

VOLUME 9 Nr. 2

NOVEMBER 2019

# Folia Societatis Medicinae Legalis Slovacae

Vedecký recenzovaný časopis Slovenskej súdno-lekárskej spoločnosti Slovenskej lekárskej spoločnosti  
Indexovaný v Bibliographia medica Slovaca a zaradený do citačnej databázy CiBaMed

Refereed scientific journal of The Slovak Society of Forensic Medicine of Slovak Medical Society  
Indexed in Bibliographia medica Slovaca and included in the CiBaMed citation database

ISSN 1338-4589

Slovenská súdnolekárska spoločnosť SLS

**Názov / Name:**

**Folia Societatis Medicinae  
Legalis Slovacae**

**Vydavateľ / Publisher:**

Slovenská súdnolekárska spoločnosť  
Slovenskej lekárskej spoločnosti  
Sasinkova 4  
81108 Bratislava  
Slovenská republika

**Redakcia / Editorial Office:**

Sasinkova 4  
811 08 Bratislava, Slovenská republika

**E-mail:**

fol.soc@gmail.com

**IČO / CRN:** 318 044 20

**Evidenčné číslo / License number:**

EV 4365/11

**Dátum registrácie / Date of Registration:**

3.5.2011

**Registráciu vykonalo / Registered by:**

Ministerstvo kultúry Slovenskej republiky /  
The Ministry of Culture of the Slovak republic

**Dátum vydania / Date of Issue:** November  
2019

**Ročník / Volume:** IX.

**Číslo / Issue:** 2/2019

**Periodicita vydávania / Periodicity:** 2x ročne

**Redakčná rada / Editorial Board:**

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**Cena výtlačku / Prize of issue:** 9,- EUR

**Vytlačil / Printed by:**

Tlačové štúdio Váry, Trnava

## ABSTRAKTY / ABSTRACTS

### 52. Krsekova súdnolekárska konferencia s medzinárodnou účasťou pri príležitosti 100-ročného výročia založenia Ústavu súdneho lekárstva LF UK v Bratislave

52<sup>nd</sup> Krsek Conference of Forensic Medicine  
on the occasion of the hundred-years anniversary of Institute of Forensic Medicine in Bratislava

Bratislava, 29.5. - 1.6. 2019

#### **Forensic expertise of exhumed human remains in the village Rad**

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A lot of monasteries were founded by local people and ambassadors of Christianity in the territory of today's Slovakia during the 17th century. They played an important role in the expansion of Christianity and in development of relationships among different population groups in the area of Slovakia, Hungary, Poland and Ukraine in the past. The Monastery in the village Rad (the district of Trebišov in the south-east of Zemplín) was founded in 1630 by Italian, Hungarian and Slovak Franciscans. During religious unrest among Catholics and Calvinists in 1639 many monks were tortured and killed, yet their religious faith remained unchanged. Minorite Monastery in the village Rad was destroyed. The fate of monks and monastery became a part of the history of Christian martyrs in eastern Slovakia.

During the archaeological research in 2011 - 2013 there were exhumed fourteen human skeletal remains, that were found in the ruins of the former monastery. Exhumations were carried out under extreme conditions in a flood location by the Tisza River. On the basis of forensic findings of skeletal remains the violent death was confirmed in five cases. Using software (FaceMorpher v 2.5 software), the face of the first exhumed person was reconstructed. One of the deceased was identified based on the signs of violence, age and historical documents from the local archive. It was a prominent man who dedicated his life to God and became a monk in the monastery in Rad, where he succumbed to injuries after a sword attack.

Exhumation of historical human skeletal remains was also successful thanks to the cooperation of archaeologists and representatives of the Slovak Catholic Church.

#### **Kofein jako jed**

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republika

Tricet tři-letý muž byl nalezen asi 7 hodin po rodinné roztržce ve svém bytě bez známek života. Resuscitace byla neúspěšná. V pitevním nálezu nebyly zjištěny chorobné změny, které by mohly jednoznačně vysvětlit přirozenou příčinu smrti. Rovněž nebyly shledány, kromě několika drobných oděrek, známky mechanického násilí. Ve standardním Šiklově řezu z myokardu byla prokázána makroskopickou reakcí difúzně snížená aktivita dehydrogenáz v levé komoře srdeční. Toxikologická analýza prokázala v biologickém materiálu masivní přítomnost kofeinu, která téměř 16x převyšovala doporučené množství. Příčinou smrti bylo srdeční selhání při intoxikaci kofeinem.

