

## Case Report

# Death due to Benzodiazepine Overdose: A Case Report

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### ABSTRACT

Benzodiazepines are the most commonly prescribed antipsychotic drugs in modern medical practice. A case is reported where a young male was found dead in his room. No significant external injuries were present on the body, but intracranial haemorrhages were seen on internal examination during autopsy.

Chemical analysis of relevant viscera and body fluids revealed the presence of alcohol and a benzodiazepine compound, although the exact nature and concentration of the latter could not be established. The cause of death was furnished as death due to benzodiazepine overdose.

**Key Words:** Benzodiazepine, Drug overdose, Chemical analysis

### Introduction

Benzodiazepines comprise one of the most commonly prescribed groups of psychotropic drugs in modern medical practice. They are widely administered as tranquilizers, hypnotics and sedatives.<sup>1</sup> Active metabolites produced in the body account for their prolonged sedative effect. They are remarkably safe drugs even in high doses, though this is not always the case. Complacency should be avoided as deaths have been reported in some cases even from unexpectedly low doses.<sup>2</sup> This is particularly true with regard to the newer benzodiazepines. A case is presented wherein a young man was reported to have died under suspicious circumstances, and subsequent autopsy followed by chemical analysis of viscera

and body fluids revealed the presence of a benzodiazepine compound.

*The Case:* A 20-year-old, moderately built and nourished male was found unresponsive in his room, and was declared brought dead when he was taken to the hospital. An autopsy was conducted subsequently.

Externally, subconjunctival haemorrhage and conjunctival congestion were present bilaterally. Fingernails showed bluish discolouration. Abdomen and lower chest showed greenish discolouration. Two contusions measuring 1.5 x 0.5 cm each were present on the forehead, separated from each other by 7 cm.

Internally, diffuse subdural haemorrhage was noted bilaterally, and subarachnoid haemorrhage was present at the base of the right temporal lobe. Mastoid air cells showed multiple petechial haemorrhages. Brain and both lungs were congested and oedematous. Epicardial haemorrhages were noted over the left ventricle of the heart. Stomach contained unidentifiable food particles, with unusual odour.

Relevant viscera and body fluids were preserved and sent to the forensic science laboratory for toxicological evaluation. Chemical analysis revealed the presence of benzodiazepine group of drugs in the blood and viscera, while ethanol was detected in the blood (37 mg/100 mL). The cause of death was opined as death due to benzodiazepine overdose.

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## Discussion

The remarkable safety profile of benzodiazepines has led to its extensive employment in clinical practice. These drugs are mainly used for the treatment of convulsions, anxiety, mania, insomnia, and as muscle relaxants. They can be administered orally or by parenteral route. After absorption, they get bound to plasma proteins, and are metabolized by cytochrome p450 pathway. Benzodiazepines act by stimulating GABA receptors, thereby opening chloride channels. This lowers the potential difference between the interior and exterior of the cell, blocking nerve impulse conduction.<sup>3</sup>

Although they are generally considered to be safe, features of sedation, somnolence, ataxia and amnesia may be seen even at relatively lower doses, and withdrawal symptoms may appear with sudden stoppage after chronic use.<sup>4</sup> Synergism has also been reported when these drugs are used in conjunction with substances such as alcohol.<sup>5</sup>

Treatment mainly involves decontamination, supportive measures, and use of the specific antidote flumazenil in severe cases.<sup>3</sup>

Cases of fatality resulting from benzodiazepine overdose have rarely been reported, but it is imperative that the safety profile of these drugs is not taken for granted. The sedation, ataxia and somnolence that result from intake of a benzodiazepine could become hazardous if proper care is not exercised. Patients who use these drugs should be extra careful while driving, walking on the road, using the stairs, or operating any kind of machinery.

In the case reported here, the deceased was presumably on benzodiazepine medication for some ailment, though there was no conclusive evidence pointing to this. It is well known that consumption of alcohol synergistically increases the sedation caused by benzodiazepines. Since alcohol (ethanol) was also detected in this case, it is possible that due to its synergistic effect with the benzodiazepine ingested, the victim may have slipped due to the resultant ataxia and somnolence, and sustained fatal head injury.

## REFERENCES

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