



ILLEGAL DRUG ABUSE AND MORTALITY IN HUNGARY

Varga T.¹, Benkő A.², Dunay Gy.³

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¹Department of Forensic Medicine, University of Szeged, Hungary

²National Institute of Forensic Toxicology, Budapest, Hungary

³National Institute of Forensic Medicine, Budapest, Hungary

The illegal drug abuse and mortality were analysed on the base of the health care and police statistical data. The increase of use of illegal drugs has begun in the middle of 90's and has reached the maximal level in 1999. There was 12 765 drug users registrated in the health care system (126,49 / 100 000 inhabitants), 888 criminal processes (8,79 / 100 000 inhabitants) and 42 drug related deaths (0,42 / 100 000 inhabitants) in the country. Cannabis is the most commonly consumed illegal drug followed by the opiates and amphetamines. The male-female relation is 2:1 in the health care system and 7,5:1 in the criminal processes and there is a predominance of 20-24 years old age group. The most inflected parts of the country are the capital (435 patients, 13,16 criminal cases, 0,98 death / 100 000 inhabitants) and the south/east part of the country (150 patients, 24,75 criminal cases, (1,43 death / 100 000 inhabitants). The increasing tendency has stopped during the last two years.

KILLING OF A NEWBORN INFANT BY HIS MOTHER (NEONATICIDE) – NEW REGULATIONS IN THE HUNGARIAN CRIMINAL LAW

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Bajnóczky I.

Institute of Forensic Medicine, University of Medical Sciences, Pécs, Hungary

Abstract was not submitted.

MEDICO-LEGAL ASPECTS OF CHILD ABUSE

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Bouška I., Toupalík P.

Institute of Forensic Medicine, Charles University, 2nd Medical Faculty, Prague, Czech Republic

In connection with the increasing number of abused children connected with the increased interest of the society on the problem, high attention is also focused on the extreme phenomenon of CAN - on fatal cases and its different forms. The early diagnosis of abused child can prevent such course because detailed autopsy finding can explain not only the cause of the death and the origine of the trauma but the results of the postmortem findings are usefull for the solution of other non lethal cases - timing and estimation of the type of the injury or detection of vital reaction. The report analyses 84 lethal cases of abused children aged to 5 years (excluding neonaticide), died in the time period of 38 years. The mechanical trauma is the most frequent type of the injury and some are typical. In other cases the explanation of the detected lesions offered by the parents is



sometimes difficult to reject. Even the physician who knows well the symptoms of abused child has to overcome the rooted feeling of the child's untouchability, that is to go against the generally admitted principle love for the child. The higher incidence of CAN can be observed in families which are immature emotionally or by age, socially isolated or incomplet. It can be observed that abused child develops in a maltreating parent and represents the risk of aggressiveness to the family.

Research No. 111300004

BENZODIAZEPINE DERIVATIVES IN FORENSIC TOXICOLOGY PRACTICE

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Kulikowska J., Celiński R., Albert M., Sybirska H.

Department of Forensic Medicine, Silesian Academy of Medicine, Katowice, Poland

Medicines of a group of the benzodiazepine derivatives used commonly in therapeutic procedures are the subject of investigations in the toxicological practice of forensic medicine. Therapeutic qualities of benzodiazepines and their broad application cause that beside ethanol, medicines of this group become a co-effect of different events resulting in breaking the law or even death.

The authors have presented their own toxicological observations relative to cases in which benzodiazepines were found and carried out at the Forensic Medicine Department, Silesian Academy of Medicine Katowice in years 1995 – 1999. These observations refer 27 persons who committed suicide and 45 persons who died after taking drugs of opium narcotics (home-made poppy straw products). Among alive persons whose being under the influence of benzodiazepine derivatives broke the law, the largest group was traffic users (15 cases).

Benzodiazepine concentrations determined in blood ranged widely not only in persons died in the course of narcotization and persons poisoned with other medicines but also in alive persons who committed an offence.

ETHYLENE GLYCOL POISONING

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Mydlík M.¹, Derzsiová K.¹, Mizla P.¹, Böör A.², Mačingová E.³, Slosarčíková L.³

¹Nephrological Clinic, Faculty of Medicine of the P.J.Šafárik University and L. Pasteur University Hospital, Košice, Slovak Republic

²Institute of Pathology, Faculty of Medicine of the P.J.Šafárik University and L. Pasteur University Hospital, Košice, Slovak Republic

³Institute of Forensic Medicine, Faculty of Medicine of the P.J.Šafárik University and L. Pasteur University Hospital, Košice, Slovak Republic

Aim of the study was the retrospective analysis of 19 patients suffering from acute ethylene glycol poisoning who were treated from 1972 to 2000 in the Dialysis Centre of the 4th Medical Clinic and of the Nephrological Clinic of L. Pasteur University Hospital in Košice.

Main clinical signs of ethylene glycol poisoning were various neurological symptoms (cramps, hemiparesis, coma), severe metabolic acidosis and the signs of acute toxic hepatitis and of acute



renal failure. Calcium oxalic crystals in urine were present in 16 patients and leucocytosis was observed in each patient. In the first 4 patients we administered intravenously ethylalcohol and later in other patients we used ethylalcohol in dialysis solution. The concentration of ethylalcohol in dialysis solution was 100 mg%. Severe metabolic acidosis improved in 14 patients using bicarbonate haemodialysis. Total number of haemodialyses was 114, among them were 86 bicarbonate haemodialyses.

Conclusion: 1. Conservative treatment (including vitamin B₆ administration) and bicarbonate haemodialysis was successful in 16 patients (84.2%) suffering from acute ethylene glycol poisoning. 2. In the present time early and repeated bicarbonate haemodialysis is the method of choice in the treatment of ethylene glycol poisoning.

COMPETENCE OR INCOMPETENCE OF THE MEDICO-LEGAL ACTIVITY IN ROMANIA?

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Hecser L.

University of Medicine and Pharmacy, Department of Forensic Medicine, Târgu-Mureș, Romania

Achieving the act of justice in the sense of righteous solutions in the essential element in a constitutional state. The ascertaining of the truth must be undertaken in the context of the evidence and the methods of examination as institutions of trial. The auxiliary extrajudicial sciences including forensic medicine, contribute to supplement the documentation with specialized knowledge at the present level of the science.

Two normative legal documents drawn up in Romania in 2000 determine the way the institutions of forensic medicine should function and how their activity must be organized. These acts stipulate that forensic medicine comes under the jurisdiction of the Ministry of Health and Family and ordains that the Superior Council Board of Forensic Medicine from Romania be established. The human and professional quality of forensic experts, however, is not a criterion of appointment in the present legislation and the managing directors of institutions in Academic University centers are appointed arbitrarily, on the basis of non-professional criteria. In some academic centers professors of forensic medicine have been turned out of office by the Ministry of Health, being replaced even by doctors without any scientific/university degrees. In the academic center of Târgu-Mureș, for example, the managing director of the Medico-Legal Institution is a professor of histology. The author also exposes circumstantially other aspects in the field.

INCIDENCE OF PULMONARY TUBERCULOSIS IN FORENSIC AUTOPSY CASUISTRY

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Hecser L., Palfi-Siklodi K., Matei D., Hădăreanu V.

University of Medicine and Pharmacy, Department of Forensic Medicine, Târgu-Mureș, Romania

Tuberculosis in general, pulmonary tuberculosis in particular, shows an incidence of growing tendency in Romania: in 1999 this was of 119.9 ‰. In Mureș county (605.000 inhabitants) the



rate was of 105.4 ‰. There are no data regarding the unrevealed cases among the population, which at the same time, constitute the epidemic source.

In their retrospective study, the authors examined the medico-legal cases in a series of 5.031 autopsies, from which 1.830 natural (non-violent) death. In this category, 102 cases of tanatogenerative pulmonary tuberculosis were diagnosed ($5.57 \pm 1.92\%$). The cases occurred predominantly at men (79.41%); the average age of the sample was of 46.27 ± 17.0 years. Most of the “sudden” death occurred at home (71.55%); only in 7 cases (6.98%) did the deceased have the diagnosis of pulmonary tuberculosis established. Chronic alcoholism was found in 28.43; in 19 cases (26.3%) of 76 histopathological examinations, ethylic hepatopathia was confirmed. In 32 cases the persons had no family or permanent residence, 40 persons were unemployed, 19 were retired (on account of illness or age). From 100 analyzed cases, 32 persons had a positive alcoholemia.

The authors underline the chronic alcoholism and pauperization involved in the problem.

VWA POLYMORPHISM IN THE UPPER SILESIAN POPULATION (POLAND); APPLICATION TO PATERNITY TESTING AND ROUTINE FORENSIC CASEWORK.

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Raczek E., Kabiesz J., Drożdżiok K.

