

CASE REPORT

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Fatal zipeprol intoxication

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Abstract A fatality resulting from ingestion of zipeprol is described. Capillary gas chromatography coupled to mass spectrometry was employed to quantify the drug in biological fluids and tissues. The femoral blood concentration of the drug was 2.85 mg/L. Hair analysis clearly indicated chronic drug abuse with a concentration of 7.34 ng/mg. Results are discussed in the light of the existing literature.

Key words Zipeprol · fatal intoxication · drug addiction

Introduction

Zipeprol, a piperazine ethanol derivative with a non-phenanthrenic chemical structure, is a non-essential but widely used antitussive which is stated as having a peripheral action on bronchial spasm. Several reports, particularly from Italy, have shown that zipeprol in high doses has a definite abuse liability and dependence potential. Many of its effects were identical to those induced by opiates, with hallucinogenic effects, convulsions, cerebral edema or sudden loss of consciousness [1–4].

Some cases of zipeprol related deaths have been described in the literature [5–7]. Nevertheless, fatalities seem infrequent. For this reason, data concerning zipeprol poisoning are useful for information on the levels of the drug in post mortem biological samples.

We present here an acute death after oral zipeprol overdose and the dispersion of the drug in the body.

Case report

A white 22-year-old male (height 1.77 m) was found dead on the floor of his bedroom. He was not known to be an opiate addict. There was no evidence of violence and no needle marks were

found. At the autopsy, no particular morphological changes were noted except for visceral congestion. Specimens of body fluids and tissues were collected for toxicological analysis.

Materials and methods

Toxicological screening was performed on blood and gastric contents using fluorescence polarization immunoassay (Abbott ADx), liquid chromatography coupled to a diode array detector, and gas chromatography coupled to mass spectrometry. Zipeprol was clearly identified. Body fluids and tissue samples were then analysed for zipeprol using a capillary gas chromatography procedure coupled to mass spectrometry [8].

Results and discussion

Zipeprol was detected in all the autopsy samples and concentrations are presented in Table 1. No ethanol nor any other drugs, including drugs of abuse and organic solvents were detected. The blood zipeprol was within the range of fatal concentrations previously reported [5–7]. As it is generally the case for other drugs of abuse, the liver zipeprol concentration exceeded the concentration of zipeprol in blood. The content in liver, kidney, brain and

Table 1 Dispersion of zipeprol (mg/L or mg/kg) in postmortem biological samples taken from the deceased

Sample	Concentration
Femoral blood	2.85
Urine	15.56
Gastric Contents	28.36
Bile	9.53
Heart	4.79
Brain	5.42
Liver	4.60
Kidney	6.66
Head hair	7.34
Pubic hair	13.86
Axillary hair	16.73

heart showed relatively uniform distribution of the drug, which is consistent with the data of Yoo et al. [6]. The high concentration found in stomach indicated an oral ingestion.

Hair testing was performed to evaluate chronic exposure to the drug. Results on the hair analysis of the deceased clearly indicated repeated exposure to zipeprol. Using the same procedure, no morphine, codeine or 6-monoacetylmorphine were detected in hair samples. This demonstrates that zipeprol was not used as a substitute for heroin. In contrast to opiates [9], pubic hair was not the major site of incorporation.

Drug addicts may use zipeprol rather than other drugs of abuse because the drug is easier to obtain, inexpensive and can be taken orally thereby reducing the risk of AIDS contamination from intravenous administration.

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