SILENT KILLER AT THE TABLE – AN UNEXPECTED CAUSE OF SUDDEN DEATH

Anita Galic Mihic 1, Vedrana Petrovecki 1, Ivan Mario Stanicic 2
1 Institute of Forensic medicine and Criminalistics, University of Zagreb, Croatia
2 Department of Pathology, Judicial Medicine and Cytology, University Hospital of Split

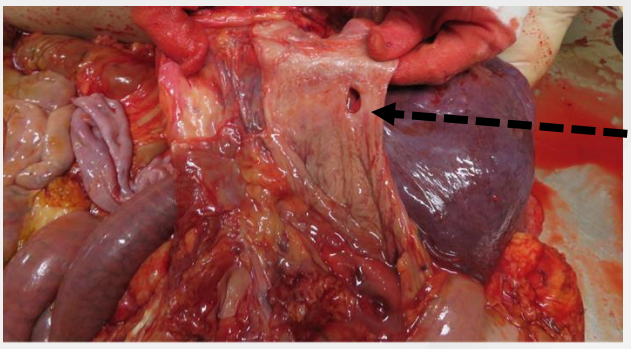
Background:

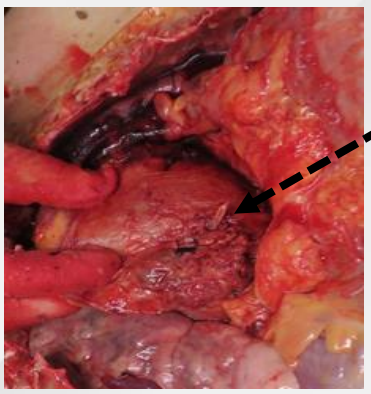
Sudden cardiac death is often attributed to acute coronary events.

Rare cases may stem from unexpected causes, detectable only by autopsy.

Case Presentation:

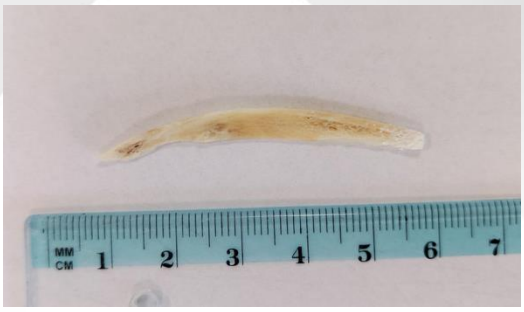
- **Patient:** 57-year-old female
- **Symptoms:** Acute chest pain, inferolateral ST-elevation on ECG
- **Initial intervention:** Urgent PCI, stent placed in RCA
- **Clinical course:** Persistent septic shock, large pericardial effusion
- **CT scan:** Detected a sharp, linear foreign body near the heart
- **EGDS:** No visible foreign object in esophagus
- **Outcome:** Despite intensive care, the patient died 1 month after the admission.





Key Autopsy Results:

- **Heart:** 11×12×5.5 cm, 435 g; mild LV hypertrophy (17 mm)
- **Foreign body**: 5×0.3 cm animal bone



- → Penetrated esophagus → pericardium → posterior wall of the heart
- **Pericardial sac**: 300 mL of blood + fibrin - rich adhesions
- **Perforations**:
  - Esophagus: 2×1 cm (near gastroesophageal junction)
  - Heart: 0.5 cm (posterior wall)
- **Additional findings:**
  - Pleural effusions (Left: 300 mL; Right: 100 mL),
  - Cerebral edema, nephrosclerosis

Conclusion

- The clinical picture mimicked myocardial infarction.
- Autopsy revealed a rare but fatal complication: cardiac perforation due to ingested foreign body.
- Autpsy is irreplaceable diagnostic value of forensic autopsy in unexpected deaths.

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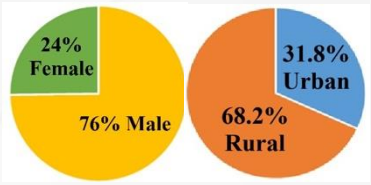
Postmortem diagnosis of accidental hypothermia - medico-legal correlations and macroscopic aspects in hypothermia

Andreea-Alexandra Hleșcu[1,2], Mădălina Diac[1,2], Bianca Hanganu[1,2], Iuliana Hunea Zamisnicu[2], Cristian Ștefan Hleșcu[1], Adriana Grigoraș[1,2], Beatrice Gabriela Ioan[1,2], Diana Bulgaru-Iliescu[1,2], Cornelia Amălinei[1,2]

1 Grigore T. Popa University Of Medicine and Pharmacy Iași , Romania
2 Institute of Legal Medicine Iași, Romania

Hypothermia is an area of interest for research due to the complex aspects of diagnosing with certainty. 107 necropsy cases were analyzed for over 15 years at the Institute of Legal Medicine Iași, Romania.

