



HISTORY OF MEDICINE / ИСТОРИЈА МЕДИЦИНЕ

Has something changed about chronic cocaine abuse over time?

An instructive example from the forensic collection

Slobodan Nikolić, Danica Đukić, Vera Lukić, Vladimir Živković

University of Belgrade, Faculty of Medicine, Institute of Forensic Medicine, Belgrade, Serbia

SUMMARY

Introduction Herein we present an illustrative case from the Forensic Museum collection made by Professor Milovan Milovanović (1884–1948). Museum specimen No. 465 represents a jar containing three glass syringes and two small bottles of 10–20 ml, sealed with corks, found in the pockets of the deceased whose autopsy was performed in 1929.

Case outline It was a 30-year-old male, found dead in a tavern shed, a former medical student, lieutenant, and Russian émigré who came to Belgrade, Serbia in 1921 following the commanding general of the anti-Bolshevik White Army, Pyotr Nikolayevich Wrangel. He was an alcoholic, a drug user, and a member of the so-called Russian cocaine quartet gang. In the autopsy report, Professor Milovanović described a textbook example of a drug user: extremely malnourished body, skin covered with scabs, multiple „purulent abscesses” and „livid infiltrations,” and attenuated nasal septum with mucosa covered with scabs. Internal autopsy findings included fatty liver, pneumonia, and anemia of all internal organs. At the time, the whole brain, tissue of internal organs, and contents of the stomach and intestines were used for the analysis (”the Stas–Otto method for extraction of alkaloids”). Qualitative analyses showed ”the presence of cocaine” in all the examined organs, and the analysis of the content from the ”cloudy, colorless liquid” found in the dark bottle showed that it contained ”0.0113 g of morphinum hydrochloricum.”

Conclusion Contemporary analyses of the material from one of the syringes and the transparent glass bottle performed 90 years later showed the presence of cocaine, morphine, and codeine, confirming that the cause of death was drug-related.

Keywords: autopsy; museum collection; 1920s; cocaine; morphine; toxicology

INTRODUCTION

In the early 1920s, Professor Milovan Milovanović (1884–1948) officially founded the Forensic Museum of the Institute of Forensic Medicine. Its collection contains exhibits of medicolegal and forensic importance related to actual cases from the Professor’s daily practice. This is a story about one such object and a related case.

CASE REPORT**Museum specimen No. 465**

The preserved label attached to the jar, bearing text written in Cyrillic, refers to forensic case No. 331 with the autopsy performed by Professor Milovanović on September 27, 1929 (Figure 1a). The specimen contains three glass syringes and two small bottles of 10–20 ml, one made of transparent glass and the other of dark glass, sealed with corks (Figures 1b and 1c).

Case history, autopsy and toxicological findings and the cause of death

From the autopsy report (Figure 2), but even more from the paper published by Professor

Milovanović [1], we learn information about the deceased: a 30-year-old male who was found dead in a tavern shed, on the outskirts of the city. As a lieutenant, he came to Belgrade in 1921 with General Pyotr Nikolayevich Wrangel (1878–1928) (commanding general of the anti-Bolshevik White Army in Southern Russia, later one of the most prominent exiled white émigrés in the Kingdom of Yugoslavia). He was a failed medical student, an alcoholic, and a cocaine and morphine user, as well as a member of the so-called Russian cocaine quartet, a gang that operated in Belgrade between the First and the Second World War. He used about three grams of cocaine per day, injecting it more than 60 times per day subcutaneously. He eventually ended his life as a thief and beggar. During the investigation, in the deceased’s coat pockets, the police found three glass syringes, needles, and two small bottles: one bottle was transparent, with ”a minimal amount of white powder,” and the other one dark with ”a small amount of cloudy, colorless liquid.”

