

Surviving a life-threatening 2,4-DNP intoxication: 'Almost dying to be thin'

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Dear Editor,

To our knowledge, all case reports including the most recent ones describe patients who die following a 2,4-dinitrophenol (DNP) intoxication.^{1,2} DNP was used extensively as a diet aid, but was taken off the market because of serious adverse effects. Nevertheless, it's readily available over the internet. We present a case in which immediate and aggressive treatment led to complete recovery.

We describe an alert, excessively sweating, tachypnoeic and tachycardic woman who readily admitted ingestion of DNP in excess of 600 mg. Toxicology screening was positive for diazepam, fluoxetine and cannabinoids. She developed a progressive hyper-metabolic state. Temperature at admission was 37.5 °C and quickly rose to 39.1 °C. Mild rigidity developed. Mildly elevated liver enzymes and rhabdomyolysis were present (creatinine kinase (CK) 18,170 U/l). The fatal outcome in serial case reports convinced us to employ an aggressive strategy. Active cooling (hypothermia blanket, target temperature 37 °C) and fluid resuscitation was initiated immediately, followed by sedation and intubation because of progressive respiratory failure. Dantrolene (1 mg/kg) was given intravenously and repeated several times in the first 24 hours. No side effects occurred. Active cooling was terminated after four days

when the CK levels decreased. Following transient renal failure, the patient ultimately made a full recovery.

DNP uncouples oxidative phosphorylation in the mitochondria resulting in rapid energy consumption without generation of ATP. Hyperthermia and many other (fatal) sequelae can ensue.³ Denial by the patient and unawareness of the popularity of DNP as a diet aid and the clinical manifestations of a potential lethal intoxication may hamper the diagnosis of DNP intoxication. Acute ingestion of 10 to 20 mg/kg can be fatal.³ Any measure to minimise peak absorption fails unless it takes place immediately following ingestion. DNP is also not amenable to dialysis. Early recognition of a severe intoxication is essential. Acute supportive management, most importantly rapid cooling (with intravenous sedation and intubation if necessary), is vital. Dantrolene is an important therapeutic adjunct.

DNP is a relatively unknown toxic compound. It's lethal potential warrants vigilance and aggressive therapy in recognized and suspected cases.

REFERENCES

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