In the studied group, 76% of cases were male, 68.2% came from rural areas, average age of 57,95±1,47 yo [24-91], and among the risk factors, the most frequent were represented by low socio-economic status (34.6%), severe weather conditions (14.9%), alcoholism (22.4%), outdoor working conditions (2.8%) and the presence of traumatic injuries (1.9%).



Most deaths occurred at home (32%), in rural areas, among males. A variable survival was found, such that death occurred later, in a hospital environment for 30% of cases with a period ranging from 1-30 days with an average of 3.97± 6.53 days and a body temperature at hospitalization ranging between 19.5-32.6 degrees C, the majority developing neurological complications.

The external environmental temperature ranged from -13.20°C to 26°C, with a mean of 0.57°C ± 6.4°C, the air humidity ranged from 0 to 0.96%, with a mean of 0.74% ±0.23%, the wind speed ranged from 0 to 18.4 km/h, with a mean of 2.28 km/h ±3.30, the Wind Chill Index ranged from -19.46 to 29.279, with a mean of 5.83 (SD = 8.89).

External body examination

87.9% presented with dry hypothermia (dry skin), while 12.1% presented with wet hypothermia (skin maceration, especially on the palms and soles).

Exposure to extreme temperatures was associated with paradoxical undressing in 9.3% of cases with a significant association with the hospitalization *(p= 0.018),* 12.1% were found in embryonic position and 44.85% presented cutis anserina.

Among the specific cold injuries, such as cold erythema (49.5%) more common in the lower limbs (34.6%), various degrees of frostbite (50.5%) classified from degree I (33.6%) to degree IV (2.8%) and immersion foot in 12.1% of cases both with a significant correlation with temperature at hospitalization (*p = 0.023/p = 0,022*) and the last one also with external environment temperature (*p = 0.023*).

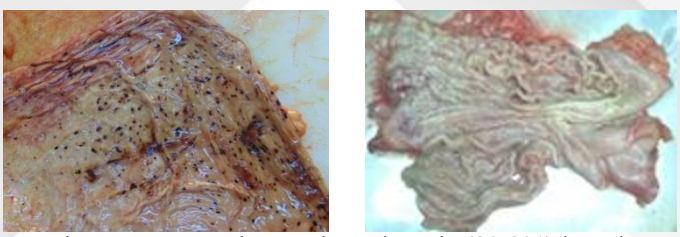
Retraction of the scrotum and testicles (Puparev's sign) was observed in 60% of male cases and intense reddish coloration of the glans penis (Desyatov's sign II) in 6.17%.

Traumatic injuries (bruises, abrasions, wounds) were recorded in 67.3%, and 86.1% of them were produced by passive hitting.

Internal body examination

Revealed a series of macroscopic aspects, secondary to the body's exposure to low temperatures, such as intense reddish blood color (60.7%) bilaterally extended pleuropulmonary hemorrhagic petechiae (11%), sero-hemorrhagic pulmonary edema in 54.9%, subepicardial hemorrhages (5.6%).

In digestive organs were observed pancreatic hemorrhages (18.7%), hepatic steatosis (71.4%), gastric retraction (Pukharevich sign) (53.3%) significantly correlated with a higher wind chill index (*p=0.041*) and Wischnewsky spots (44.8%) these being correlated with a more pronounced decrease in body temperature, measured intra-hospital, namely with an average value of 22.42 degree C (*p=0,001*).



In urinary tract we observed renal stasis (83.2%) but also cold diuresis or Samson-Gimmelstierna sign (the amount of urine measured inside the bladder) ranged between 30 and 1000 ml, with a mean of 276.74 ml (SD = 217.19 ml) in 40.18% of cases.

The most common aspects observed at the cerebral level were moderate cerebral edema (87.5%), followed by meningeal congestion (69.15%), marked edema (10.28%) and subarachnoid hemorrhage (5.6%).

Toxicological examination

Alcoholemia was observed in 42% of cases, ranging between 0.20 and 4.65 g‰, with an average of 0.806‰ (SD=1.04), the highest values being found in male victims. Urine alcohol was found in 24.3% of cases and varied between 0.34 and 3.503g‰, with an average of 0.9116 g‰. In three cases, all male (2.8%), benzodiazepines (BZD) and carbamazepine were identified. In cases that presented paradoxical undressing, found in the supine position, those that presented cold erythema, those with Wischnewski spots, it was highlighted that alcoholuria was higher than alcoholemia (p=0.001/ p=0.004/p=0.001/p=0.001).

Conclusions

Forensic experts play a crucial role in diagnosing death by hypothermia, relying on a comprehensive approach that combines forensic findings at the scene, witness accounts, necropsy information (including external and internal examination of the body), and toxicology data, which often require histopathological confirmation. In many cases, due to the short survival time in harsh temperature conditions, there may be a lack of specific observable macroscopic features that suggest hypothermia as the cause of death.

