H125 New Psychoactive Substances (NPS) -Related Deaths in Sweden — An Alarming Development

Gisela Pettersson, MD, National Board of Forensic Medicine, PO Box 7616, Analysvägen, Umeå S-90742, SWEDEN; and Gunilla Thelander, BSc, National Board of Forensic Medicine, Dept of Forensic Genetics and Forensic Tox, SE-58758, Linköping, SWEDEN*

After attending this presentation, attendees will better understand the prevalence and other data of NPS in Swedish medicolegal autopsy cases.

This presentation will impact the forensic science community by informing attendees of abuse trends in general for NPS in Sweden and of the increased toxicity of new synthetic opioids in particular.

Introduction: This study was conducted to follow up on a previous investigation of NPS in medicolegal autopsy cases in Sweden with analyses of, for example, time trends, demography of the decedents, and the formation of clusters of cases caused by the same NPS.

Method: Data from medicolegal autopsies positive for NPS in blood and/or urine were reviewed regarding age, sex, cause of death, place of death, and type of drug. It was also noted whether the decedent had a documented substance abuse at the time of death. The cases were divided into three groups: true lethal intoxications (A), possible intoxications (B) in which NPS was a possible contributing factor, and cause of death not directly related to drug intoxication (C). The study period was 2016 and the results were compared to earlier findings from the time period between 2007 and 2015. A cluster was defined as more than five true lethal intoxication (A) cases in Sweden in the same year due to the intake of one specific NPS.

Results: In 2016, 129 NPS-positive cases were found. Of the decedents, 112 were male (87%), the average age was 34 years, and the median age was 32 years. Seventy-nine of the cases (61%) were determined as true lethal intoxications (A), and in 42 cases (33%), NPS was determined as a possible contributing factor (B). Thus, NPS was the sole or contributing cause of death in 94% of all NPS-positive cases. A majority of the decedents (72%) were found in their own home, the fatalities were scattered across Sweden, and 63% of the decedents had a substance and/or alcohol abuse mentioned on the death certificate. Three clusters due to intoxication of one specific NPS were identified within the time period studied, namely by the synthetic opioids acrylfentanyl, tetrahydrofuranfentanyl, and 4-fluoro-isobutyrfentanyl. Variants of "spice" caused a fourth cluster. In all, 48 different NPS were detected in 2016.

Discussion: Unlike previous years, the number of NPS-positive cases did not increase in 2016, but the true lethal intoxications (A) nearly doubled and remarkably few of the NPS-positive cases were entirely caused by something other than NPS. This study found seven different fentanyl analogues, and these caused nearly all of the true lethal intoxications (A). The emergence of new potent opioid analogues is challenging for forensic pathologists as well as toxicologists, and awareness of these particular NPS is important to all professionals working in connection to substance abuse.

Conclusion: As previously shown, there is a high risk of death due to NPS intoxication if the user is male, approximately 30 years of age with a known substance abuse, and uses the NPS in the own home environment. The emergence of new fentanyl analogues in 2015 and 2016 has further elevated the risk of lethal intoxication compared to previous years.

NPS, Postmortem, Increased Toxicity

*Presenting Author