Department of Forensic Medicine, Silesian Academy of Medicine, Katowice, Poland

Allele and genotype frequencies for the VWA locus (12p12-pter) were determined in the Upper Silesian population (226 unrelated individuals from paternity cases and 200 unrelated individuals from forensic casework). No deviations from H-W equilibrium were observed, no rare or anomalous genotype was found. Comparison with other Polish and world populations was made.

Statistical parameters of forensic importance (Ht obs., Ht exp., PD, MEC, MEP, PIC) were calculated.

Note: This contribution will be presented as a poster

MEDICO-LEGAL AIMS

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Porubský V.

Retired senior consultant of Institute of Forensic Medicine, Faculty of Medicine of the Comenius University and of Institute of Forensic Medicine, Slovak Postgraduate Academy of Medicine, St. Cyril and Metod Hospital, Bratislava, Slovak Republic

Forensic medicine (FM) is not only an independent branch in the system of medical sciences for judgement and explanation of medical issues of the whole great field of judicature but it has and more and more will have its unsubstitutable commission in public health care, prevention and in particular by the solution of contemporary moral and ethical problems of modern life including problems connected with parenthood, cloning, euthanasia and many others.



An active involvement of these tasks has to be a principal aim of FM in Slovakia. In particular, when Slovakia is on the beginning of incorporation into all new European political and economical structures.

Therefore, FM has above all to ensure a firm but flexible legislative base in present structures of health care on the basis of the momentary state and incorporation, moreover with prospectives of further possibilities of development, application and cooperation with all borderline branches, not only medical.

However, the main aim of FM ought to be an active institutional work in terms of management and control of efficiency of health care professions of all degrees and so an improvement of work and output.

MEDICO-LEGAL CRITERIA RELATING TO THE DECIDING ABOUT THE INABILITY TO WORK IN POLAND

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Chowaniec Cz., Chowaniec M.

Department of Forensic Medicine, Silesian Academy of Medicine, Katowice, Poland

In years 1996 and 1997 both the Pensions Act and the Social Insurance Act were changed in Poland and as a consequence of this all the regulations relating to the deciding about the inability to work. Having suppressed the so-called disability groups, such terms as permanent or temporary inability to work were introduced. Medical boards deciding about disability were replaced by predicative physicians working for the Social Insurance Department. Recently, there has been observed a rise in number of cases relative to the verification of the decisions passed by the SID and sent by either Work or Social Insurance Departments of district courts to the Department of Forensic Medicine in Katowice.

The authors have tried to analyse the cause of a rise in number of appeals against a decision of the SID submitted by the insured. Taking into consideration sex, age, occupation, job and diseases, the statistical analysis was carried out with regard to the cause of differences in opinions given by us and physicians of the SID.

THE ANALYSIS OF FORENSIC AND POLICE ACTIVITY COORDINATION IN THE CASE OF MURDER OF THE FATHER, EXHUMATION AND FURTHER EXAMINATION APPROACHES

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Štuller F.¹, Macko V.¹, Novomeský F.¹, Krankuš J.²

¹Institute of Forensic Medicine, Jessenius Medical Faculty of the Comenius University and Faculty Hospital, Martin, Slovak Republic

²District Bureau of Investigation of the Police Force, Banská Bystrica, Slovak Republic

Authors present the case of murder of the father with passive complicity of the rest of the family. The son has illegally buried his father after killing and covered up traces at the scene of crime.



Later the evidence of the crime became clear, so it was inevitable to detect, exhumate, perform the medico-legal autopsy and other expertise and examination approaches on the victim's corpse in the framework of police investigation. Authors describe the procedures of forensic and police staff coordination in detecting and exhumation of the corpse, procedures of autopsy and other laboratory examinations, as well as further participation of forensic doctors in inquiry and proof procedures.

THE STRESS IN DIVING: AN IMPORTANT TRIGGERING FACTOR OF SERIOUS DIVING ACCIDENT

12

Novomeský F., Krivoš D.

Institute of Forensic Medicine, Jessenius Medical Faculty of the Comenius University
and Faculty Hospital, Martin, Slovak Republic

The fatal diving accident, which happens in the water hyperbaric environment, hostile for the human's being survival, presents a lot of questions both for the investigators and medicolegal experts alike. The causes of the diver's crisis being underwater are many. The most important seems to be the permanent stress, which may lead to severe psychic or somatic overload of a diver. Thus, the panic as the most adverse reaction may result. The presented lecture points out the most frequent causes of a diver's stress, which may lead to the human loss.

SOME PATHOMORFOLOGICAL FINDINGS IN SUBSTANCE ABUSERS

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Cyprianová A, Lysenková A, Beran M., Zikmund J.

Department of Forensic Medicine, University Hospital Bulovka, Prague, Czech Republic

Dispersed myocardial fibrosis is often found among young people using drugs. No illness accounting for such pathomorphological changes was found either in their history or in autopsy. Other pathomorphological findings (in lungs) are presented in the following text.

AN UNUSUAL DEVELOPMENT FOLLOWING A HEART SURGERY

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Lysenková A.¹, Procházka I.¹, Beran M.¹, Teršíp K.²

¹Department of Forensic Medicine, University Hospital Bulovka, Prague, Czech Republic

²Clinic of Cardiosurgery, General Faculty Hospital, Prague, Czech Republic

A 60-year old woman suffering from a heart disease was successfully operated by means of mammocoronarius bypass. One day after the operation, left chest cavity was drained due to the



presence of a fluid in the cavity, and the right ventricle of the heart was perforated. This injury led to a quick death of the patient as a result of an acute haemorrhagic shock.

ACUTE COMPARTMENT SYNDROME AS A LIFE-THREATENING CONDITION

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Molčányi T.¹, Molčányiová A.², Kitka M.³, Morochovič R.³

¹Clinic of Trauma Surgery, L. Pasteur University Hospital, Košice, Slovak Republic

²Department of Clinical Biochemistry, L. Pasteur University Hospital, Košice, Slovak Republic

³Faculty of Medicine of the P. J. Šafárik University, Košice, Slovak Republic

The compartment syndrome is defined as a condition in which increased pressure within a limited space / compartment / compromises the circulation and function of the contents of its space. In addition to the local neuromuscular sequelae of the compartment syndrome, the systemic consequences of the myonecrosis / mostly acute renal failure / may threaten patient's life.

During past 5 years the authors treated 7 patients, suffering from an acute compartment syndrome with systemic consequences caused by rhabdomyolysis. They focused on the etiologic factors of the an acute compartment syndrome, therapeutic approaches, and the methods of the skin closure after the fasciotomy.

In the field of the vascular surgery, we can differentiate between 2 types of compartment syndrome. The secondary compartment syndrome is caused by a surgical revascularisation of the ischemic tissue. An acute compartment syndrome caused by a prolonged pressure, exerted by own body mass, is in majority of cases associated with a medicamentous, drug or alcohol intoxication.

Myonecrosis, as a result of an acute compartment syndrome, may threaten patient's life in a form of its sequelae – the multi-organ failure. In addition to an early local surgical therapy, the monitoring of the target organs combined with a failure-preventing therapy is necessary.

TWO SUICIDAL SHOT WOUNDING CASES: ON-LINE COLLABORATION OF THE FORENSIC DOCTOR AND THE SURGEON

16

Bobrov N., Vyhnálková V., Longauer F.

Institute of Forensic Medicine, Faculty of Medicine of the P.J. Šafárik University and L. Pasteur University Hospital, Košice, Slovak Republic

Authors demonstrate the valuability of using some on-line communication systems in advanced investigation of medico-legal cases. Two suicidal shot wounding cases were chosen as an example. On-line collaboration of the forensic doctor and the surgeon in Internet led to the possibility of explanation of main circumstances of mentioned cases.

The first case was the suicidal attempt of a man with using of home-made slaughter weapon. Death occurred at a hospital due to irreversible brain damage 9 days after shooting wounding with



constant unconsciousness background. The essential questions to solve the case concerned the parameters of the wound channel compared with the weapon's characteristics, as well as a range of brain damage. The information on CT analysis of the head sent via E-mail helped the forensic doctor to summarize main circumstances of the case and estimate the mechanism of brain injury.

The second case was the suicidal attempt of a man with using of altered low-caliber pistol. Death due to channel-like brain injury was attested 10 days after admitting to a hospital. The deformed and partially fragmented lead projectile was revealed within the cranial cavity of the deceased and all alien parts were precisely taken for further examinations due to obtaining of exact on-line information, including images of CT- and X-ray transparencies via E-mail at the procedure of medico-legal autopsy.

Authors also discuss on the problem of encoding/decoding and general security of specific medical information transfer through Internet channels.

CLASSIFICATION OF THORAX INJURIES TOGETHER WITH OTHER INJURED AREAS BY THE ABBREVIATED INJURY SCALE AND NEW INJURY SEVERITY SCORE

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Adámek T., Vajtr D., Štefan J.