During the external examination, Professor Milovanović noticed that the deceased was ”extremely malnourished and neglected ... his skin covered with lice.” The nasal septum was ”attenuated,” and ”its mucosa was covered with scabs.” The skin of the front side of the body, and even more pronounced on the left arm,

Received • Примљено:
January 31, 2022

Revised • Ревизија:
August 18, 2022

Accepted • Прихваћено:
August 20, 2022

Online first: August 25, 2022

Correspondence to:

Vladimir ŽIVKOVIĆ
Institute of Forensic Medicine
31a Deligradska Str.
Belgrade 11000, Serbia
vladinmej1@yahoo.com
vladimir.zivkovic@med.bg.ac.rs



Figure 1. Museum specimen No. 465, related to forensic case No 331, from 1929; a: label attached to the museum specimen; b: jar with three glass syringes and two small bottles, one made of transparent and the other of dark glass, sealed with corks; c: closer aspect of the syringes and bottles

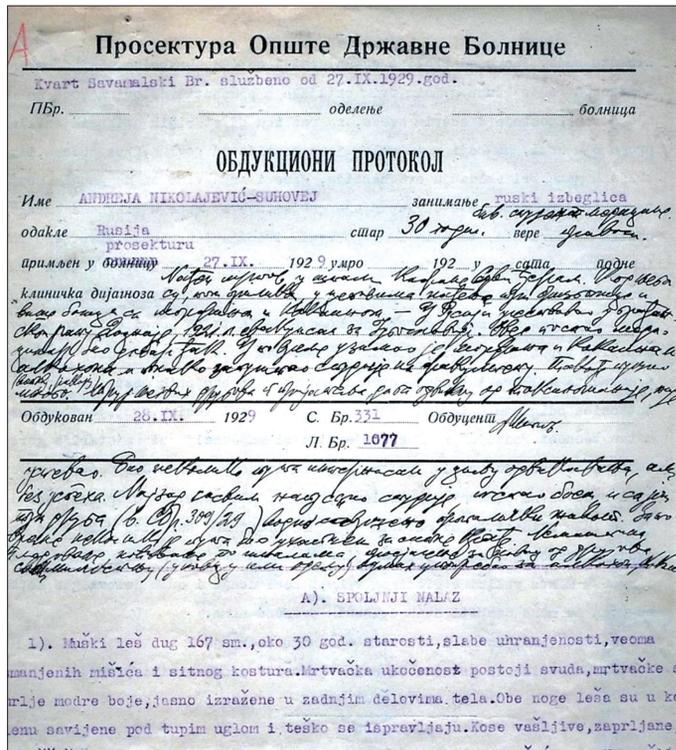


Figure 2. Autopsy records from September 27, 1929, forensic case No. 331; autopsy was performed by Professor Milovan Milovanović

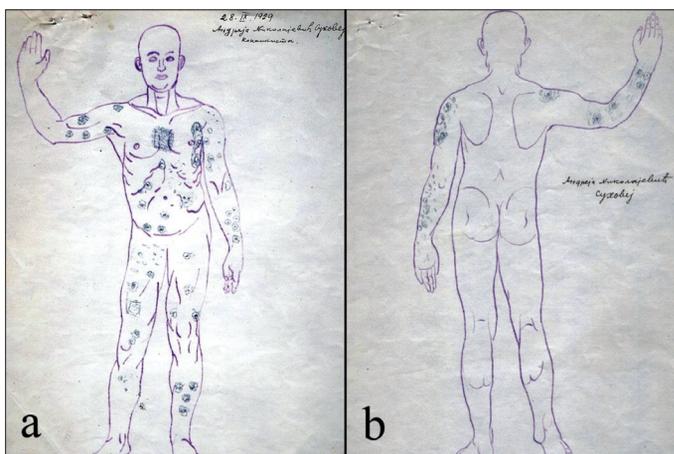


Figure 3. Two autopsy diagrams of the a: anterior and b: posterior view of the body, with numerous prominent skin lesions caused by repeated cocaine injections in “the typical regions”

was covered with multiple “purulent abscesses” and “livid infiltrations,” focally spotted with scabs. Professor Milovanović illustrated all of these changes in the body diagrams (Figure 3), which were saved and preserved in the autopsy report. Internal autopsy findings included fatty liver, pneumonia, and anemia of all internal organs.

