G131 Pulmonary Hypertension in Users of Levamisole-Contaminated Cocaine

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After attending this presentation, attendees will learn how the use of levamisole-contamined cocaine may lead to the occurrence of idiopathic pulmonary hypertension.

This presentation will impact the forensic science community by raising awareness of the potential lethal consequences that may result from chronic levamisole ingestion and make the community aware of a new public health threat.

Background: The conversion of levamisole to aminorex in horses was first observed in 2009. Two years later, there was laboratory confirmation that the same conversion occurs in humans. Since then, Maurer and his group in Germany have isolated five different isomers of the two compounds. Both drugs interfere with serotonin metabolism. It has even been speculated that cocaine is being intentionally adulterated with levamisole to increase its psychogenic effect. Aminorex was once sold in Europe as an anorectic, but was withdrawn from the market after a cluster of deaths from Idiopathic Pulmonary Hypertension (IHP) were reported, mostly in women attending weight-loss clinics.

Objectives: Various monitoring agencies now report that most of the world's illicit cocaine supply is contaminated with levamisole. Some estimates suggest that as much as 70% of street cocaine may be contaminated. This raises the possibility that users of levamisole-adulterated cocaine may be at risk for IHP. This presentation describes the autopsy and toxicology findings of the first such case.

Materials and Methods: A complete autopsy was performed on an individual who died of heroin toxicity and was also a known cocaine user. Peripheral blood samples were submitted for toxicological analysis. In addition, samples of urine, hair, and blood were all screened for the presence of levamisole and aminorex.

Results: Microscopic examination disclosed the classic findings of IHP, though no evidence of thrombotic arteriopathy was evident, in spite of the heroin use. Interlobular septal veins had become muscularized, and there was marked capillary distention in periseptal alveoli. Some areas displayed marked vein wall thickening and decreased lumen. Adjacent alveoli were sometimes filled with blood. Toxicology findings included the presence of both levamisole and aminorex quantifiable in urine, peripheral blood, brain, liver, and hair. For levamisole, the concentrations were 75.05, 15.05, >0.15, >0.15, and 12.15ng/ml, respectively. The corresponding values for aminorex were 38.62, 8.92, >0.15, >0.15, and 7.35ng/mg, respectively.

Conclusion: This study's results suggest that regular cocaine abusers may be at risk for developing IHP as a consequence of levamisole adulteration, depending on how much levamisole they ingest with their cocaine. Among those who died during the IHP-aminorex epidemic of the early 1970s, the average dose per day ranged from 14 to 42mg and the average decedent had been taking the drug for more than one year. This observation suggests that many current cocaine abusers are at risk. Whether and how many really are at risk cannot be estimated because the conversion rate of levamisole to aminorex in man is not known.

Levamisole, Aminorex, Cocaine

 ** Presenting Author*