Department of Forensic Medicine of the 3rd Faculty of Medicine, Charles University, Prague, Czech Republic.

The aim of our study was classification of thorax injuries together with other injured areas of the body at persons who were treated and later died at the University Hospital Královské Vinohrady. All these patients were autopsied at our Department of Forensic Medicine. The data set is consisting of 99 victims who died during the 5 years from 1996 through 2000.

It was the Abbreviated Injury Scale – revision 1990, update 1998 (AIS) that was used for classification of injuries. The AIS is a standardized system developed to provide a simple numerical method for ranking and comparing injuries by severity, and to standardize the terminology used to describe injuries. The injury is described in terms of its anatomical location, specific lesion and relative severity. Thanks to the AIS is further possible to calculate the New Injury Severity Score (NISS) designed for the standard summary measure of human trauma and prediction of survival. The NISS is a modification of the Injury Severity Score used in the U.S.A. and around the world for 25 years.

We used the AIS and NISS for a retrospective study that provided us with summary measures of 99 victims. These measures were compared to other foreign studies and results. From forensic point of view this measurement has significant importance for retrospective assessment of survival prognosis of injured in cases such as no first medical care was provided etc.

This study was supported by the Research Goal MSM 111200003 of the 3rd Faculty of Medicine, Charles University, Prague.



UNUSUAL FATAL INJURY OF A SMALL TRUCK DRIVER

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Moravanský N., Macko V.

Institute of Forensic Medicine, Jessenius Medical Faculty of the Comenius University
and Faculty Hospital, Martin, Slovak Republic

Deceleration, compressive and penetrating injuries of the truck drivers sitting relatively high above the road level are more rare than those occurring to the personal car drivers. Very unusual from this point is a deadly injury of a small truck driver during the car collision with a low obstacle.

RECONSTRUCTION OF THE CASE OF DOUBLE PERFORATING HEAD SHOT WOUNDING

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Šoral A.¹, Bauerová J.¹, Hagara M.¹, Stuparin J.¹, Javor M.², Siget V.²

¹Institute of Forensic Medicine, Slovak Postgraduate Academy of Medicine, St. Cyril and Method Hospital, Bratislava, Slovak Republic

²Geodetteam, Bratislava, Slovak Republic

Authors present the case of perforating double shot wound of head with brain injury. On the basis of investigation, autopsy results, surveying (geodetic measurements) and reconstruction of the case, they try to resolve the question whether the wound was performed as suicide or by other person.

IDENTIFICATION OF POSITION OF THE CRIMINAL IN SHOT WOUNDING OF THE PERSON

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Hagara M.¹, Stuparin J.¹, Javor M.², Karnasová V.³

¹Institute of Forensic Medicine, Slovak Postgraduate Academy of Medicine, St. Cyril and Method Hospital, Bratislava, Slovak Republic

²Geodetteam, Bratislava, Slovak Republic

³District Bureau of Investigation of the Police Force, Bratislava, Slovak Republic

Identification of the position of offender based on informations obtained from victim and offender – electronic distance meter TOPCON measurement.



USING OF GEODETIC METHODS IN FORENSIC AND CRIMINALISTIC PRACTICE

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Hagara M.¹ Stuparin J.¹, Javor M.², Siget V.²

¹Institute of Forensic Medicine, Slovak Postgraduate Academy of Medicine, St. Cyril and Metod Hospital, Bratislava, Slovak Republic

²Geodetteam, Bratislava, Slovak Republic

General applications of surveying (geodetic) methods in forensic medicine and criminology, using of electronic devices.

COMPREHENSIVE MEDICO-LEGAL EXAMINATION OF AN UNIDENTIFIED BURNT DECEASED NN WITH REGARD TO THE INDIVIDUAL IDENTIFICATION

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Neniczka S., Drożdżiak K., Kabiesz J., Kulikowska J., Olszowy Z.

Department of Forensic Medicine, Silesian Academy of Medicine, Katowice, Poland

In the paper the authors present results of the postmortem examination of the burnt dead body of an unidentified young man NN, who might have been kidnapped, held in custody and finally burnt. During the autopsy stomatological identification was carried out and its results were compared to the dental card of the chosen man. Toxicological examinations of alcohol, CO, drugs and medicines were negative. Additionally, for the individual identification, the analysis of blood DNA polymorphism was carried out in the following loci: CSF1PO, TPOX, TH01, F13A01, VWA, F13B, HPRTB (STR systems) and also DQA1, LDLR, GYPA, HBGG, D7S8, GC. The results of the DNA polymorphism in the deceased were compared to those obtained in putative parents. Statistical analysis of the obtained results of the DNA analysis allowed to find out that the man NN was a son of H.E. and R.E. This comprehensive medico-legal examination let identify the deceased.

Note: This contribution will be presented as a poster

MULTIPLE STAB WOUNDS OF THE BACK: ASSAULT BY OTHER PERSON OR A SEQUEL OF TRAFFIC ACCIDENT?

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Macko V.,¹ Porubská R.,² Straka Ľ.²

¹Institute of Forensic Medicine, Jessenius Medical Faculty of the Comenius University and Faculty Hospital, Martin, Slovak Republic

²Department of Forensic Medicine, District Hospital, Lučenec, Slovak Republic

Numerous stabbed wounds have been found on the body of the traffic accident victim, female. Victim's relatives have expressed suspicion, whether the young victim hadn't been raped or



attacked by other person before the accident. An additional inspection of the traffic accident scene and of the vehicle together with the autopsy results found out circumstances concerning the mechanism of these injuries.

WHETHER THE FATAL HEAD INJURY CAUSED BY OTHER PERSON OR BY FALL DOWN IN DRUNKENNESS?

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Gavaľa P., Ivicsics I., Rozboril R., Urbanský A.

Department of Forensic Medicine, District Hospital, Nové Zámky, Slovak Republic

In discourse authors report a death of 37 years old woman who was found on the floor in the kitchen, in her flat.

According to a preliminary, informative interrogation made by police, the death should have been caused by another person with an iron bar. According to the character of the injuries police come to a conclusion that a head injury could not have been caused by a whack of the bar but by a fall when she hit her head on the concrete floor covered with a carpet. Probably it had happened as a consequence of the intoxication.

Besides these facts, they refer to a necessity of a closet examination of a place of crime with an acceleration of subsequent execution of dissection.

CASPASE AS A MARKER OF TISSUE DAMAGE

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Klír P.¹, Toupalík P.², Bouška I.²

¹Department of Forensic Medicine, Institute for Postgraduate Medical Education, Prague, Czech Republic

²Institute of Forensic Medicine, 2nd Faculty of Medicine of the Charles University, Prague, Czech Republic

There are several markers described which indicate hypoxic, ischaemic, traumatic and other changes of tissue and could be detected by histochemical or immunohistochemical methods. In this study we focused on immunohistochemical detection of several types of caspases in various tissues. Caspases are activated in cells to initiate the apoptosis and other proteolytic changes. In sudden and traumatic death cases we detected various types of caspases for visualisation of tissue damage in myocardium and other organs.



ABO SYSTEM AND DECOMPOSED BLOOD

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Dobisíková M.¹, Brouček J.², Mazura I.³, Beran M.¹

¹Department of Forensic Medicine, University Hospital Bulovka, Prague, Czech Republic

²Institute of Criminalistics, Prague, Czech Republic

³Faculty of Sciences, Charles University, Prague, Czech Republic

Being able to determine the ABO types of blood is an important task in identify of unknown body. Detection from fresh blood or bloodstains is usually no problem. Problems come with a decomposition of blood.

We had investigated 100 samples of decomposed blood and compared with known serological properties.

PREREQUISITES TO FORENSIC TOXICOLOGICAL ANALYSIS AT PRESENT

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Bauer M.

Institute of Forensic Medicine, Slovak Postgraduate Academy of Medicine, St. Cyril and Metod Hospital, Bratislava, Slovak Republic

The continued rise of xenobiotics, their well-grounded or not grounded consumption often in combination, sometimes bring for forensic analysts, but even for forensic doctors, analytical but also diagnostic problems manageable with great difficulty. The analyst should cope with problems of extensiveness of used screening procedures, separation and detection, selection of suitable separation, separation effect, detection limit, artefacts etc. These facts raise requirements to professional erudition, but in some connections to ethical qualities and in our conditions to economical criteria, too. This is valid similarly for the forensic doctor by diagnostics of influence of xenobiotics, who has to give opinion about interaction of a number of substances, to judge their influence not only in lethal intoxications, but also in connection with the time immediately before a traffic or working accident and so on.

This is a brief enumeration of problems, to which the author wants to direct attention and which can excite the interest mainly of younger colleagues engaged in toxicology.