The toxicological analysis was performed in the State Chemical Laboratory: its original report is still attached to the autopsy report (Figure 4). The whole brain (weighing 1420 g), the tissue of other internal organs (parts of the lungs, heart, spleen, liver, and kidneys – weighing 1580 g in total), the stomach and intestines with their contents, and “the contents” of the dark bottle found in the coat pocket of the deceased were analyzed using “the Stas–Otto method for extraction of alkaloids.” Qualitative analyses showed “the presence of cocaine” in all the examined organs. The analysis of the “cloudy, colorless liquid” found in the dark bottle showed that it contained “0.0113 g of morphinum hydrochloricum.”

Professor Milovanović concluded that the cause of death was pneumonia “facilitated by malnutrition and reduced resistance to disease ... due to chronic purulent skin infection ... which were all caused by cocaine and morphine abuse,” i.e., formally, this was pronounced a drug-related death.

This article presents a historical case and, therefore, ethical approval was neither necessary nor obtained.

DISCUSSION

According to Professor Milovanović, no one in the domestic population in Serbia used cocaine in the first decade after the First World War [1]. Cocaine was introduced to our people by the Russians, the so-called white émigrés. At one point in 1920, there were about 40,000 Russian refugees in the Kingdom of Yugoslavia, mostly belonging to the middle or upper class, landowners, persons of liberal professions, merchants, industrialists, and army officers to the most considerable extent: all of whom escaped the Bolshevik Revolution [2]. According to the census in 1931, about 16,000 Russian refugees were in Belgrade. In addition to opera singers, ballet dancers, and various artists, the habit of cocaine use also came with the refugees from Russia.

The Drug Law passed in December 1931 in the Kingdom of Yugoslavia defined the term “controlled psychoactive substances,” specifying which of them were illegal and including among them “cocaine, its salts and all chemical substances with more than 0.1% of cocaine” [3].

Professor Milovanović published his paper about pathoanatomical changes in chronic cocaine abusers in a domestic medical journal *Medicinski*

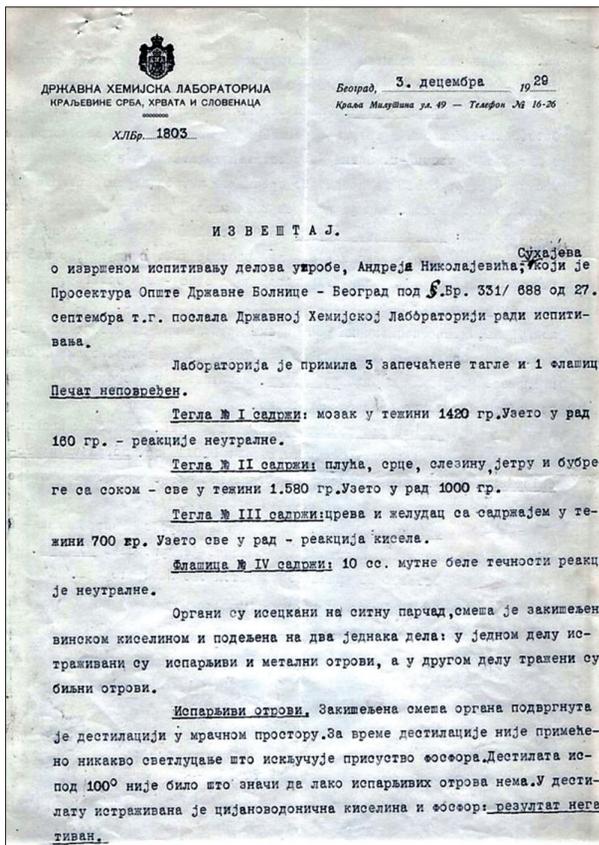


Figure 4. The original report of the State Chemical Laboratory, No. 1803 from December 3, 1929, related to forensic case No. 331 from 1929