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Validation of Methods in Forensic Histopathology: From Basic Research to Evidentiary Application

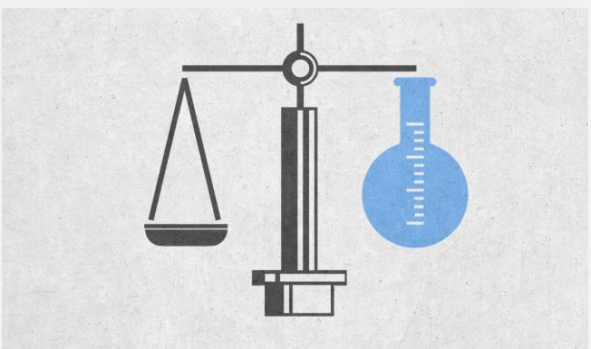
Stefania De Simone [1], Roberta Bibbò [1], Raffaella Campagna [1], Elena De Laurentis [1] , Cristina D'Elia [1], Wanda Nocerino [2].

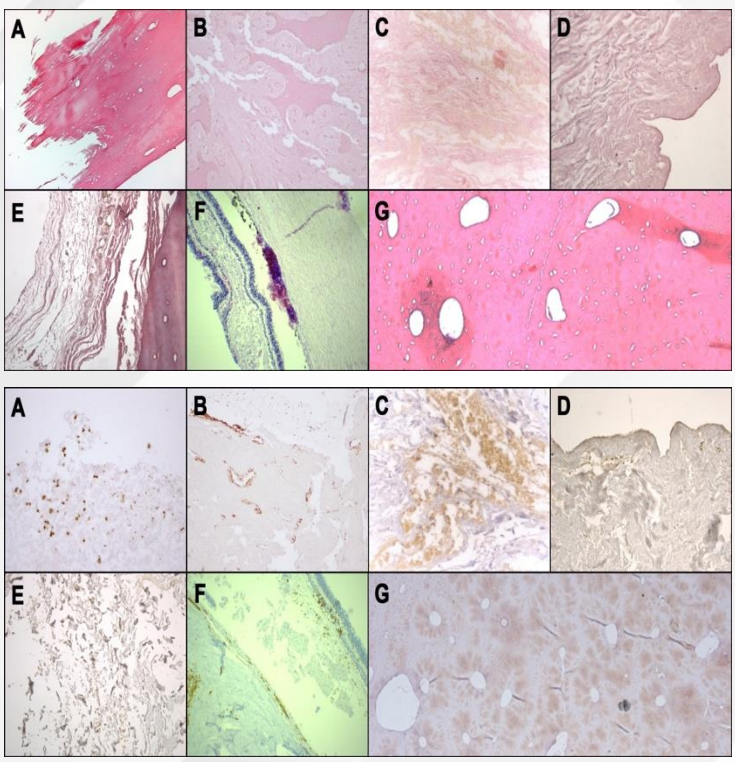
1 Department of Clinical and Experimental Medicine, Section of Forensic Medicine, University of Foggia, 71122 Foggia, Italy.
2 Department of Law, University of Foggia, 71122 Foggia, Italy.

Background and aims: In recent years, histopathology has gained importance in forensic investigations for determining the cause of death and addressing legal questions. Traditional staining techniques (e.g., hematoxylin-eosin, Masson's trichrome) are now complemented by immunohistochemistry (IHC), which enables the detection of markers not visible with conventional methods, especially in poorly preserved tissues. Over the past three decades, advances have led to the development of specific damage markers and improved protocols, allowing IHC to serve as reliable scientific evidence.

Methods: This study explores the validation processes that have established IHC as an accepted tool in forensic practice. It also examines selected case studies from Foggia, Ferrara, Trieste, and Salerno forensic departments. IHC contributed to legal decisions and was acknowledged as scientifically valid evidence in judicial rulings.

Results: We reconstructed the scientific validation process of glycophorin-A, reconstructing the phases that allowed its use and its application in case law. There will be an initial laboratory phase to optimize the antibody, which will then be used and applied in different cases by multiple Forensic Pathology Departments, on several tissues in various states of preservation. The results will subsequently be published in international journals, leading to the systematic application of the method in legal cases.





A: Skull; B: Vertebrae; C: Jaw; D: Larynx;
E: Skin neck; F: Retina; G: Case-control

1: Hematoxylin-eosin staining (H&E)
2: Glycophorin-A immunohistochemical staining

Discussion - Conclusions: The study highlights the critical role of experimental research in refining IHC applications, particularly in complex post-mortem scenarios where traditional microscopy is limited. Markers such as glycophorin-A and HIF-1α have proven valuable for assessing injury vitality, timing, and mechanisms. Integrating IHC with other fields—genetics, toxicology, imaging, and metabolomics—reflects a growing multidisciplinary approach. Collaboration across institutions is essential to standardize methodologies and enhance their probative value. Furthermore, insights gained from forensic histopathology can support clinical medicine by deepening our understanding of disease mechanisms.