EXPERT ACTIVITY OF FORENSIC TOXICOLOGIST AND ITS RISKS

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Bauer M.

Institute of Forensic Medicine, Slovak Postgraduate Academy of Medicine, St. Cyril and Metod Hospital, Bratislava, Slovak Republic

The results of expert activity of toxicologists – non-physicians represent an integral part of expert opinions in forensic medicine in cases of lethal poisoning and traffic or working accidents. The



experts for toxicology should perform their work personally in accordance with the valid expert law. Therefore, they have claim to a reward. Of course, the expert's work must be realised outside of working time. An expert in the branch of health care can be only a person, who fulfil the defined professional conditions. But it happens too often, that experts taken *ad hoc* do not have the necessary qualification. This fact can be negatively projected into quality of expert's statement, incorrect conclusions and finally into impairment of judged person. Here are great reserves also in ethical access, in connection with groundless, economically pretentious chemical analysis of solved cases.

The author directs the attention towards above mentioned as well as other shortcomings in realization of expert work with possible legal consequences.

THE POLAROGRAPHIC DETERMINATION OF METALS BY FIREARM INJURIES

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Vaněrková H.¹, Klír P.¹, Toupalík P.²

¹Department of Forensic Medicine, Institute for Postgraduate Medical Education, Prague, Czech Republic

²Institute of Forensic Medicine, 2nd Faculty of Medicine of the Charles University, Prague, Czech Republic

There was tested the use of the polarographic determination of some metals (Pb, Cu, Fe, Sb) in the skin in deceased due to multiple firearm injuries.

The authors present on a real case, in which the shots throught the dress of victim penetrated, the possibility to determine entry and exit wound.

DETERMINATION OF OPIATES IN CASES OF DEATH OF TWO YOUNGER PERSONS – INTERPRETATION OF THE RESULTS

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Brzobohatá A., Mudrová J., Hirt M., Procházková A., Krejzlíková E., Votava M., Samková H.

Department of Forensic Medicine, University Hospital, Brno, Czech Republic

A younger man of foreign nationality died under uncommon circumstances – the body was found in a bath, already without water, and a hair dryer was plugged in the socket. The hair dryer was hanging into the bath. During the autopsy, samples for toxicological analysis were taken, the results of which substantially influenced the physicians' conclusion leading to the determination of the cause of death of above mentioned man.

The second case was the death of a young man, who was found dead in his flat; the physician who inspected the corpse determinec „an unknown narcotic overdose“ as the preliminary cause of death. During the autopsy, samples for toxicological analysis were taken as well; the results however did not directly influence the determination of the cause of death.



In both cases, there was a positive finding of opiates in biological materials, and quantification of morphine in blood in both deceased persons proved to be very important.

SPECIFICATION OF A CORRECTION FACTOR VALUE FOR THE PURPOSE OF ETHYLALCOHOL CONCENTRATION IN A HEMOLYTIC SERUM DETERMINATION

31

Mlynár J., Muráriková B., Makuchová M.

Institute of Forensic Medicine, Slovak Postgraduate Academy of Medicine, St. Cyril and Metod Hospital, Bratislava, Slovak Republic

Determination of ethyl alcohol concentration in blood using method of gas chromatography is one of the most common and frequent analyses realised in laboratories of forensic and clinical toxicology. Depends on type of analysed blood sample, the final calculation includes multiplication of the raw GC result (related to a reference standard) by one of the well known correction factors (0.9259 for whole blood, 0.8696 for hemolytic serum and 0.7937 for serum).

The correction factors for whole blood and for serum as well are related to quite well defined samples. The hemolytical-serum-related one, in contrary, covers relatively broad range of blood hemolysis possible rate fluctuating between the whole-blood- and the serum-related values.

Does using of just one, common correction factor for whole possible range of samples covered by the term "hemolytical serum" represent potential source of significant inaccuracy in ethyl alcohol determination, namely in case of its high concentration? Results of the presented investigation try to answer the question.

SETTING OF CHROMATOGRAPHIC INSTRUMENTATION FOR TOXICOLOGICAL LABORATORY

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Oriňák A., Daniel V., Guláš P.

MULTIRECOMM, Košice, Slovak Republic

Toxicological laboratory represents complicated system of measuring instruments, methods and evaluation systems. We would demonstrate an unicate system that couples chromatographic instrumentation – gas chromatography (GC), liquid chromatography (LC), thin-layer chromatography (TLC) – with high effective detection and identification system in one block.

Instrumentation of GC and HPLC is supported with column bank, new technology columns SolGel, GC-MS database support, accessories support (liners, head-space, pyrolysis injector, etc.).

TLC is specially used at preliminary analysis, pre-dominantly, unknown samples. All three methods and instrumentation are controlled via LIMS system and software at central PC. By this way there are connected all three chromatographic instrumentations to provide elegant effectivity of the analyses, shorteness time to provide an acceptable results. System is full quantitative and supported by evaluation programs.



CRANIOMETRICAL RESEARCHES AT THE FORENSIC MEDICAL IDENTIFICATION OF THE PERSON

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Huseynov V.

Department of Forensic Medicine and Pathology, Baku, Azerbaijan Republic

The given work is devoted to diagnostics of an individual membership of a skull to one of local variants Southern European of race by a method of the discriminant analysis. For these purposes the method of craniometric diagnostics of a skull of an unknown person to populations of the Caucasian, Central Asian and Southern European origin is developed.

The racial structure of the modern nations of former USSR is investigated rather full. Now there is no some significant region, which has been not covered by craniological researches. For the purpose of forensic medicine the method of craniometrical diagnostics of a skull of the unknown person to populations of the Caucasus, central Asia and south European origin is developed. The method assumes using of two classes of models based on one and multimeasuring discriminant analysis. Use of models is stipulated also in case of examination of fragmentated skull. Diagnostics of local variant of southeuropean race (the Caucasus or Central Asia, the Caucasus or Southern Europe) on models of one-dimensional discriminant analysis assumes: practically authentic decision -85.63%; the probable decision -10%; failure of the decision of a task-4.37%; The craniometrical diagnostics of local variant of southeuropean race on a basis of discriminant is possible: Central Asia – 68.94-80.73%; Southern Europe – 71.79-79.07%; the Caucasus – 76.32-81.08%. The simultaneous differentiation worsens all of the 3rd local variants of race diagnostic prospects – 64.71-78.46%, 57.50-65.26% and accordingly 61.79-73.33%.

Note: This contribution will not be orally presented due to author's excused absence

SURVEY OF AUTOPSY RATE IN SLOVAK REPUBLIC IN THE LAST YEARS

34

Hojsík D., Mego M., Kováč P., Kuruc R., Fiala P., Hollá B., Kovács A.

Institute of Forensic Medicine, Faculty of Medicine of the Comenius University and University Hospital, Bratislava, Slovak Republic

Authors present the survey of autopsy rate in Slovak Republic in the last years (approximately 20 years). The source of this presentation are informations from Statistical Office of S. R.



PARTICIPATION OF SLOVAK FORENSIC DOCTORS ON THE 10TH INTERNATIONAL MEETING ON FORENSIC MEDICINE IN CROATIA IN MAY 2001

35

Gavaľa P.¹, Ivicsics I.¹, Malý J.², Krivoš D.³, Novomeský F.³

¹Department of Forensic Medicine, District Hospital, Nové Zámky, Slovak Republic

²Department of Forensic Medicine, District Hospital, Nitra, Slovak Republic

³Institute of Forensic Medicine, Jessenius Medical Faculty of the Comenius University and Faculty Hospital, Martin, Slovak Republic

Authors report on representation of Slovak specialists in forensic medicine by modern, digital, multimedia form in the 10th International meeting on forensic medicine in Opatija, Croatia, from 23rd to 26th of May 2001.

FOREST CONFLAGRATION IN THE REGION OF SLOVENSKÝ RAJ

36

Gavel A.¹, Niezňanský S.¹, Bauer M.²

¹Department of Forensic Medicine, District Hospital, Poprad, Slovak Republic

²Institute of Forensic Medicine, Slovak Postgraduate Academy of Medicine, St. Cyril and Metod Hospital, Bratislava, Slovak Republic

Six people died during the forest fire in the region of Slovenský Raj (Slovak Paradise) in October 2000. Authors analysed the accident from following aspects:

1. reasons and beginning of fire
2. identification of victims
3. autopsy findings of victims
4. toxicological analyses.

AIR ACCIDENTS IN SLOVAKIA

37

Kállay D.

Department of Forensic Medicine, J. A. Reiman District Hospital, Prešov, Slovak Republic

Author refers occurrence of aircraft accidents in Slovak republic and analyses reasons of accidents from forensic medicine point of view.



REPEATED AGGRESSIVENESS OF THE PERPETRATOR

38

Iannaccone S., Vyhnáľková V., Grochová Z.

