol level and toxicology screen were normal as well as routine CBC, EKG, and chemistry.

Six days prior to admission the patient had an attack of flu symptoms which resulted in temporary absence from his janitorial job of 23 years. He began self-medication with *Afrin* (oxymetazoline BID) nasal spray, *Delsym* (dextromethorphan polistirex, 2 tsp q 12h), *Contac* (acetaminophen 650 mg/guaifenesin 200 mg/ dextromethorphan HBr 30 mg, 3 tsp q4h), and *Tussin* (drug store supplied equivalent of *Robitussin-DM*, i.e. guaifenesin 200 mg/oz and dextromethorphan HBr 10 mg, 1 tsp (5ml) q6h. The day prior to admission the patient started amoxicillin (1000 mg). Long term medication (past 4 years) included *Catapres* (clonidine, 0.1 mg BID) for hypertension.

According to his wife, persistent delusions about his own and his son's suicide were preceded by personality changes over the two days prior to admission including "making little jokes" and "irrational and illogical thought." On the evening of admission he had a twenty minute episode of irrational, "not logical talk" lying in bed with "glazed eyes" and then was "nonreactive" for at least two and one-half hours, followed by "his head bothering him."

Twenty years previously the patient experienced suicidal ideation during a troubling time with his wife, and seven years prior had been seen by a psychiatrist for 5 weeks in conjunction with his son's school problems. Family history revealed a older sister who had briefly been in therapy after "an accident," and a 28 year-old daughter in remission from possible "schizophrenia."

Mental Status

Initial mental status examination demonstrated a clear sensorium in the presence of blunted to hostile/jocular labile affect, and marked death prescient-paranoid delusions and self-referential ideation. Episodic dissociation, characterized by passivity and latency in response time extended to inert, static, noncommunicative immobilization for up to several minutes. Upon continued prodding he became easily frustrated, saying,

> "I wish you wouldn't waste my time. I'm dead. I soon will be dead. I hope it happens soon. I'm ready to die. No sense in staying."

He had no "no idea" what would kill him. He laughed as he recalled having "asked my wife to help me commit suicide." He denied hearing voices or seeing visions. Despite his conviction of present or impending death, he denied current intent to commit suicide or homicide.

Course in Hospital:

The patient was placed on Haldol 2mg BID while all other medications were discontinued and suicide precautions instituted. All labs were negative including drug screen, electrolytes, CT scan (head), and EEG. Over the next two days a rapid diminution in delusional extent and intensity and increased cooperation was accompanied by depression, dyskinesia, and rigidity. Haldol was discontinued over the next several days, and the patient was discharged nine days after admission in complete remission. On discharge there was no evidence of suicidal or homicidal ideation, nor were dissociative, affective, or ideational disturbances present. The discharge diagnosis was acute organic delusional disturbance with mood disorder secondary to over-the-counter medication, in remission. The patient was warned to avoid decongestants and anti-tussives containing dextromethorphan.

Discussion:

An Organic Delusional Psychosis may have more than one antecedent. In the present case a predisposition for psychotic decompensation was considered given a family history of possible "schizophrenia" and the patient's prior psychiatric contact. However, both the acute nature of the attack, the absence of other severe psychological stressors, a long stable job history, and rapid remission suggested a toxic mechanism.

The psychiatric effects of many categories of medication, including antitubercular drugs, hypotensive agents, and steroids are well known.[4] Several medications with potential CNS effects were in use in our patient, including a four year history of clonidine (*Catapres*), brief one week course of oxymetazoline (*Afrin*), and one day's worth of amoxicillin. In addition, several different OTC combinations of anti-tussive agents had received heavy one week utilization.

CNS effects of long term use of clonidine including anxiety, auditory hallucinations, and delirium have been reported. [5]. In addition to its antihypertensive use, clonidine has been recently recommended for the relief of adrenergic withdrawal symptoms in narcotic addiction,[6] motor tics in Tourette's syndrome,[7] and hypomanic and hyperactive arousal syndromes.[8] In this instance an acute onset of psychological disruption after four years of regular use suggests minimal influence attributable to clonidine.

