K2 Polydrug Fatality Involving Metaxalone

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The attendee will learn how an overdose of Metaxalone, a skeletal muscle relaxant, can cause or contribute to death.

Metaxalone (Skelaxin®) [5-(3,5-dimethylphenoxymethyl)-2oxazolidinone] is a widely used, orally administered, centrally acting skeletal muscle relaxant. It is prescribed widely for acute, chronic, traumatic, and inflammatory musculoskeletal disorders since its introduction in 1962. Metaxalone is available as 400 mg tablets with the recommended dose being 2 tablets three to four times a day.

Since its introduction, little has been reported concerning the toxicity of metaxalone in humans. A review of the literature revealed no reported cases of fatal overdose with metaxalone as a sole agent or in combination with other drugs, though it has been detected and considered non-contributory in a few case studies. In this report, the authors discuss the first reported case of a fatality in which metaxalone is felt to have played a major role.

Citalopram (Celexa®) is a selective serotonin reuptake inhibitor used to treat depression. It is administered at an initial dose of 20 mg daily, taken orally, and may be increased to 40 mg/day. Citalopram has been studied previously in fatalities and has been reported previously in a drug overdose cases. It was also detected in this case.

A 29-year-old female with a history of depression and recent ethanol abuse was found dead in a hotel room. She was discovered after she did not check out by the appropriate time. The police entered the secured room by cutting the security chain on the door. The decedent was lying on the bed. The death scene investigation found bottles of prescription drugs. Two prescription bottles for forty 400 mg tablets of metaxalone were found with directions to take one tablet four times a day. One bottle was prescribed approximately seven months prior to death and was empty. The other was prescribed approximately six weeks prior and contained 21 tablets. Also, an empty liter wine bottle was on the nightstand. Otherwise the scene was unremarkable. No suicide note was found.

The adult decedent weighed 71 pounds and was 41 inches in length, consistent with a history of dwarfism. Postmortem examination revealed the presence of multiple subacute superficial incised wounds involving the left anterior wrist. The larynx and trachea had small amounts of edematous fluid. Particulate white granular debris was present within the duodenum and proximal half of the small bowel. The remainder of the gross and microscopic examination was unremarkable.

Urine samples were routinely screened using Syva EMIT. Samples of blood, gastric contents and liver were routinely prepared with an alkaline extraction, then analyzed and quantitated by gas chromatography-mass spectrometry. Metaxalone, citalopram, ethanol, and chlorpheniramine were identified in the postmortem samples. The concentration of metaxalone in femoral vein blood was 39 mg/L. The heart blood concentration was 54 mg/L. Femoral vein blood concentrations of citalopram and chlorpheniramine were 0.77 mg/L and 0.04 mg/L, respectively. Ethanol levels were 0.13 g/dl in vitreous and 0.08 g/dl in heart blood. Other tissue samples including brain, liver, gastric, and duodenum contents were also analyzed and were positive for metaxalone and citalopram.

The authors consider the metaxalone concentrations toxic and potentially fatal based on communications with the pharmaceutical laboratory that performs C_{max} testing for therapeutic levels of metaxalone. This laboratory reports the therapeutic level to be 4.0 mg/L in plasma under fasting conditions. The metaxalone levels in this case far exceeded this level. The citalopram concentrations found in this case were lower than those reported in fatal cases for this drug alone. Chlorpheniramine levels were also lower than those considered toxic or fatal. However, the additive central nervous system effects of toxic levels of metaxalone with citalopram, ethanol, and chlorpheniramine, also central nervous system depressants, likely caused death. Death was officially ascribed to polydrug overdose/abuse with metaxalone felt to be a major contributor. This represents the first reported case to the authors in which a metaxalone overdose significantly contributed to death.

Metaxalone, Citalopram, Overdose

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