Institute of Forensic Medicine, Faculty of Medicine of the P.J. Šafárik University and L. Pasteur University Hospital, Košice, Slovak Republic

Autors demonstrate two cases of homicide in Gipsy family as a result of repeated violent agressivity of the assailant (the father of the family). The first case is referred to the year 1994, when the little child, his son, was dead due to head injury caused by father-perpetrator. The second case of the mother's violent death caused by the same person is referred to the year 2001. The cause of death was traumatic shock due to repeated blunt injury on the whole body with using of diferent types of instruments.

USAGE OF BIOPHYSICAL METHODS OF DEFINITION OF VITAL SKIN INJURIES

39

Khohlov S., Vavilov A., Ramishvili A., Khasanyanova S.

Department of Forensic Medicine, State Udmurtian University, Izhevsk, Russia

The investigation is devoted to the problem of vital and postmortal definition of skin injuries. The authors using the thermophysical method find the difference of heat- conducting values in following groups: vital injuries, postmortal injuries, intact areas (control group). On the base of preliminary received experimental data analysis, the following conclusions can be made:

1. Biological tissue (skin) heat-conducting coefficients is in direct relation with tissue temperature, under which investigation was hold that agrees with some investigations made before.
2. Changing of skin heat-conducting coefficients in vital injuries doesn't depend on injury location that allows to consider it as a universal process the same for all areas of human body.
3. Heat-conducting coefficients of skin with vital injuries, postmortal injuries and intact skin greatly differ from each other, that shows the possible availability of our method for definition of vital injuries.

Note: This contribution will not be orally presented due to authors' excused absence



DNA IDENTIFICATION – INSTITUTE OF FORENSIC MEDICINE LJUBLJANA EXPERIENCE AND A CASE REPORT

P1

Balažic J.

Institute of Forensic Medicine, Medical Faculty, University of Ljubljana, Slovenia

To identify biological trace with the newest method of DNA analysis using extremely sensitive DNA multiplication methods we can use as little as a trace of blood from a millimeter surface, saliva from the place of contact, a single root-containing pubic hair and some other biological material in small, sometimes microscopic quantities. The method we are using in our DNA laboratory is based on microsatellite polymorphisms analysis as well (we analyze 14 STR loci). For determination of sex from forensic samples we are using amelogenine gene multiplication in PCR.

There are more steps in forensic medicine genetical testing:

- Isolation of genomic DNA from different biological samples, which can be of extremely small quantities.
- PCR amplification of STR loci and amelogenine gene sequence. Approximately 30 cycles of the reaction amplifies specific regions of the genome to a million or even more copies.

Separation of the amplification products with capillary electrophoresis and determination of genotypes from the analyzed samples. PCR products (amplification products) are separated in the process of capillary electrophoresis by the help of *ABI Prism 310 Perkin Elmer*. The sample separation progresses consecutively with automatically injecting and fluorescence-based DNA fragment detection.

Case report. A murder of a younger businessman has been committed on the day of 12/31/2000. He was found dead at the entrance to his shop. At the beginning we believed mafia had committed it, because the suspect was unknown and the murder weapons were not found at the crime scene. The deceased was lying in a pool of blood and the investigation showed he was attacked by firearms. The investigators found 7,65 caliber bullet shells for a Beretta model 82 in a bathroom of a residential object. The deceased was found to be shot in the same bathroom with 6-8 projectiles. The autopsy declared none of the shot wounds to be mortal. It also showed multiple sharp injuries made by an axe or a similar object – two on the subject's head, three cuts on his back and seven cuts on both arms. The autopsy established the exact time of death, which opened a new direction in criminal investigation. It was not until the fifth day after the incident that the suspicion of murder was drawn to the deceased's extra-marital partner and her mother, who were living common residence. Investigators found a smaller axe in a container with water and confiscated both suspects' shoes and clothes. A criminal investigation of both their cars insides' was carried out as well. All the confiscated material was sent to the institute together with the secured samples from the crime scene. We performed a detailed revision of all the material found. In consensus with the examining magistrate we selected numerous biological samples from the crime scene, following a logical clue.

Examining the soles of one of the suspects' shoes, we discovered a macroscopical sample, which reacted positively with the hematest. Examining a sports shoe, belonging to the other suspect, we didn't find any biological trace on the surface, because the shoes had been previously washed. In



spite of that we found a microscopical trace of blood while opening the front margin between the linen and the plastic part of the shoe.

We carefully examined the pads on the cars' brake, clutch and accelerator pedals and obtained a positive hemastix reaction on the brake pad. We collected the microscopical sample of the biological trace.

Test results. We isolated DNA according to standard procedures, performed PCR and separation of PCR products by capillary electrophoresis. The results were genotypes and phenotypes of the biological samples as seen on the ferrograms shown. We weren't able to isolate genomic DNA from the axe. The biological trace from the light shoe sole and from the brake pad were genotypically and phenotypically identical to the victim's biological samples, as well as biological trace from the blood stains in the bathroom, the outer side of the bathroom window shelf, the roof gutter and from the entrance to the shop where the deceased was found.

MEDICAL EXPERIMENTS ON PEOPLE IN POLISH LAW

Nasiłowski W., Legień M.

Department of Forensic Medicine, Silesian Academy of Medicine, Katowice, Poland

P2

In the paper are presented the following issues:

1. law regulations relating to medical experiments in Poland,
2. differential problems (kind of experiment, medical systematics etc.),
3. procedures of getting a patient's agreement,
4. acceptance of the bioethical board,
5. legal responsibility of experimentators.

THE NIGHT OF HORROR

Dókuš K., Tuharský T., Kadlecová V.

Department of Forensic Medicine, Roosevelt District Hospital, Banská Bystrica, Slovak Republic

P3

Autors present a case which happened in the Slovak Ľupča Castle in „The Night of Horror“ during time at performance of actor's role as the hanger „public execution“.



LEGAL ASPECTS OF THE FORENSIC MEDICINE AND TOXICOLOGY IN REGARD WITH THE PERSON'S DETRIMENT

P4

Náplavová J., Loyka S., Útrata R.

Institute of Forensic Medicine, Faculty Hospital with Out-patient Clinics, Ostrava, Czech Republic

The authors studied the conception of the right to life and the detriment of the subject from a viewpoint of civil as well as criminal law. The study mainly concerned kinds of prevention, assumptions of responsibility and indemnification. By the criminal responsibility, they tried to elucidate in addition to history of euthanasia the problems of phases of criminal act and deed substance of this act. Furthermore, they analysed the detriment of the subject from a viewpoint of the administration law. An important part of the work is the processing of statistical dates from northern and southern Moravia.

METHODS OF DIATOMS EXAMINATION IN DROWNING

P5

Lábaj P., Bobrov N., Hönschová I.

Institute of Forensic Medicine, Faculty of Medicine of the P.J. Šafárik University and L. Pasteur University Hospital, Košice, Slovak Republic

Authors are presenting their experience of different diatom detection methods. Besides of disorganization methods using strong acids or ultrasonic irradiation, they applied also enzymatic digestion method for detection of plankton from lung, kidney, liver and bone marrow by using proteinase K and sodium dodecyl sulphate. After using of this method in 32 cases of drowning and comparing it with routine proceedings they fully recommend it, as simple, safe and effective for detection phytoplankton and zooplankton too.

Authors emphasize the inevitability of comparative analysis of diatoms species from the biological material and from samples of the water at the scene of drowning investigation.

EFFECT OF IONIZING RADIATION ON THE HUMAN BRAIN: WHETHER IS IT DIFFUSE AXONAL INJURY?

P6

Bobrov N.¹, Kassayová M.², Saenko A.³, Yakovlev A.⁴

¹Institute of Forensic Medicine, Faculty of Medicine of the P.J. Šafárik University and L. Pasteur University Hospital, Košice, Slovak Republic

²Department of Human and Animal Physiology, Faculty of Sciences of the P.J. Šafárik University, Košice, Slovak Republic

³Bureau of Forensic expertise, Moscow, Russia

⁴Bureau of Forensic expertise, Rostov-Don, Russia

The authors present 16 cases of low-dosage ionizing radiation influence on the human fetal brain. Unique material was taken from Clinics of Gynecology and Obstetrics in Kyjev (Ukraine) after



procedures of artificial termination of pregnancy of the women being influenced by low-dosage ionizing radiation due to Chernobyl nuclear power station accident in April, 1986.

The samples of different parts of the brain were examined by transmission electron microscopy. There was estimated, that ultrastructural pathomorphological changes of white matter of the human fetal brain resemble some characteristics of diffuse axonal injury (axons' ballooning, cytoskeletal disorganisation, retraction balls and multivesicular complexes incidence). The relatively higher grade of vitality of myelinated structures in comparison with non-myelinated components was indicated.

