Q: What are the dangers of using cocaine that has been diluted with levamisole?

A: The association between use of cocaine and agranulocytosis was initially reported in 2008. Two Canadian patients presented with agranulocytosis of unknown etiology and neither was receiving any medication known to cause this severe form of neutropenia. The common link between these patients was their abuse of cocaine. Subsequent cases of agranulocytosis related to the use of cocaine were identified in Mexico and throughout the United States. The condition can potentially be fatal because the immune system is unable to adequately respond to infection. 

Recreational cocaine intended for intranasal use most commonly consists of cocaine hydrochloride as well as a mixture of quinine, sugar, procaine or amphetamines. In 2003, cocaine cartels in South Africa began to dilute the product with a compound known as levamisole. The Drug Enforcement Administration (DEA) stated in 2009 that 69% of the cocaine seized in the United States contained levamisole. This compound has immunomodulatory properties and has been used in veterinary practice for the eradication of worms. It had previously been used in humans for the treatment of colon cancer, but is no longer employed for this indication. Levamisole is relatively inexpensive and widely available for the treatment of farm animals in agricultural countries that serve as distributors of cocaine. It also possesses the appropriate taste, melting point, and appearance to be undetected by the user. 

Levamisole is primarily used as a bulking agent for cocaine, but may possibly also produce euphoric effects. It is unknown whether levamisole is added to cocaine purely for bulking purposes, additional euphoric effects, or both purposes. In addition to agranulocytosis, several reports of necrotizing peripheral vasculitis have been linked to the abuse of cocaine diluted with levamisole. This severe adverse reaction had previously been reported when the compound was used in the treatment of rheumatoid arthritis and other disorders and is related to the development of antineutrophilic cytoplasmic antibodies (ANCA). Necrotizing peripheral vasculitis can present as necrotic, purpuric skin lesions accompanied by inflammation. This type of reaction has commonly been observed on the ear lobes; however, cases associated with cocaine abuse have been seen in locations where the cocaine mixture has been administered, for example the nose, mouth, and face. Areas of microvasculature are possibly most affected due to cocaine’s vasoconstrictive properties. These reactions can develop within hours of a single exposure, but may be delayed for long periods. Treatment consists of abstinence from cocaine and administration of corticosteroids. Recognition that toxicities may be associated with diluents in cocaine products only increases concerns regarding abuse of this substance.

References:


David W. McKnight and Gary W. Tedesco, Pharm.D. Candidates

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