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"Forensic Case Report: Fatal Fat Embolism Following Aesthetic Correction of Mandibular Prognathism"

Viktorija Belakaposka Srpanova 1, Slavica Kostadinova Kunovska 2, Natasha Bitoljanu 1, Goran Pavlovski 1, Ljupcho Cakar 1, Ana Ivcheva 1, Aleksandar Stankov 1, Zlatko Jakjovski 1
1 - Institute for forensic medicine, criminalistics and medical deontology, Medical Faculty Skopje, University of "Ss. Cyril and Methodious"
2 - Institute of Pathology, Medical Faculty Skopje, University of "Ss. Cyril and Methodious"

CASE REPORT

35 year old female admitted to the Clinic for anesthesia, reanimation and intensive care due to cardiac arrest following a Maxillofacial surgery – Osteotomio sagitalis rami mandibulae bilateralis. Operation and fatal event took place on the same day several hours apart. She was reanimated and hospitalized for 8 days, in a critical condition with inotrope support throughout all the time.

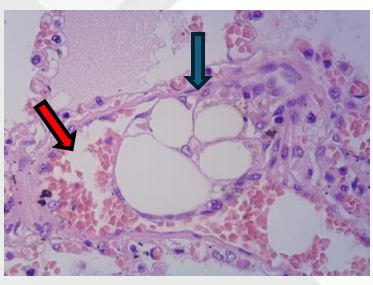
Pic. 1

Pic. 2

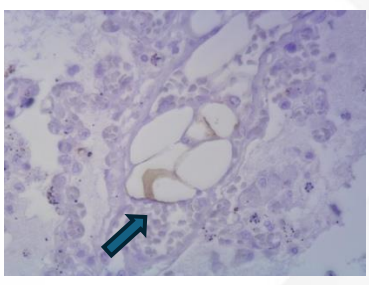
Pic. 3

Pic. 1&2 show bleeding under serous membrane of organs, ecchymoses shows respiratory insufficiency; **Pic. 3** shows bleeding in the white matter gross finding

Pic. 4
Pic. 4 shows bleeding in the white matter gross finding



Pic. 5
H&E stain 20
Blue arrow showing fat emboli clogging the blood vessel; Red arrow showing bleeding surrounding the small blood vessel.



Pic. 6
Sudan III stain 100x20
Blue arrow showing fat emboli clogging the blood vessel

DISSCUSION

The autopsy confirmed fat emboli in the cerebral vessels, which were thought to have resulted from the maxillofacial osteotomy. Cerebral fat embolism (CFE) is an incomplete type of fat embolism syndrome (FES), a rare clinical condition caused by embolization of fat particles into multiple organs, characterized by purely cerebral involvement. (1–5) CFE has an incidence of 0.9%–2.2% and is more frequent after closed, long-bone fractures of the lower extremities, particularly with multiple (≥3 sites) fractures.(6,7) Although it is usually self-limiting, it may be fatal (mortality rate of up to 10%). (8) Correct and early recognition of CFE remains an important goal in the diagnostic management of patients who show a sudden onset of neurological signs and symptoms. In fact, the presence of isolated neurological symptoms and signs, in the absence of simultaneous pulmonary and/or dermatological manifestations, represents a diagnostic challenge, not satisfying the Gurd and Wilson's criteria, the diagnostic features most widely used today for FES diagnosis. (9). Cerebral fat embolism (CFE) is a rare but potentially fatal condition that presents a significant diagnostic challenge, particularly when it arises from uncommon causes such as mandibular osteotomy, as demonstrated in this case. This rare cause of cerebral fat embolism underscores the importance of recognizing the condition as a potential complication of maxillofacial surgery, warranting careful consideration by both clinicians and pathologists.

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Autopsy Case of Postmortem-Discovered Varicella-Zoster Virus Encephalitis with Optic and Acoustic Nerve Involvement

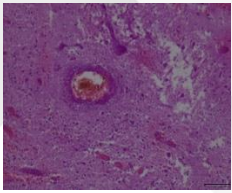
Hind ABOUZAHIR[1,2]
[1]Hassan II University Faculty of Medicine and pharmacy, Casablanca, Morocco
[2]Medicolegal Institute, Ibn Rochd University Hospital, Casablanca, Morocco

INTRODUCTION

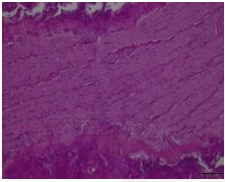
Varicella-zoster virus (VZV) is a highly neurotropic herpesvirus. This case highlights a rare presentation of VZV CNS infection, emphasizing the virus's capacity to produce extensive central and cranial nerve injury in immunocompromised patients.