The authors analyse pathogenetical consequences of the possible mechanism of referred changes, discuss on the nature of influence of low-dosage ionizing radiation on the human fetal nervous system at different stages of ontogenetical development and try to estimate so-called "critical periods" of the human brain development in relation to the artificial ionizing radiation.

FATAL INTOXICATION DUE TO NARCOTAN (HALOTAN) INHALATION

P7

Jablonský P., Kucbel J., Gažová D.,

Department of Forensic Medicine, Roosevelt District Hospital, Banská Bystrica, Slovak Republic

Halotan is effective inhaling anesthetic matter in the group of halogenhydrocarbons which cause associative anesthesia. Poster shows scene of death, autopsy findings and also stated laboratory results of analyses halotan levels in blood and urine samples after inhaling intoxication in 18 years old student.

CHILD ATTACKED BY TWO DOGS

P8

Kállay D.¹, Gavel A.²

¹Department of Forensic Medicine, J. A. Reiman District Hospital, Prešov, Slovak Republic

²Department of Forensic Medicine, District Hospital, Poprad, Slovak Republic

Authors represent a case of the dogs attack of the ten years old boy. There are demonstrated a lot of injuries of the extremities, of the face and especially of the neck.



PHARMACOKINETICS OF ETHYLALCOHOL: IMPLICATIONS FOR FORENSIC CALCULATION OF BLOOD ALCOHOL CONCENTRATION

P9

Mezencev R., Kyska J.

Pharmacia & Upjohn S. p. A., Bratislava, Slovak Republic

Calculation of blood alcohol concentration for forensic purposes is based on several simplified assumption (linear pharmacokinetics of ethanol, elimination from one body compartment, constant rate of alcohol absorption and time of achievement of peak blood levels).

Simplified and idealized assumptions mentioned above significantly restrict possibility of back-extrapolations blood alcohol concentration from observed values and calculation based on them exclude the absorption phase of blood alcohol curve (BAC) from being estimated.

In this work there is a design of more advanced model of alcohol pharmacokinetics resulting from analysis of BACs. Its possible benefits for forensic medicine and practical aspects of BACs generating software are discussed.

SELF-INFLICTED INJURIES TO SIMULATE XENOPHOBIC OFFENCES

D1

Pollak S.

Institute of Legal Medicine, University of Freiburg, Germany

In the field of clinical forensic medicine the expert is often confronted with different categories of self-induced bodily harm:

self-mutilation for the purpose of insurance fraud, voluntary self-mutilation among prisoners, dermal artifacts in patients with personality disorders, false rape allegations and suicidal gestures.

For about ten years a new category of simulated offences has been observed in Germany: Adolescents as well as adults of both sexes allegedly claim to have become victims of xenophobic or right-wing/neo-fascist assaults. As proof they inflict mostly superficial cuts on themselves characterized by the following features: localization in easily reachable regions (avoiding especially sensitive body areas) without consistent damage to the clothing, a multitude of individual lesions in grouped and/or parallel arrangement. To support the impression of a neo-fascist/xenophobic background of the offence the symbols of the right-wing scene are often applied, for example by cutting swastikas into the skin. Motives for this behaviour are the desire to attract attention, arouse compassion and gain respect.

The criteria of forensic evaluation are presented and discussed on the basis of cases investigated at the Freiburg institute.

**Note: Texts of all submitted abstracts were published in author's genuine form,
without abridgements and corrections**



III. SLOVENSKÝ VEDECKÝ ZJAZD SÚDNEHO LEKÁRSTVA

3rd SLOVAK CONGRESS OF FORENSIC MEDICINE

Zoznam a adresy účastníkov / List and addresses of participants

- | | |
|---|--|
| <p>1. Adámek Tomáš, MUDr. Ústav soudního lékařství 3. LF UK a FNKV Šrobárova 50 100 34 Praha 10 Česká republika</p> <p>2. Albert Małgorzata, Mgr. Katedra Medycyny Sądowej Śląskiej Akademii Medycznej ul. Medyków 18 40-752 Katowice Poland</p> <p>3. Bajerovská Ľubica, MUDr. Záchraná služba Rastislavova 43 041 90 Košice Slovenská republika</p> <p>4. Bajnóczy István, Prof., MD., PhD. habil. Institute of Forensic Medicine, University of Medical Sciences, Szigeti út. 12, H-7624 Pécs, Hungary</p> <p>5. Balažic Jože, Prof., Dr. med. Institute of Forensic Medicine Medical Faculty Korytkova 2 SI-1000 Ljubljana, Slovenia</p> <p>6. Baník Peter MUDr., Ing. Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura Šrobárova 2 041 80 Košice Slovenská republika</p> <p>7. Bauer Miroslav, Doc., Ing., CSc. Ústav súdneho lekárstva SPAM a NsP sv. Cyrila a Metoda Petržalka Antolská 11 P.O.BOX 51 851 07 Bratislava Slovenská republika</p> <p>8. Bauerová Jiřina, Doc., MUDr., CSc. Ústav súdneho lekárstva SPAM a NsP sv. Cyrila a Metoda Petržalka Antolská 11 P.O.BOX 51 851 07 Bratislava Slovenská republika</p> <p>9. Benešová Olga Martinská fakultná nemocnica, Kollárova 2 036 59 Martin Slovenská republika</p> <p>10. Beran Michal, MUDr., primář Ústav soudního lékařství FN Bulovka, Budínova 2 180 81 Praha 8 Česká republika</p> | <p>11. Beťáková Olga Martinská fakultná nemocnica, Kollárova 2 036 59 Martin Slovenská republika</p> <p>12. Bobrov Nikita MUDr., CSc. Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura Šrobárova 2 041 80 Košice Slovenská republika</p> <p>13. Bouška Ivan, Prof., MUDr., CSc. Ústav soudního lékařství, 2. LF, Karlova univerzita, Budínova 2, 180 81 Praha 8, Česká republika</p> <p>14. Brzobohatá Andrea, Mgr. Fakultní nemocnice u Svaté Anny Ústav soudního lékařství Tvrdého 2a 662 99 Brno, Česká republika</p> <p>15. Burajová Anna Ústav súdneho lekárstva SPAM a NsP sv. Cyrila a Metoda Petržalka Antolská 11 P.O.BOX 51 851 07 Bratislava Slovenská republika</p> <p>16. Celiński Rafał, Mgr. Katedra Medycyny Sądowej Śląskiej Akademii Medycznej ul. Medyków 18 40-752 Katowice Poland</p> <p>17. Cyprianová Alena, MUDr. Ústav soudního lékařství FN Bulovka, Budínova 2 180 81 Praha 8 Česká republika</p> <p>18. Dandárová Mária, MUDr. Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura Šrobárova 2 041 80 Košice Slovenská republika</p> <p>19. Dobisík Vladimír, RNDr. Ústav soudního lékařství FN Bulovka, Budínova 2 180 81 Praha 8 Česká republika</p> <p>20. Dobisíková Miluše, RNDr. Ústav soudního lékařství FN Bulovka, Budínova 2 180 81 Praha 8 Česká republika</p> |
|---|--|