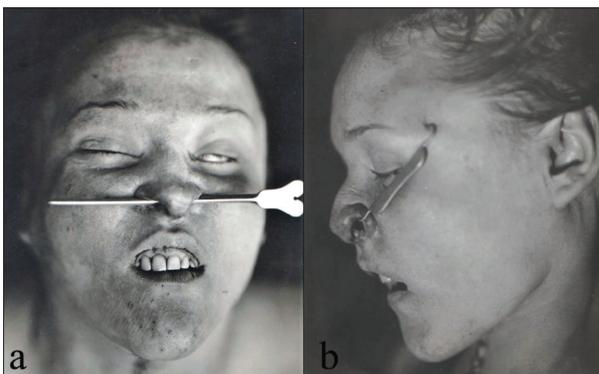


Figure 6. Photographs of fenestration of the nasal septum in a chronic cocaine abuser, taken by Professor Milovanović; forensic case No. 416 from November 1933: Russian émigré, female, 25 years old, suicidal acute intoxication with barbitone; a: full face; b: lateral aspect

pregled – Medical Review (Figure 5) [1]. The journal came out monthly from 1926 to 1940 and published papers in four South Slavic languages: Serbian and Bulgarian in the Cyrillic and Croatian and Slovenian in the Latin script, depending on the nationality of the author [4]. In this paper, Professor Milovanović presented the autopsies and other findings in “the first three fatal cases of chronic cocaine abuse in Belgrade,” summarizing “the common pathoanatomical changes”: cachexia, attenuation, and fenestration of the nasal septum (Figure 6), as well as skin lesions due to



Figure 5. Cover of the medical journal *Medicinski pregled* – Medical Review, in which Professor Milovanović presented his autopsy findings in “the first three fatal cases of chronic cocaine abuse in Belgrade” [1]

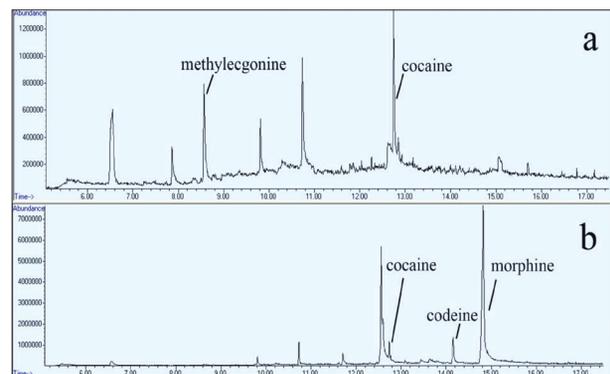


Figure 7. a: chromatogram of the qualitative analysis (GC-MS) of the material obtained from the transparent bottle showing the presence of cocaine; b: the same analysis of the material obtained from one of the three syringes showed the presence of cocaine, morphine, and codeine, meaning the syringe was used for multiple injections of different drugs; these were new, present-day analyses

repeated cocaine injections. Skin lesions included: multiple needle punctures and bruises, oval infiltration of corium and subcutaneous tissue with necrosis and edema, ruptured and unruptured purulent abscesses, and, finally, oval hollow scars [1], resembling what is nowadays known as skin popping [5]. All these lesions were present on the body of the deceased in typical regions: anterior parts of the thighs and external parts of the left arm, chest, and trunk. The least number of these lesions were present in the lower legs [1] (Figure 3). As opposed to cocaine abusers, such skin lesions

were less numerous and less prominent in chronic morphine abusers [1]: its shorter half-life than morphine and shorter duration of its effects meant that cocaine had to be injected more often [1, 5]. An additional cause of these skin effects also lies in the fact that cocaine is difficult to sterilize – it will decompose in a heated solution [1, 5], which was a common procedure in morphine abuse. According to Professor Milovanović, in its nature, cocaine abuse was “idiopathic and psychogenic,” causing a “strong craving,” and abusers “got the drugs on the street.” In contrast, morphine abuse was “symptomatic and occurred after treatment of chronic pain,” and abusers “purchased opium at the pharmacy” legally or illegally [1]. “The previous 17 fatal cases of chronic morphine abuse” pointed to apparent differences in the extent of skin lesions compared to “those three fatal cases of chronic cocaine abuse” [1]. Nowadays, intravenous and subcutaneous cocaine use seems to be quite rare since it is mainly inhaled, while it has largely been supplanted by smoking “crack” [5]. Therefore, skin changes in chronic cocaine users become inconspicuous: nowadays, skin popping is more commonly seen in chronic heroin abusers [5, 6, 7].