CASE PRESENTATION

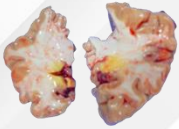
A 56-year-old woman with a medical history of systemic lupus erythematosus (SLE), managed with long-term corticosteroids and immunosuppressive therapy, was admitted for planned surgical management of a chronic anal fissure.. However, during hospitalization her neurological status deteriorated rapidly. She progressed to coma and died. Gross neuropathological examination revealed multiple small cerebral intraparenchymal hemorrhages associated with ischemic necrotic zones, predominantly in the frontal lobes and brainstem. Microscopic analysis confirmed subacute ischemic encephalopathy. Small vessel vasculitic changes with endothelial swelling and focal necrosis were observed. Examination of cranial nerves showed striking lesions: Optic nerves (II): Prominent lymphocytic neuritis with perineural infiltrates and axonal damage. Acoustic nerves (VIII): Dense lymphoid infiltration with disruption of nerve fibers, consistent with acute neuritis. Postmortem cerebrospinal fluid analysis by PCR detected VZV DNA. The integration of clinical, autopsy, histopathological, and molecular findings established the diagnosis of Varicella-Zoster Virus encephalitis with multifocal ischemic necrosis and concurrent optic and acoustic neuritis in the setting of SLE.



Subacute ischemic encephalopathy



Lymphocytic neuritis with perineural infiltrates and axonal damage



Small cerebral intraparenchymal hemorrhages with ischemic necrotic zones

CONCLUSION

This case illustrates the fulminant and often under-recognized neurological potential of varicella-zoster virus in immunocompromised hosts. The postmortem discovery of multifocal ischemic necrosis alongside histologically proven optic and acoustic neuritis underscores the virus's broad neurotropism and highlights an exceptionally rare constellation of findings.

FATAL BUTANE INHALATION: FROM EPIPHENOMENON TO SOCIAL ISSUE. SYSTEMATIC REVIEW OF THE LITERATURE AND IMMUNOHISTOCHEMICAL STUDY OF EIGHT CASES

Di Maria Stefano [1], Vetrini Raffaella [1], Livieri Tommaso [1], Cuttaia Calogero [1], Bolzan Filippo [1], Concato Monica [1]
Department of Medicine, Surgery and Health, University of Trieste, 34137 Trieste, Italy

1 INTRODUCTION

Volatile substance abuse (VSA) is an underrated phenomenon with very serious health consequences, including the risk of death in abusers. **Among the commonly inhaled substances, butane has become popular due to its affordability and ease of access, particularly among young people and vulnerable populations, such as inmates.** Despite this, only a small number of fatal butane intoxication cases have been reported in the literature. The pathophysiology of death appears to be mixed in nature, involving both an arrhythmic cardiac component and a hypoxic mechanism.

2 SYSTEMATIC REVIEW

A systematic review following PRISMA 2020 guidelines included 39 studies on butane-related deaths from 987 screened articles. **Among 57 cases, males predominated** (86%), with **46% of all deaths** (independently of gender) in **adolescents aged 11–17**, mainly 14–16 years. Inhalation was the sole route, primarily via sniffing and bagging. **Cardiac events**, mostly malignant arrhythmias due to butane-induced catecholamine sensitization, **caused 25 deaths**; myocardial infarction from coronary vasospasm occurred in 3 cases. **Asphyxia accounted for 13 deaths**, especially in bagging-related cases. In 13 cases, cause of death was unknown.

Autopsy findings in 47 cases revealed frequent **pulmonary edema, congestion, emphysema, and pleural petechiae** (83%). Additional nonspecific findings included cerebral edema, polyvisceral congestion, and airway aspirates. Histology (31 cases) showed pulmonary edema, hemorrhages, capillary blebs, and occasional foreign bodies. Cardiac microscopic changes were limited to fibrosis and contraction band necrosis; cerebral hypoxic lesions were rare. **Immunohistochemistry** (IHC) **on myocardial tissue** (11 cases) demonstrated **positive acute ischemic markers fibrinogen and fibronectin, with moderate decreases in desmin, myoglobin, and troponin C expression**.

3 CASE SERIES

The case series includes **8 individuals who died due to fatal butane intoxication**, with ages ranging from 18 to 52 years and diverse death circumstances. Among them, **4 were inmates in custody. 3 deaths were classified as suicides and 3 as accidental during recreational use of butane**. Autopsies were conducted in all cases, revealing universal findings of **multivisceral congestion, pulmonary and cerebral edema**, and in 3 cases, **subpleural and subepicardial petechiae.**

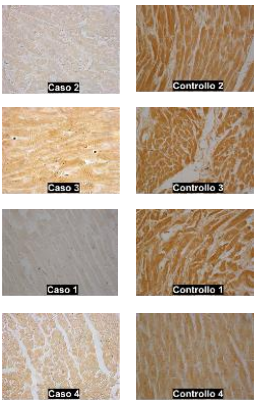


Figure 1: IHC results using cardiac markers. From top to bottom: Connexin-43, Myoglobin, Troponin T, and Troponin I.

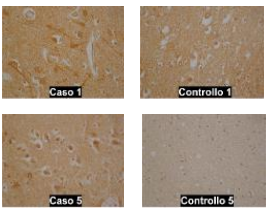


Figure 2: IHC results using cardiac markers. From top to bottom: MAP2 and Calbindin.