21. **Dókuš Karol, MUDr.**
Oddelenie súdneho lekárstva,
Nemocnica F.D.Roosevelta,
nám. L. Svobodu 1
976 32 Banská Bystrica
Slovenská republika
22. **Farkaš Daniel, MUDr.**
Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2
041 80 Košice
Slovenská republika
23. **Fedorčáková Monika, RNDr.**
Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2
041 80 Košice
Slovenská republika
24. **Gavaľa Pavol, MUDr., primár**
Oddelenie súdneho lekárstva
NsP Nové Zámky
Slovenská 11
940 34 Nové Zámky
Slovenská republika
25. **Gavel Anton, MUDr., primár**
Oddelenie súdneho lekárstva
NsP Poprad
Francisciho 5
058 01 Poprad
Slovenská republika
26. **Gažová Dana, Ing.**
Oddelenie súdneho lekárstva
NsP F.D.Roosevelta
Banská Bystrica
Slovenská republika
27. **Grochová Zuzana, MUDr.**
Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2
041 80 Košice
Slovenská republika
28. **Hagara Miroslav, MUDr.**
Ústav súdneho lekárstva SPAM a NsP sv. Cyrila a
Metoda Petržalka
Antolská 11
P.O.BOX 51
851 07 Bratislava
Slovenská republika
29. **Hecser László Lóránt, Prof., agr. Dr.**
Department of Forensic Medicine University of Medicine
and Pharmacy
str. Vulcan 10
4300 Târgu Mureș,
Romania
30. **Hirt Miroslav, Doc., MUDr., CSc.**
Fakultní nemocnice u Svaté Anny
Ústav soudního lékařství
Tvrdého 2a
662 99 Brno
Česká republika
31. **Hojšík Dalibor, MUDr.**
Ústav súdneho lekárstva LF UK
Sasinkova 4
811 08 Bratislava
Slovenská republika
32. **Hollá Beata, Mgr.**
Ústav súdneho lekárstva LF UK
Sasinkova 4
811 08 Bratislava
Slovenská republika
33. **Hrivnák Ľubomír, pplk. RNDr.**
Odbor kriminalistických expertíz
Kriminalistického a expertízneho ústavu PZ SR
ul.9 mája 1
97486 Banská Bystrica
Slovenská republika
34. **Chowaniec Czesław, Dr.**
Katedra Medycyny Sądowej Śląskiej Akademii
Medycznej
ul. Medyków 18
40-752 Katowice
Poland
35. **Chowaniec Małgorzata, Dr.**
Katedra Medycyny Sądowej Śląskiej Akademii
Medycznej
ul. Medyków 18
40-752 Katowice
Poland
36. **Iannaccone Silvia, MUDr.**
Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2
041 80 Košice
Slovenská republika
37. **Ivan Jaroslav, MUDr., primár**
Oddelenie súdneho lekárstva NsP Žilina
V. Spanyola 43
012 07 Žilina
Slovenská republika
38. **Ivicsics Imrich, Ing.**
Oddelenie súdneho lekárstva
NsP Nové Zámky
Slovenská 11
940 34 Nové Zámky
Slovenská republika
39. **Ivor Jaroslav, Gen., Doc., JUDr., CSc.**
Ministerstvo vnútra SR
Sekcia vyšetrovania a kriminalisticko-expertíznych
činností PZ
Pribinova 2
812 72 Bratislava
Slovenská republika
40. **Jančiová Lívia, MUDr.**
Oddelenie súdneho lekárstva NsP Žilina
V. Spanyola 43
012 07 Žilina
Slovenská republika
41. **Javor Marek, Ing.**
Ústav súdneho lekárstva SPAM a NsP sv. Cyrila
a Metoda Petržalka
Antolská 11
P.O.BOX 51
851 07 Bratislava
Slovenská republika
42. **Kabiesz Jadwiga, Dr.**
Katedra Medycyny Sądowej Śląskiej Akademii
Medycznej
ul. Medyków 18
40-752 Katowice
Poland



43. **Kadlecová Viera, RNDr.**
Oddelenie súdneho lekárstva,
Nemocnica F.D.Roosevelta,
nám. L. Svobodu 1
976 32 Banská Bystrica
Slovenská republika
44. **Kállay Dalibor, MUDr., primár**
Oddelenie súdneho lekárstva
NsP J.A.Reimana
Hollého 14
080 01 Prešov
Slovenská republika
45. **Klír Přemysl, Doc., MUDr., CSc.**
Subkatedra soudního lékařství IPVZ
FN Bulovka, Budínova 2
180 81 Praha 8
Česká republika
46. **Klučka Pavol, pplk. Ing.**
Odbor kriminalistických expertíz
Kriminalistického a expertízneho ústavu PZ SR
ul.9 mája 1
97486 Banská Bystrica
Slovenská republika
47. **Kokavec Milan, Prof., MUDr., DrSc.**
Cyrilova 1
821 08 Bratislava
Slovenská republika
48. **Koleda Milan, JUDr.**
OÚV PZ Žilina
Kuzmányho 26
011 51 Žilina
Slovenská republika
49. **Korbička Josef, Prof., MUDr., CSc.**
Jugoslavska 104
613 00 Brno, Česká republika
50. **Kováč Peter, MUDr.**
Ústav súdneho lekárstva LF UK
Sasinkova 4
811 08 Bratislava
Slovenská republika
51. **Krajčovič Jozef, MUDr.**
Ústav súdneho lekárstva JLF UK a MFN
Kollárova 10
036 01 Martin
Slovenská republika
52. **Krivoš Dušan, Ing.**
Ústav súdneho lekárstva JLF UK a MFN
Kollárova 10
036 01 Martin
Slovenská republika
53. **Kulikowska Joanna, Dr.**
Katedra Medycyny Sądowej Śląskiej Akademii
Medycznej
ul. Medyków 18
40-752 Katowice
Poland
54. **Kurka Petr, RNDr., CSc.**
Ústav soudního lékařství FNsP Ostrava
Syllabova 19
728 08 Ostrava,
Česká republika
55. **Kuruc Roman, MUDr.**
Ústav súdneho lekárstva LF UK
Sasinkova 4,
811 08 Bratislava
Slovenská republika
56. **Kühnholz Bärbel, Dr. med.**
Wührenreddn 5
D-24794 Bünsdorf
Germany
57. **Lábaj Peter, MUDr.**
Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2, 041 80 Košice
Slovenská republika
58. **Legień Marek, Dr.**
Katedra Medycyny Sądowej Śląskiej Akademii
Medycznej
ul. Medyków 18
40-752 Katowice
Poland
59. **Longauer František, Doc., MUDr., CSc.**
Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2
041 80 Košice
Slovenská republika
60. **Loyka Svatopluk, Doc., MUDr., CSc.**
Ústav soudního lékařství FNsP Ostrava
Syllabova 19
728 08 Ostrava,
Česká republika
61. **Lysenková Alena, MUDr.**
Ústav soudního lékařství
FN Bulovka, Budínova 2
180 81 Praha 8
Česká republika
62. **Macko Vojtech, MUDr., primár**
Ústav súdneho lekárstva JLF UK a MFN
Kollárova 10
036 01 Martin
Slovenská republika
63. **Mačingová Eva, RNDr.**
Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2
041 80 Košice
Slovenská republika
64. **Makuchová Mária, MUDr.**
Ústav súdneho lekárstva SPAM a NsP sv. Cyrila
a Metoda Petržalka
Antolská 11
P.O.BOX 51
851 07 Bratislava
Slovenská republika
65. **Malý Jozef, MUDr., primár**
Oddelenie súdneho lekárstva
NsP Nitra
Špitálska 6
949 01 Nitra
Slovenská republika
66. **Mátyás Tibor, MUDr.**
Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2
041 80 Košice
Slovenská republika



67. **Mego Mirko, Doc., MUDr., CSc.**
Ústav súdneho lekárstva LF UK
Sasinkova 4
811 08 Bratislava
Slovenská republika
68. **Mezencev Roman, RNDr.**
Pharmacia & Upjohn S. p. A.
Zochova 5
811 03 Bratislava
Slovenská republika
69. **Mičko Igor, MUDr.**
Ústav súdneho lekárstva JLF UK a MFN
Kollárova 10
036 01 Martin
Slovenská republika
70. **Mlynár Juraj, Ing., CSc.**
Ústav súdneho lekárstva SPAM a NsP sv. Cyrila
a Metoda Petržalka
Antolská 11
P.O.BOX 51
851 07 Bratislava
Slovenská republika
71. **Molčányi Theodoz, MUDr., CSc.**
Klinika úrazovej chirurgie FN L.Pasteura
Rastislavova 43
041 90 Košice
Slovenská republika
72. **Moravský Norbert, MUDr.**
Ústav súdneho lekárstva JLF UK a MFN
Kollárova 10
036 01 Martin
Slovenská republika
73. **Mudrová Jana, MUDr.**
Fakultní nemocnice u Svaté Anny
Ústav soudního lékařství
Tvrdého 2a
662 99 Brno,
Česká republika
74. **Mydlík Miroslav, Prof., MUDr., DrSc.**
Nefrologická klinika LF UPJŠ a FN L. Pasteura
Rastislavova 43
041 90 Košice
Slovenská republika
75. **Neniczka Stanisława, Dr.**
Katedra Medycyny Sądowej Śląskiej Akademii
Medycznej
ul. Medyków 18
40-752 Katowice
Poland
76. **Novomeský František, Prof., MUDr., PhD.**
Ústav súdneho lekárstva JLF UK a MFN
Kollárova 10
036 01 Martin
Slovenská republika
77. **Oriňák Andrej, RNDr.**
MULTIRECOMM
Národná trieda 38
040 01 Košice
Slovenská republika
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Odbor kriminalistických expertíz
Kriminalistického a expertízneho ústavu PZ SR
ul.9 mája 1
97486 Banská Bystrica
Slovenská republika
79. **Pollak Stefan, prof., Dr. med., Dr. h. c.**
Direktor des Instituts für Rechtsmedizin
des Universitätsklinikums Freiburg
Albertstraße 9
D-79104 Freiburg im Breisgau
Germany
80. **Porubská Ružena, MUDr., primárka**
Oddelenie súdneho lekárstva
NsP Lučenec
Nám. Republiky 14
984 01 Lučenec
Slovenská republika
81. **Porubský Vladimír, MUDr. primár**
Sch. Trnavského 22
841 01 Bratislava
Slovenská republika
82. **Raczek Ewa, Dr.**
Katedra Medycyny Sądowej Śląskiej Akademii
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ul. Medyków 18
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Záchraná služba
Rastislavova 43
041 90 Košice
Slovenská republika
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Oddelenie súdneho lekárstva
NsP Nové Zámky
Slovenská 11
940 34 Nové Zámky
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Ústav súdneho lekárstva LF UPJŠ a FN L. Pasteura
Šrobárova 2
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Oddelenie súdneho lekárstva
NsP Lučenec
Nám. Republiky 14
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Slovenská republika
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Ústav súdneho lekárstva SPAM a NsP sv. Cyrila
a Metoda Petržalka
Antolská 11
P.O.BOX 51
851 07 Bratislava
Slovenská republika
88. **Sybirská Halina, Prof.**
Katedra Medycyny Sądowej Śląskiej Akademii
Medycznej
ul. Medyków 18
40-752 Katowice
Poland