#### **Diffuse axonal injury, a distinct entity in a forensic medicine practice, a review**

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**Introduction:** The knowledge about the diffuse axonal injury (DAI) as a clinic-pathological entity has matured in the last 30 years. It has been defined clinically (immediate and prolonged unconsciousness

leading to death or severe disability) and pathologically (the triad of DAI specific changes). In terms of its biomechanics, DAI is occurring as a result of acceleration forces of longer duration and has been fully reproduced experimentally.

**Material and methods:** Here we are presenting the method of detail forensic-neuropathological examination of the brain, followed by the immunohistochemistry method with antibodies against Beta amyloid precursor protein, in a purpose of visualization of the damaged axons in the white brain matter.

**Discussion:** In this review, upon our previously published scientific results, we are pointing to the significant characteristics of DAI as a distinct clinic-pathological entity that can cause severe impairment of the brain function, and in the forensic medicine setting, it can be found as the concrete cause of death. We are discussing its pathological feature, its mechanism of occurrence, and the events on a cellular level, but also the dilemmas about DAI that still exist in science: 1. regarding the strict criteria for its diagnosis and 2. regarding its biomechanical significance, which can be of a big medico-legal importance.

## Mummification with a rare entomological finding

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Authors present a rare entomological finding on a mummified body of a man, who was found in a closed apartment four weeks after his death. The clothes and the skin of the dead body were sporadically covered with larvae and pupae of an unknown insect, and there were numerous thin fine uniform filaments of a light brown color imitating mold. Entomological investigation discovered that these were larvae and feces (frass) of a larder beetle. Larder beetle (*Dermestes lardarius*) is a species of a beetle in the family Dermestidae, originally found only in the Central Europe, but later spread throughout the world. More often than in nature it occurs in chambers, warehouses and other parts of human households, but also in bird nests and vertebrate burrows. Adult beetles are about 7 – 9 mm long, dark brown in color, while the front portion of their forewings is gray. Larvae are approximately 1 cm in length, dark brown, and they are covered in

rough hairs. Females are able to lay over a 100 eggs, while the whole life cycle may last from two months to two years, depending on the living conditions. Larvae are highly voracious, they consume organic material, especially of animal origin like keratin, and they produce characteristic feces, called frass. In the households, they consume fur, upholstered furniture, wool carpets and fabrics, on the body they feed on skin. Occasionally, larvae can be found in smoked bacon, meat or cheese. Forensic examination of the dead body can determine the presence of larder beetle in cases of mummification, while except for adult beetles and larvae, significant is also a finding of the frass.

## Application of a validated method for the analysis of cocaine and benzoylecgonine in human bone to forensic cases

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In recent years, great advances have been made in the study of bones as toxicological matrix and a wide range of substances can now be analysed in this tissue (e.g. opiates such as morphine, codeine and tramadol, anti-depressives such as citalopram and amitriptyline, or benzodiazepines such as diazepam). Several skeletal tissues have been investigated as possible toxicological matrices using a variety of methodologies for sample preparation and substance detection. Most researchers use experimental animals with the added advantage of working under controlled conditions (dose, administration route, time from last exposure to death and from death to sampling, etc), while studies performed using human bones are less frequent and do not use standardized protocols for sample preparation and analysis from this matrix.

In this work, the validated method for the determination of cocaine and its major metabolite benzoylecgonine (BE) in human bone was applied to real bone samples from two forensic cases in which toxicological analysis in blood was positive to benzoylecgonine.

The first case showed BE in blood at the concentration of 860 ng/ml and after the application of the method in the corresponding bone samples, BE was found in bone at 11 ng/g. The second case showed BE in blood at 40 ng/ml but it was not detected in bone samples probably due to the low concentrations. Further research is needed in this