

Propoxyphene Abuse*

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Abstract

Propoxyphene (Darvon^R) is a centrally acting analgesic with pharmacologic effects similar to morphine. Although one of the most widely prescribed drugs, it is of questionable therapeutic value. It has a significant abuse potential and is the cause of a growing number of accidental and suicidal deaths. The most common method of abuse is oral ingestion of a legally prescribed capsule, but it is also smoked and taken by needle. Abuse entails serious medical risks and repeated high doses can produce psychological and physical dependence of the morphine type as well as tolerance. Physicians can assist in the prevention of the problem by being alert to the abuse potential of the drug and by exercising judgment, caution, and restraint in their prescribing habits. The data from this study revealed that individuals in a young drug-abusing population who take propoxyphene illicitly are likely to have histories of anti-social problems and multiple drug abuse.

Introduction

Dextropropoxyphene hydrochloride (Darvon^R) was introduced for clinical use in 1957 in the midst of great concern about the addictive potential of codeine. Within a short time propoxyphene gained the reputation of a safe, non-addicting, effective codeine substitute. Data collected over the years from controlled studies, clinical observations, and epidemiologic investigations indicate that such confidence in the safety and effectiveness of the drug may not be justified.

This centrally acting analgesic has a chemical structure similar to methadone hydrochloride and pharmacologic effects qualitatively similar to morphine. Although it is currently classified as a "non-narcotic", the Drug Enforcement Administration (DEA) stated in 1973 that "...there is no scientific reason to consider dextropropoxyphene anything other than a narcotic analgesic," and recommended that domestic narcotic controls be placed on the drug (1). To support this position the DEA cited studies on mice and rats which have shown that morphine antagonists reduce both the incidence of seizures and the lethality of toxic doses of propoxyphene (2) and case reports showing that nalorphine, a narcotic antagonist, reverses the respiratory depression of propoxyphene poisoning (3,4). Supporting this view is the fact that propoxyphene napsylate can be used in the treatment of opiate withdrawal and as an opiate substitute in the long term therapy of heroin addicts (5).

Abrupt termination of propoxyphene has produced a morphine-type abstinence syndrome in patients who received 600-825 mg. doses daily for 53 days (6). Case reports have documented that propoxyphene can produce tolerance as well as psychological and physical dependence (3,7,8).

Side effects to propoxyphene used in therapeutic doses are qualitatively similar to codeine (9,10). The toxic manifestations are similar to those observed in narcotic overdoses, except for a greater incidence of seizures with propoxyphene (10,11). The usual pattern following intoxication is general central nervous system (CNS) depression, which may progress to loss of consciousness, respiratory and circulatory depression and generalized seizures (4,9).

Propoxyphene is subject to diversion and improper use in part as a consequence of its status as the most commonly used prescription analgesic (13,14). A legitimate prescription is the normal means of obtaining propoxyphene with most abusers tapping multiple prescription sources (8), raiding family medicine cabinets, or soliciting capsules from friends. A street dealer is rarely the primary source of propoxyphene, but it is available in the illicit drug subculture (15).

Propoxyphene has been abused intravenously, subcutaneously, orally, and by smoking. The most common method is to ingest ("drop") the capsule by mouth or to take only the encapsulated pellet (15,16). The most popular intravenous method is in the form of an "ice shake" where the propoxyphene pellet is crushed or dissolved in a spoonful of cold water, filtered away from the powder binder, and injected. Some abusers "cook the mixture" by boiling the filtrate to concentrate it prior to injection (17).

Misuse of propoxyphene appears to be widespread. A 1970 questionnaire revealed that 15% to 20% of 180,000 American soldiers in West Germany had abused propoxyphene (3). A study of over 15,000 sixth to twelfth graders in Anchorage, Alaska in 1971 ranked Darvon^R among the top seven reported drugs of experimentation, exclusive of alcohol and tobacco (18). The prevalence of abuse among eleventh and twelfth graders

was 20%, with the majority of users indicating that they planned to continue to take the drug.