- | | |
|---|---|
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|---|---|



Zoznam aktívnych účastníkov / *List of active participants*

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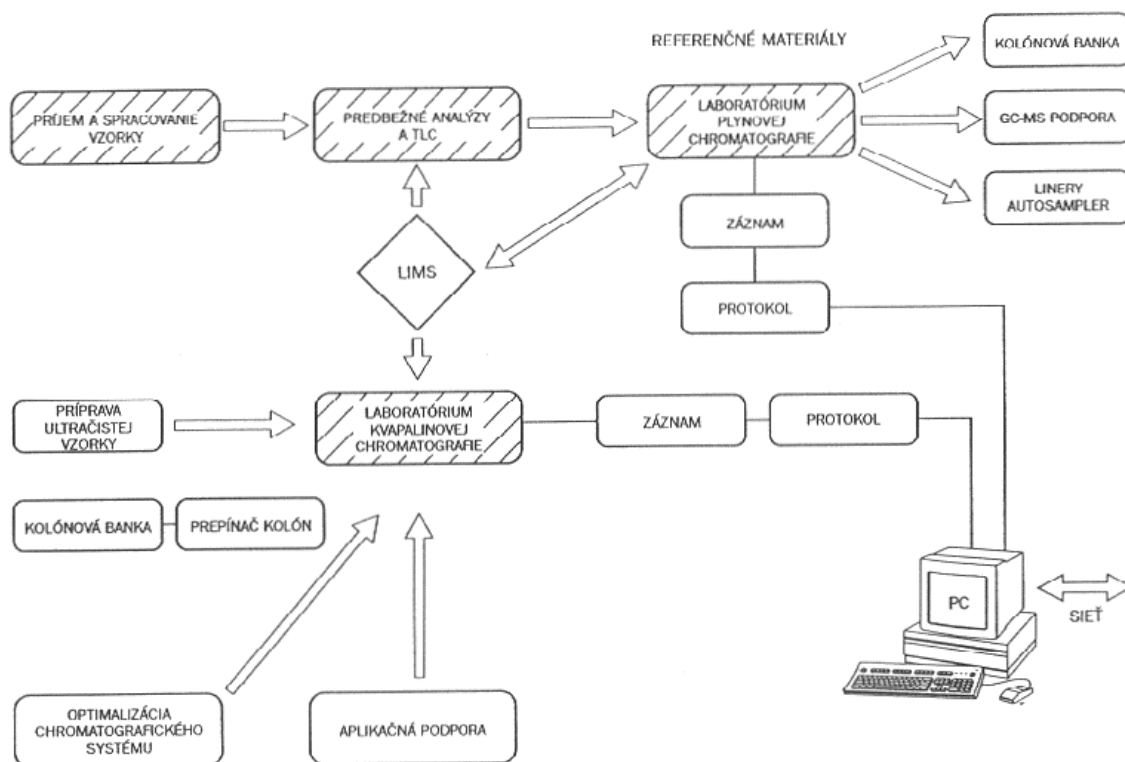


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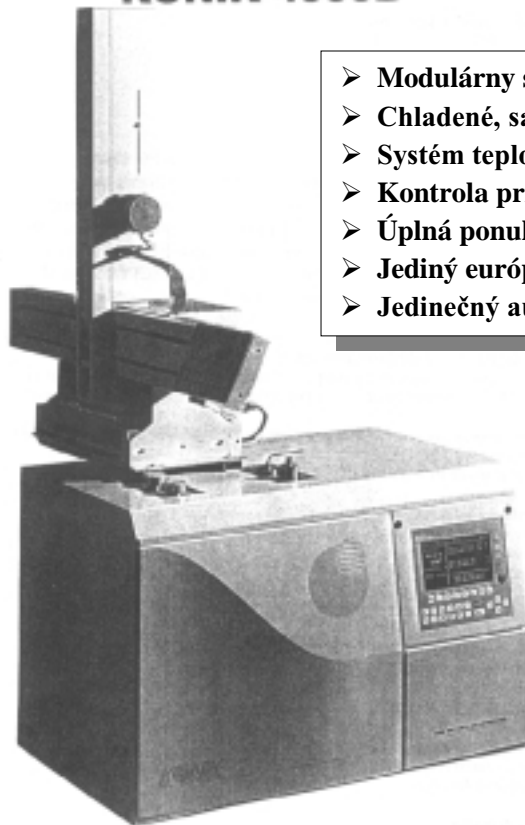
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1. KNK-000-GCB HRGC 4000B Series – Plynový chromatograf

Základná jednotka obsahuje:

- normalizovaný a modulárny HRGC riadený mikroprocesorom
- konštrukčne novú piecku s rozšírenými limitmi teplôt
- digitálnu riadiacu jednotku detektorov
- jednotku riadenia prietokov a kontroly tlaku KONIK Control Software Windows 95 pre automatickú kontrolu a nastavenie parametrov (klávesnica a panel + obslužný softvér)

Chromatograf pozostáva z dvoch nezávislých kanálov, s dvoma miestami pre voliteľné injektory a dvoma miestami pre voliteľné detektory (tretí detektor je na vyžiadanie) ako aj možnosť výberu ďalšieho príslušenstva (vzorkovacie ventily, rozhrania, prepínacie ventily atď.). Chromatograf je svojou jednoduchou konštrukciou predurčený pre analýzy na kapilárnych alebo klasických náplňových kolónach, je kompatibilný so všetkými typmi kolón. Možnosť výberu medzi manuálnou (MPC) alebo elektronickou (EPC) kontrolou plynov (nosný, make-up, detektor), samočistenie septa injektora.



Parametre piecky:

- operačná teplota od -90°C do 490°C (475°C je doporučený teplotný limit) s krokom 0.11°C
- rozšírenie rozsahu od + 5°C nad laboratórnu teplotu
- 5 kladných a 5 záporných teplotných rámp (15 rámp na vyžiadanie zákazníka) od 0.11°C/min. do 40.0°C/min. v 0,1°C/min. prírastkoch s im korešpondujúcim izotermným polohám (od 6 – 16 na vyžiadanie)
- teplotná kontrola 8-mich izolovaných blokov (2 injektory, 2 detektory, 3 periférie a piecka)
- rozlíšenie teploty piecky 0.01°C kontrolovaných PIDom
- možnosť prekonať signál READY v každom nezávislom vyhrievacom bloku

2. KNK-002-M18 kapilárny injektor

Samočistiaci kapilárny injektor, manuálna alebo elektronická kontrola tlaku, časovo kontrolovaný split/splitless

3. KNK-010-M18 FID detektor

Plameňovo-ionizačný detektor s kremenným horákom a manuálnou alebo elektronickou kontrolou tlaku, vysoká kompatibilita, vysoká citlivosť s deklarovanou linearitou signálu a širokým rozsahom, vysokostabilný digitálny elektrometer so štyrmi pracovnými rozsahmi a 10-timi zosilňovacími nastaveniami, autonula, automatické zapnutie plameňa z ovládacej klávesnice a automatické alebo softvérové vypnutie pri zastavení prietoku plynu.

4. KNK-013-M18 ECD detektor

Jednotka s manuálnou kontrolou tlaku, vysoká citlivosť a dynamický rozsah, Ni₆₃ žiarič, 10-15mCi.

Kompatibilný s rôznymi pracovnými metódami (kontinuálna a pulzná polarizácia), pracuje s kapilárnymi a náplňovými kolónami.

Vybavený je digitálnym elektrometrom s variabilnou pulznou šírkou polarizácie použitého nosného plynu.

Lineárny rozsah 0 – 28×10^{-9} A.

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Ďakujeme za podporu a pomoc týmto inštitúciám:
Thanks for the support and assistance to the following institutions:

Lekárska fakulta UPJŠ Košice
FN L. Pasteura Košice
FNsP Košice
VSŽ Nemocnica, a.s. Košice - Šaca
Združená tkanivová banka LF UPJŠ a FNsP Košice
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