The toxicological analyses in the presented case were initially performed in the State Chemical Laboratory (Figure 4), established in 1859. At the end of 1947, this laboratory became an integral part of the Institute of Forensic Medicine, and since late 1979 they have been

situated in the same facility. New and modern toxicological equipment (gas chromatography – mass spectrometry or GC-MS) allowed us to take another view of these samples. In forensic toxicology, GC-MS is the most commonly applied method due to the large number of compounds that can be easily quantitated without time-consuming sample preparation. The development, validation, and application of a GC-MS method for separating and determining pharmaceuticals and drugs from different classes have already been tested in many studies [8, 9].

We performed new toxicological analyses, which showed the presence of cocaine in the transparent bottle (Figure 7a) and the mixture of cocaine, morphine, and codeine in one of the three syringes (Figure 7b), meaning it was used for multiple injections of different drugs. This way, we confirmed and broadened the results of this 90-year-old case.

ACKNOWLEDGEMENT

This work was supported by the Science Fund of the Republic of Serbia, IDEAS program, No. 7749444 (BoFraM project).

Conflict of interest: None declared.

REFERENCES

- Milovanović M. Prilog anatomopatologiji kokainizma. Medicinski pregled. 1931;6:267–73.
- Makljecov A. Naše ruske izbeglice. Nova Evropa. 1922;8:233–7.
- Milovanović M. Sudsko-medicinsko veštačenje. Beograd: Scientia; 1938.
- Veljković S. Hronika sudske medicine u Beogradu. Beograd: CIBIF Medicinski fakultet u Beogradu; 2009.
- Karch SB. Karch's Pathology of Drug Abuse. 4th ed. Boca Raton London New York: CRC Press; 2009. p. 736
- Saukko P, Knight B. Knight's Forensic pathology. 4th ed. Boca Raton: CRC Press; 2016.
- Spitz WU, Spitz DJ. Spitz and Fisher's Medicolegal Investigation of Death: Guidelines for the Application of Pathology to Crime Investigation. 4th ed. Springfield, IL: Charles C Thomas; 2006. p. 680.
- Orfanidis A, Krokos A, Mastrogianni O, Gika H, Raikos N, Theodoridis G. Development and Validation of a Single Step GC/MS Method for the Determination of 41 Drugs and Drugs of Abuse in Postmortem Blood. Forensic Sci. 2022;2:473–91. [DOI: 10.3390/forensicsci2030035]
- Bilko J, Deng Y. Determination of cocaine on banknotes using innovative sample preparation coupled with multiple calibration techniques. Drug Test Anal. 2022;14(9):1665–71. [DOI: 10.1002/dta.3326] [PMID: 35603522]

Хронична злоупотреба кокаина – да ли се нешто променило током времена? Пример из форензичке колекције

Слободан Николић, Даница Ђукић, Вера Лукић, Владимир Живковић

Универзитет у Београду, Медицински факултет, Институт за судску медицину, Београд, Србија

САЖЕТАК

Увод У раду смо приказали илустративни случај хроничне злоупотребе кокаина из форензичке колекције професора Милована Миловановића (1884–1948). Експонат број 465 из 1929. године састоји се од три стаклена шприца и две мале стаклене бочице са плутаним чеповима: све је ово нађено у џепу капута покојника.

Приказ случаја У питању је био младић стар 30 година, некадашњи студент медицине, чије је тело нађено у шупи у дворишту једне кафане. Као официр руске војске, пратећи генерала Врангела, дошао је као емигрант у Београд 1921. године. Био је алкохоличар, наркоман и члан тзв. четворочлане кокаинске руске банде. У обдукционом записнику професор Миловановић приказао је књишки пример изгледа хроничног наркомана. Обдукција је показала и

масно измењену јетру, запаљење плућа и малокрвност. Токсиколошку анализу ткива унутрашњих органа урадила је Државна хемијска лабораторија и анализа је показала квалитативно присуство кокаина у органима покојника, као и присуство морфијума у једној од бочица нађених у џепу капута покојника.

Закључак Накнадна токсиколошка анализа материјала из једног од шприцева и друге бочице која својевремено није анализирана, урађена на савременом апарату (GC-MS), показала је присуство наркотика у траговима, чак деведесет година после прве анализе у Државном хемијској лабораторији, далеке 1929. године.

Кључне речи: обдукција; музејска збирка; 1920-е; кокаин; морфијум; токсикологија