The Food and Drug Administration (FDA) received 50 drug abuse injury reports relative to propoxyphene in 1968-1969, and 93 reports of serious complications following overdose between April, 1970 and March, 1973 (1). From 1970 through 1972, 1,672 case reports of accidental and intentional self-poisoning by propoxyphene were reported to the FDA by poison control centers throughout the U.S.A. (19). Two Darvon surveys conducted by the DEA revealed 1,916 suicide and non-suicidal ingestions resulting in 323 deaths from 1967 to 1971 (1).

The present study examines a sample of young drug abusers who took propoxyphene illicitly and compares them with a similar group who did not.

Methods

This investigation was conducted on the patient population of a walk-in, storefront, drug information and outpatient treatment service in St. Louis. Between January, 1971, and June, 1972, 48 patients who returned after their initial visit were given a structured, privately administered, personal interview by paraprofessional staff members. An attempt was made to gather information on all eligible patients but, due to problems in record keeping, the representativeness of their sample cannot be guaranteed.

Data was gathered in the following areas: (1) demographics, (2) school history, (3) psychiatric history and symptom review of immediate family members, (4) personal psychiatric history review and mental status examination, and (5) illicit drug use history. The research instrument, a condensed version of the questionnaire utilized

in a study of drug use and psychiatric illness in a university population, has been described in detail elsewhere (20).

Psychiatric diagnoses were made for all subjects and immediate family members by a psychiatrist using the criteria of Feighner, et. al. (21). The subjects who reported taking propoxyphene (Darvon^R) "off the street" or without a prescription (Study Group) were compared with those who did not report taking it illicitly (Comparison Group).

The agency from which the population was chosen is located on the boundary between urban and suburban St. Louis and serves predominantly lower to upper-middle-class families. The clinic attracts young persons seeking help for drug-related and other personal and interpersonal problems. Only those clients who returned at least one time after their initial contact were chosen for this study. Since the characteristics of clinic repeaters may differ from those of individuals who do not return, the subjects may not be representative of the clientele of the agency. However, these restrictions were applied equally to both the propoxyphene and the comparison groups, and no specific characteristics were used either as the basis for accepting requests for counseling services or for selecting subjects for the study.

Results

The 48 subjects had a mean age of 18 years (range 13-28) and, with the exception of one Negro in the propoxyphene group, were Caucasian. About one-half of both groups were male. Approximately 15% in each group had been set back in grade school, and 60% in each group had not graduated from high school, either because they were still attending or had dropped out. Of those who completed high school, about half had

a grade point average (GPA) between 81 and 90 percentage points at graduation. Forty-four percent of the subjects in both groups had previously consulted a professional about nervous or mental problems and 15% had been hospitalized for psychiatric reasons.

Of the total sample, 26 (54%) took propoxyphene illicitly. They differed from the comparison subjects in four ways: (1) characteristics of their parents, (2) school-related problems, (3) psychiatric diagnosis and (4) non-prescription drug use.

Differences between the two groups were tested by chi square and are shown in Table 1. More propoxyphene users considered their father domineering, over-protective or overly permissive, and had school-related problems and behavior difficulties. No consistent differences were noted in the drug or alcohol habits of immediate family members.

Differences in psychiatric diagnoses between the two groups of subjects and their immediate family members were also examined. The family histories of subjects were similar, but a non-significant trend emerged in the diagnoses of subjects. Twenty percent of the subjects in the propoxyphene group and 9% of the comparison sample fulfilled the criteria for sociopathy (21).

As seen in Table 2, propoxyphene users reported experience with a greater variety of drugs. Only hashish and MDA were taken by a greater percentage of the comparison group. Twelve of the 16 drugs listed were used by 50% or more in the propoxyphene group, compared with seven in the other group. No class of drug was taken by fewer than 30% of the propoxyphene users. The greatest contrast (35 or more percentage points difference) was in the use of "speed" and medicinal drugs.

Discussion

Propoxyphene has been advertised as a safe analgesic. However, the literature reveals that it has a significant potential for abuse, that it has been fatal in overdoses, and that it can produce morphine type physical dependence (1,6).