4 IMMUNOISTOCHEMISTRY

Myocardial (right ventricle, anterior wall) and brain tissue samples from all cases underwent immunohistochemical analysis. **Heart sections** were incubated with antibodies against **Connexin 43, Myoglobin, Troponin T, and Troponin I** (Fig. 1); **brain sections with antibodies against MAP2 and Calbindin** (Fig. 2) **to detect hypoxic damage**. Detection used the avidin-biotin-peroxide method. Sections were then stained with Mayer's hematoxylin and examined microscopically. Negative controls underwent the same protocol. **Sixteen age- and gender-matched controls were included**: 8 died from head trauma without cardiac involvement, and 8 from thoracic trauma without cerebral involvement. Staining intensity for each marker was assessed using a semi-quantitative scoring system as follows: 0 : minimal reaction; 1: isolated reaction 2: focal reaction; 3: diffuse reaction; 4: a markedly diffuse reaction.

The findings of the semiquantitative examination of each case-control's immunohistochemistry staining are shown in **Fig. 3**.

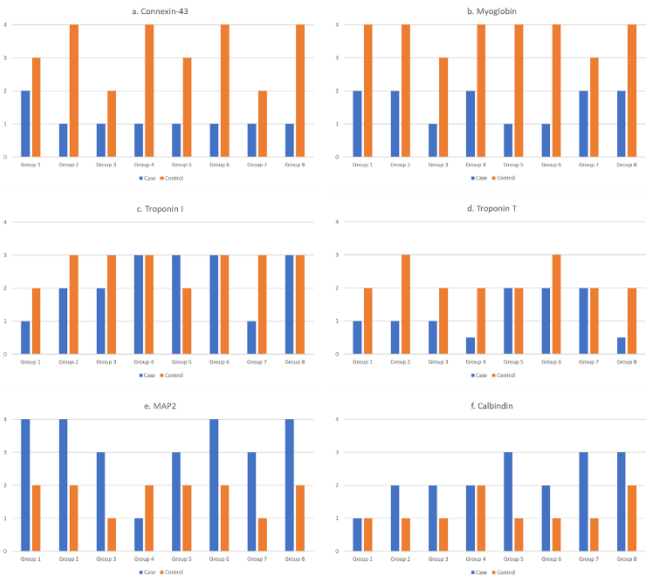


Figure 3: semiquantitative IHC findings.

5 RESULTS AND CONCLUSIONS

Among all markers, **connexin 43 and myoglobin yielded the most definitive results, both showing significant depletion in all cases**, while antibody staining was strongly positive in controls. Between these two, myoglobin appeared slightly more sensitive, as connexin 43 exhibited weak staining in two control samples. **Troponin I demonstrated widespread reactivity in nearly all controls**, but also in over half of the cases, which complicates its interpretative value in this context. **Troponin T showed somewhat greater specificity**, with focal expression observed in six controls and three cases, but a loss of staining in several other cases (three isolated and two minimal reactions).

Regarding brain markers, expression was generally higher in cases compared to controls. **MAP2**, predominantly neuronal, **showed diffuse or markedly diffuse expression in nearly all cases** (except case 4), whereas controls exhibited predominantly focal or isolated reactivity. **Calbindin**, in contrast, was mainly expressed in glial cells and neuronal bundles (axons and dendrites). Its pattern mirrored that of MAP2, with reduced antigen expression in controls and diffuse or focal staining in cases, although its intensity was lower than that of MAP2.

This study employs conventional diagnostic methods—including autopsy, toxicology, and routine histological staining—but primarily emphasizes the value of immunohistochemical techniques in forensic practice. These methods provide clearer insights into the pathophysiological mechanisms underlying butane intoxication fatalities. Notably, this is the first study to identify markers of hypoxic brain injury following butane exposure. Further research is needed, with the goal of comparing these findings with national and international case series to expand sample sizes and better elucidate the roles of brain and cardiac markers in such cases.

FORENSIC IDENTIFICATION AND POST-MORTEM FINDINGS IN A REPATRIATED SERVICEMAN

Marta Garazdiuk, Viktor Bachinskyi

Forensic Medicine and Medical Law Department, Bukovinian State Medical University of Ministry of Health of Ukraine

m.garazdiuk@gmail.com

Background: the body of an unknown male was received for examination as part of a body repatriation process. The deceased was subsequently identified as citizen M.M.T. (b. 1997), a serviceman reported missing in action on 30.10.2024 in Donetsk Region.

