

Fatal Poisoning With Propoxyphene: Report From 100 Consecutive Cases

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ABSTRACT: The first 100 deaths caused by propoxyphene and recorded by the Chief Medical Examiner of North Carolina were studied. Victims ranged evenly in age from the second to the seventh decade. Over 65% were suicides with a female to male ratio of 2:1. Blood propoxyphene concentrations of 0.2 mg/dl were fatal, representing rapid ingestion of approximately ten capsules. In North Carolina, deaths due to propoxyphene have increased from five in 1969 to 49 in 1975. Raising physician-awareness of propoxyphene's toxicity and placing the drug in Schedule II are two of the authors' recommendations for reducing the number of propoxyphene deaths.

PROPOXYPHENE, usually sold as Darvon or some variant thereof, is a centrally acting narcotic analgesic. It has immense clinical popularity, questionable effectiveness, and poorly recognized toxicity. Propoxyphene was first marketed (as Darvon) in 1959. The first report of a death from overdose was published in 1964.¹ Subsequent articles on propoxyphene deaths and abuse were reviewed in the May 1973 report of the Bureau of Narcotics and Dangerous Drugs.²

The first known cases in North Carolina, the source of the present report, were certified in 1969 when five were identified. More than 170 have been documented in this state since then, most in the past five years. Although the state's Medical Examiner System and toxicology facilities began in 1968, many of the state's 100 counties and 5.3 million population have been represented only since Jan 1, 1972. We are reporting our first 100 propoxyphene deaths from that date. This is the first published study from a large state and is intended to provide insight into the problem of propoxyphene poisoning.

MATERIALS AND METHODS

Case records of the state's Office of the Chief Medical Examiner (OCME) constitute the data base for this study. All "unusual, unnatural or suspicious" deaths are reported to physician county medical examiners. They investigate the deaths and authorize further examination if indicated (eg, autopsy, toxicology, or additional interviewing). Autopsies in these cases are performed by hospital pathologists serving their communities as regional pathologists. The state's OCME is responsible for appointment of these officials, quality control, instruction, guidance, record maintenance, and many of the autopsies as well as all of the toxicologic analyses.

The medical examiners and regional pathologists report specific identifying, epidemiologic, demographic, and descriptive data plus narrative and opinions. Appropriate samples are taken for toxicologic analyses when autopsy is done; blood samples only are submitted from all other cases. The reports from case

investigations, autopsy, and toxicologic findings are reviewed individually by career medical examiners/forensic pathologists at the OCME. Additional investigation or death certificate modification is made when indicated.

We sought propoxyphene-related deaths from case records of the state's OCME. We did not include 12 propoxyphene deaths recorded before Jan 1, 1972, and five victims who had significant blood concentrations (0.2-0.6 mg/dl) of propoxyphene but who also had apparently fatal natural disease (four victims of coronary thrombosis or myocardial infarction and one with bilateral pneumococcal lobar pneumonia).

The reports included varying amounts of social and psychiatric history, immediate past history, and scene description for each of the 100 cases. Eighty-nine of the 100 had autopsy; toxicologic studies were done on each. Each case was reviewed independently by at least two experienced staff members for concurrence on cause and on manner of death, eg, accident versus suicide, undetermined versus suicide.

We considered death due to propoxyphene alone "pure" if (1) the blood concentration was 0.2 mg/dl or higher, or an appropriate liver concentration existed in cases where the blood sample was exhausted from other studies or was not submitted; (2) there was not a significant concentration of other drugs or alcohol; (3) no more than minor injury or natural disease was found; and (4) appropriate history and autopsy findings were described. Our "mixed" category criteria included the above except that there was also blood ethanol concentration of over 150 mg/dl (0.15%) or other drug with at least one half the minimum fatal concentration accepted by recognized sources.^{3,5}

We classified as accidental the deaths of those victims with relatively low propoxyphene levels who had high ethanol levels and whose behavior immediately preceding death was not an apparent variation from their usual. Deaths of many of the victims with a strong history of "drug abuse" were termed accidental. The suicide classification included those with previous suicide attempts, evidence of depression or disassociation, and ingestion—by a competent adult—of so many tablets or capsules in a short time so that accident seemed precluded. The manner of death was ruled undetermined when the evidence for suicide was approximately equal to that for accident.

RESULTS

Propoxyphene accounted for more deaths in North Carolina in 1975 than any other drug, excluding acute ethanol poisoning. With the 49 identified in 1975, the total rose to 136 in seven years. The detailed data are from the 100 consecutive cases from January 1972 to August 1975.

A majority of propoxyphene deaths were clearly suicides, comprising 65 of the 100 (Table). Women

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