While the generalizability of the present results is limited by the small sample size and subject selection procedures, the data are consistent with the literature on this drug.

The persons who sought help from this drug counseling resource were mostly young, middle-class Caucasians and the majority of them had abused propoxyphene. Abusers were more likely than the comparison group to evidence pervasive anti-social behavior and complex patterns of drug use. One possible explanation of the finding is that poly drug using individuals with chronic anti-social behavior are more likely to take propoxyphene than those without such characteristics.

The prevalence of school behavior problems and sociopathy in our study sample suggests that the propoxyphene abuser seeking help is likely to be involved in serious difficulties at school, on the job, with parents, and with the police. Practitioners should be aware of the possibility of serious social difficulties in propoxyphene abusers. Individuals seeking help at a time of crisis may be amenable to alteration of their pattern of maladaptive behavior. Since nearly one-half of the present study sample had sought professional help in the past, presumably they will again seek help when serious difficulties are encountered.

The primary source of misused propoxyphene appears to be a legitimate prescription, which suggests that physicians can play an important role in minimizing abuse. Since propoxyphene has not been

shown to be consistently superior to placebo or aspirin in clinical trials (22,23), aspirin or acetaminophen should be used as the drugs of choice for patients with mild to moderate pain. It is best to prescribe propoxyphene with care, never giving it to individuals unknown to the physician, to known drug abusers, or to the potentially suicidal or seriously depressed patient. Practitioners should not authorize unlimited refills, nor should they prescribe or refill by telephone. Directions should be specifically stated and limits should be clearly indicated, i.e., it should not be prescribed for ad libitum use. Patients should be advised to guard the medication carefully and to make it inaccessible to individuals who might be tempted to misuse it. To avoid becoming unwitting contributors to a pattern of abuse, pharmacists should fill and refill prescriptions only with specific medical authorization (8).

It is probable that this drug is being overutilized with resultant serious adverse reactions and illicit use. It is hoped that the data presented in this paper will call attention to the seriousness of the problem and lead to alterations in prescribing habits.

Summary

Propoxyphene is widely prescribed but has questionable therapeutic value. This analgesic is a popular drug of abuse. It is hoped that this investigation will stimulate further interest and encourage research focused on the problem, on identification of individuals who are high risk abuse, and on formulation of preventive strategies.

Table 1

Differences Between Propoxyphene and Comparison
Groups Expressed in Percentages

	<u>Propoxy- phene Group</u>	<u>Comparison Group</u>
<u>School Problems of Subject</u>		
Suspended or expelled - Grades 6-12	50	27
Truant occasionally or frequently - Grades 1-12	73	55
Set back in high school	19	0
Failed a grade or course in high school*	69	28
Dropped out of school at any time	23	5
<u>Miscellaneous</u>		
Father domineering, overprotective, overly permissive*	81	41
Father Domineering*	50	14
Subject began smoking regularly in high school	19	39
Subject has had heterosexual intercourse**	92	64

* $p < .01$ by chi square

** $p < .05$ by chi square

Herrman, et al

Table 2

Percentage of Subjects Reporting Non-Prescription Drug Use

<u>Drugs</u>	<u>Study Group</u>	<u>Comparison Group</u>
Marijuana	100	100
Hashish	92	95
THC	65	41
LSD	96	86
MDA	42	45
STP (DOM)	31	27
Psilocybin	54	41
Mescaline	96	77
Peyote	38	32
Other hallucinogens	31	9
Opiates	62	41
"Speed"	85	50
Other amphetamines	81	68
Barbiturates	69	50
Medicinal drugs other than Darvon	77	41
Other drugs	54	27

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Footnotes

*Report Number 74-9, supported by the Bureau of Medicine and Surgery, Department of the Navy, under Research Work Unit MF51.524.

002-5017DF5F. Opinions expressed are those of the authors and are not to be construed as necessarily reflecting the official view or endorsement of the Department of the Navy.

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