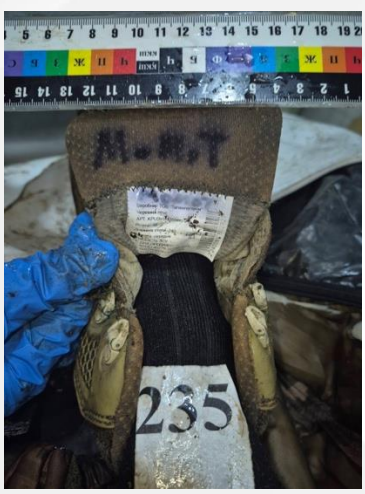
Methods: a comprehensive post-mortem examination was performed, including external and internal invistigation, histopathological, toxicological ones. Biological samples (bone fragment, tooth) were collected for DNA identification, and fingerprints were taken for dactyloscopic examination.

Results: Identification: positive identification was established based on anthropological findings, personal effects like secondary markers (uniform with "ZSU" insignia, boot markings "M.M.T."), and correlating circumstantial evidence from official military records (Ref. №xxxx, 30.10.2024).

Cause of Death: death was caused by an explosive blast, resulting in severe craniocerebral trauma and penetrating wounds.

Findings: examination revealed severe traumatic injuries, including:

Multiple penetrating wounds with tissue loss defects on the frontal, parietal, and occipital regions of the skull, a penetrating wound on the anterior surface of the left thigh, comminuted, multi-fragmentary perforating fractures of the frontal and both parietal bones, a perforating fracture of the occipital bone.



Ancillary tests: histopathology confirmed focal hemorrhages in skin and muscle tissue from a wound. Toxicology was negative for ethanol. Serological testing identified blood group antigen A.

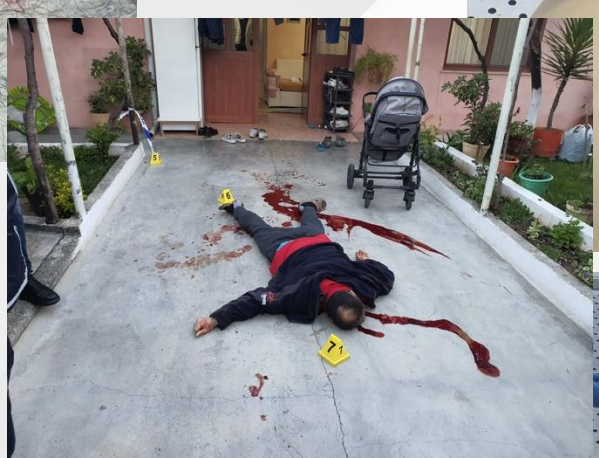
Discussion Conclusions: the nature and mechanism of the injuries are consistent with the effects of a high-energy explosive blast. These injuries were severe, life-threatening, and the direct cause of death, estimated to have occurred on 30.10.2024. This case highlights the critical role of forensic medicine in the identification of fallen military personnel and the repatriation process.

BEYOND A SINGLE SHOT: A CASE REPORT OF AN ATYPICAL CASE OF A DUAL ENTRANCE GUNSHOT WOUND SUICIDE, FOLLOWING HOMICIDE

Elton Serani[1], Erindo Alla[1], Zija Ismaili[1], Bledar Xhemali[1]
[1] *Institute of Forensic Medicine, Tirane, Albania*

Background: We report the case of a 43-year-old male found deceased in the front yard of his residence. Initial findings included two apparent contact gunshot entrance wounds one to the left chest and one beneath the chin, without a firearm present at the scene. Inside the house, a second victim, a 37-year-old female, was discovered deceased on a bed with multiple gunshot wounds, and an unharmed infant lying beside her. The firearm was later found close to the male victim, hidden by his father, who suffers from dementia and was initially unable to recall the location of the weapon.

Methods: The autopsy of male victim revealed a full-contact gunshot wound to the chest with associated thoracic organ injuries, and a partial-contact gunshot wound beneath the chin, resulting in skull base fractures and brain injury. Autopsy of female victim revealed multiple perforating and re-entry gunshot wounds consistent with defensive posturing



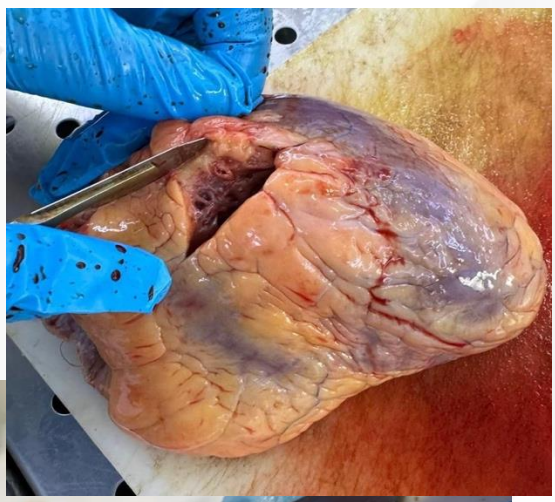
Discussion/Conclusions: This case highlights that not all firearm-related suicides are limited to a single gunshot wound. While the majority of self-inflicted gunshot suicides involve one fatal shot, particularly to the head or chest, exceptions do occur and may initially raise suspicion of homicide.