The use of the nasal spray-decongestant oxymetazoline, a sympathomimetic alpha-adrenoceptor agonist, might have been contributory, but stigmata of excessive use such as burning, stinging, sneezing, or increase of nasal discharge were not present.[9] No reported CNS side effects were found in a 20 year back search of the literature.[10]

Could the morbid delusion be due to the 1000 mg of amoxicillin taken on the day of admission? One reference to a brief amoxacillin-induced psychosis turned up in a search of toxline to 1981 and medline to 1977,[11] but in our patient the onset of the disturbance was antecedent to the use of amoxicillin.

The conjoint and excessive use of several different formulations of anti-tussives containing dextromethorphan, guaifensein, and acetaminophen in varing combination in the specified time frame of decompensation appeared most significant. These included *Delsym* (dextromethorphan polistirex), *Contac* (acetaminophen/ guaifenesin/dextromethorphan HBr), and *Tussin* (guaifenesin/dextromethorphan Hbr).

Guaifenesin appears without psychiatric implication, at least as far as a review of the literature and current non-prescription reference indicates. Acetaminophen appears innocuous except in massive doses (ISO mg/kg body weight) which may cause hepatic damage.[12] Although not assayed in our patient, hydrogen bromide was present in small (less than 2mg.) amounts in two of the three dextromethorphan-containing OTC cough preparations.

Bromides have been used in epilepsy and mental illness from the early 19th century.[13] Vincent van Gogh may have suffered from a bromide-related terpene addiction [14] The first publication in 1909 of the U.S. Government Hospital for the Insane, edited by William A. White, reported a case of delirium by bromides:

> "Special interest attaches to the delirium produced by bromides, both on account of the widespread use of the drugs by physicians and the laity, and on account of their supposed inocuousness (sic). Cases of this kind have not often been reported in the literature, but they are undoubtedly more common than is generally believed, although not always recognized."[15]

Clouding of consciousness, confusion, and memory distortions were prominent. That particular patient suffered from auditory hallucinations and marked distractibility. Older texts also note that bromide intoxications may bring about "transitory schizophrenia" and a "hallucinosis" in the presence of a clear sensorium.[16] A survey of Medline files back to 1976 for bromide intoxication revealed but one solitary clinical reference..[17]

Despite widespread use, no reported cases of dextromethorphan induced delusions or organic mental disturbance appear. However, in 1977 Shaul, et al, reported on the successful naloxone treatment of dextromethorphan induced ataxia and hyperkinetic excitability in the presence of a clear sensorium.[18] More recently Schneider et al described the reversal by naloxone of lethargy and limited verbal and nocioceptive responsivity in a longstanding asthmatic patient.[19] In their report they reference the "toxic psychosis secondary to dextromethorphan" described by Dodd and Revai. In the latter case a 23 year old male drug addict presented with hyperactivity, pressure of thought, and combined auditory and visual-color hallucinations after injestion of 20 tablets of "Romilar" (dextromethorphan).[20]

Summary

A 57 year old white male developed a brief delusional psychosis while taking multiple anti-tussive preparations. The puzzle represented by identifying the etiologic agent among the multiple presription and compounded over-the counter preparations is illustrated. Despite its opoid chemistry and widespread use, dextromethorphan has rarely elicited psychotic symptoms. The use of medline/toxline facilitated confirmation of the toxic agent. The capacity of opiate antagonists such as naloxone and naltrexone to reverse organic mental states acquires special

import where delusions have significant lethal potential.[21] In the present case, rapid remission followed discontinuation of all OTC medications and brief treatment with the neuroleptic haloperidol. Dextromethophan was identified as the probable provocative agent.

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Endnotes

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