Abuse of Dextromethorphan

The American Medical Association’s House of Delegates recently raised concerns about the dangers of misuse of dextromethorphan hydrobromide by young people (Resolution 407, adopted at the 1997 Interim Meeting). This letter is intended to provide a brief review of this subject for primary care physicians.

Dextromethorphan is a highly effective nonopioid antitussive drug. This drug, either alone or in combination with other drugs, is widely available in over-the-counter cough and cold drug products in the United States. When the recommended dosage is followed (adults and children aged 12 years and older, 60-120 mg daily in divided doses; children aged 6-12 years, 30-60 mg daily in divided doses; and children aged 2-6 years, 15-30 mg daily in divided doses), dextromethorphan is a very safe drug; adverse reactions are infrequent and usually not severe. Although a few cases of toxicity have been reported, doses in excess of 100 times the usual adult dose have not been fatal.1,2

Since dextromethorphan was introduced in the 1960s, episodic and sporadic abuse has been reported in several areas of the world,1,3 although the extent of the abuse is unknown. Case reports of recreational abuse of dextromethorphan have been reported in the United States, Sweden, Australia, Germany, and Canada.3-9 Dextromethorphan is sometimes mixed with street heroin to increase the pharmacologic effects.10 Abuse seems to occur primarily among adolescents and young adults, which can obtain the drug easily. Case reports of intentional abusers generally show that addiction is long-term, ranging from 3 months to many years. Most patients describe acute euphoria after consumption, with intense craving and dysphoria on withdrawal.3 However, physical symptoms of withdrawal have not been reported for dextromethorphan.1,2 Thus, dextromethorphan causes psychological dependence but not physical dependence.

Wolfe and Caravati3 have identified the primary psychological symptoms of dextromethorphan abuse as follows: euphoria, increased perceptual awareness, altered time perception, feelings of floating, tactile hallucinations, visual hallucinations, auditory hallucinations, visual disturbances, paranoia, and disorientation. The primary symptoms of withdrawal are insomnia, dysphoria, and depression.3 Based on studies in animals, it has been suggested that the symptoms observed in abusers of dextromethorphan are caused by the active metabolite dextrorphan, which binds to the same central nervous system receptor as phencyclidine.3

Sixteen case reports of acute dextromethorphan intoxication have been reported in the literature, but most of these ingestions were unintentional.3 In Sweden, two deaths were reported to occur as a result of dextromethorphan ingestion.6 In cases of acute overdose, the primary symptoms are related to the central nervous system and include altered mental status (ranging from somnolence to hyperexcitability), ataxia, and nystagmus.3 Supportive care seems to be all that is necessary.3 While some reports suggest that naloxone is effective in treating acute dextromethorphan intoxication,2 other data raise questions about its usefulness.3

Overdoses of dextromethorphan hydrobromide can also cause bromide poisoning.11 This should be considered in the evaluation of long-term abusers who present with symptoms and laboratory findings that suggest bromide poisoning.3

In summary, dextromethorphan is a widely available over-the-counter antitussive drug that is highly effective and has a wide margin of safety. However, episodic and sporadic abuse of dextromethorphan, especially among adolescents and young adults, has been reported in the last 3 decades. A search on the World Wide Web revealed an extensive and growing number of sites created by laypeople who use the drug and are unaware of medical advice or research related to its use. These sites promote the drug as a “powerful” over-the-counter mind-altering substance. Some relate the personal experiences of users, while several of the sites include detailed information on the psychoactive effects users may expect, dosage levels, some warning indicators, and detailed information on how to extract the drug from over-the-counter preparations. Thus, physicians need to be aware of dextromethorphan’s abuse potential, especially among younger patients.

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A Clinical Trial of Hypertonic Saline Nasal Spray

The negative findings of the recently published trial on the use of hypertonic saline nasal spray might not be surprising if it is understood that the trial used a protocol that overlooked centuries of medical tradition.

I first learned to perform nasal irrigation, or the “nasal wash,” more than 20 years ago from yoga teachers. The nasal wash is one of several internal cleansing practices that may have been in use for the last 1500 years. More fluid is normally used in each dose (4-6 oz [115-172 g]) than the amount used in this trial, less salt is used, and baking soda is not used at all.

In my clinical practice, irrigating the nose with a larger volume of the traditionally formulated solution brings relief to many patients who had not achieved success using regimens similar to that used in this trial. While it is gratifying to see the publication of a clinical investigation of a simple self treatment of a common problem, another study testing the procedure used for many centuries would seem to be justified before drawing any conclusions.

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In reply

We appreciate Dr Carlston’s interest in our study. His comments highlight the need for more clinical research in the field of family medicine. Nasal washes as Dr Carlston described are one of many remedies that are recommended without published evidence demonstrating their benefit. We tested a locally used regimen and found it to have little value. We agree with Dr Carlston that a clinical trial evaluating the treatment method he describes would be of interest. It would be wonderful to find a simple and effective remedy for upper respiratory tract infections.

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