SUDDEEN DEATHS AT YOUNG AGES IN PERSONS WITH PREVIOUSLY UNDIAGNOSED CONGENITAL DISEASES AND IN DRUG USERS: A CASE REPORT

Zija Ismaili[1], Ilir Decolli[1], Zana Bruci[1], Blerim Peli[1], Bledar Xhemali[1]
Institute of Forensic Medicine, Tirana, Albania

Case Report: A male case of about 40 years old drinking a coffee in the early hours of the morning dies suddenly in a bar. **Methods:** The body was subjected to forensic autopsy, concentric hypertrophy of the left ventricle is observed, the consistency of the heart muscle is increased. Both coronary arteries with severe narrowed lumen in the section and the presence of atheromatous plaques, in a section of the left coronary artery its immersion in the heart muscle (myocardial) “Bridge” was observed.

Results: Histological examination revealed: Coronary artery with atheromatous plaques blocking over 70% of the lumen, vascular stasis, interstitial edema, waviness and defragmentation, presence of fibrotic tissue, another coronary artery with 50% lumen blockage, a coronary artery immersed in the myocardium over 4 mm, with ischemic zones around it, a coronary artery with over 90% blockage of its lumen, with calcified plaques inside, another coronary artery with 85% blockage, with the presence of free erythrocytes inside the plaque as well as inflammatory cells, a coronary artery with over 90% blockage with ruptured plaques. Blood was analyzed in the tox laboratory for alcohol, narcotic drugs and other substances. All results were negative. Acute myocardial infarction in the setting of generalized coronary sclerosis and "Bridge".



Discussion : The cause of death was acute myocardial infarction (insufficient oxygen supply to the heart muscle) due to narrowing of the blood vessels that feed it and the infiltration of the heart muscle by the left coronary artery

SUSPECTED HELIUM ASPHYXIATION: THREE CASE REPORTS

Athina Tousia [1], Ioannis Ketsekioulafis [1], Konstantinos Katsos [1], Emmanouil I Sakelliadis [1], Chara Spiliopoulou [1]

[1] Department of Forensic Medicine and Toxicology, National and Kapodistrian University of Athens School of Medicine, Athens, GRC.

Introduction:
Helium is an inert, odorless, tasteless, and colorless gas widely used in the industrial sector. When present in high concentrations in a confined space, such as inside a bag, it can cause rapid hypoxia arrest by displacing oxygen, resulting in CNS depression and rapid fatality. However, death can also occur due to trauma from pressure (barotrauma) on the airway, resulting in rapid damage and collapse of the alveoli, causing massive pulmonary hemorrhage [1]. Since helium is easily accessible and relatively cheap, it is increasingly used as a method of suicide, especially in Asia [2]. Detecting helium in biological samples or air samples is challenging and can require specialized methodology, which explains why the documentation of helium suicide cases is rather uncommon [3-4]. We present three cases of asphyxiation suicides with the involvement of helium.

Methods:
PMEs were conducted in all cases, including sampling for toxicological examination. Scene investigation findings, such as photographic documentation, were incorporated into each case evaluation.

Results:
All three cases involved the use of helium in a closed environment (by means of a plastic bag tightly secured over the head). All decedents were adults. Toxicological analysis of biological samples -including blood (when available), urine, vitreous humor (when available), lung tissue, and air from the trachea and stomach, collected in gastight containers as soon as possible- was performed and yielded negative results for toxic substances, including CNS-acting agents. Helium could not be detected, as the laboratory infrastructure does not support such measurements, which is consistent with international experience. No injuries or other underlying pathologies were detected. Petechial hemorrhages were detected in one of the cases, while the other two were found in a state of putrefaction. Scene investigation findings played a crucial role in determining the mechanism of death, although no toxicological evidence about helium poisoning was found.

Discussion:
Helium asphyxiation is a difficult diagnostic entity since it requires specialized methodology, not included in the standard toxicological assessments. It has been reported in the literature that the detection of helium has been made possible, using methods such as headspace gas chromatography with thermal conductivity detection (HS-GC/TCD), as well as gas chromatography–mass spectrometry (GC–MS) after calibration with standard gas mixtures, performed on tissue samples or gaseous specimens collected in gastight containers as soon as possible after death [3-4]. Commonly, cases show no apparent macroscopical or microscopical findings of pathological interest [5]. The scene of death is therefore crucial. The presence of cylinders, bags, and tubing should instantaneously raise the suspicion of the forensic pathologist.

Conclusions:
Helium asphyxiation is a rather rare method of suicide. Its recognition requires increased suspicion, thus rendering meticulous death scene investigation, documentation, and awareness of characteristic setups (e.g., plastic bags, tanks, tubing) essential. Forensic professionals should be aware of this rare but emerging suicide method and make necessary adjustments to improve diagnostic accuracy in suspected inert gas deaths.

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Asphyxiation, Suicide, Helium, Toxicology, Forensic Autopsy