

A FORENSIC PERSPECTIVE ON THE FATAL VIOLENCE AGAINST WOMEN

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Introduction

- At the worldwide scale statistics show increasing numbers of aggressions against women, including fatal events;
- In Romania, mainly in rural area, women are still used to domestic violence, and they customarily see aggressive male behaviour as “natural”, reducing their perception of violence;
- Consequently, these violent incidents can escalate to fatal aggressions;
- The objective of our study was to provide autopsy-based and judicial-proven information over a 5-year period

Methods

- Transversal observational study were related to:
 - Post-mortem forensic pathology reports, recorded in the Legal Medicine Service of Galati,
 - Data were provided by the emergency services of the Emergency Hospital of Galati
 - Forensic examination reports of the living victims (Legal Medicine Service of Galati)
- Study variables were: age, area of living, nature of injuries, mode of attack, perpetrator, number of days of medical care

Results

Between 2018 – 2022 were reported:

- 25 crime against women
- 37 attempted murders against women

Figure 1. Nature of injury distribution

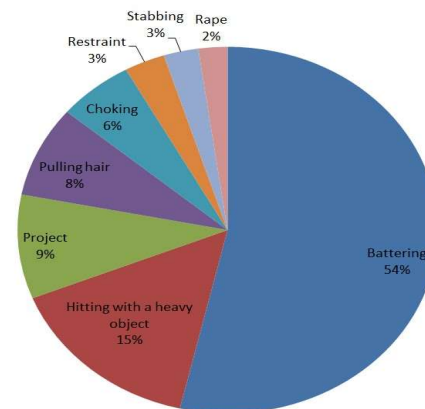
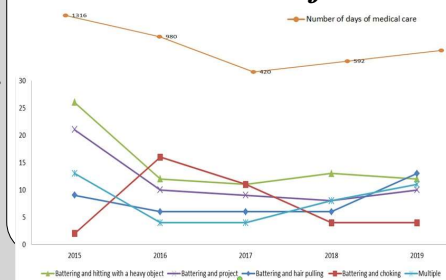


Figure 2. Correlation between the days of medical care and nature of attack



Conclusions

- Typical Romanian victim are: elderly woman, in poor material condition aggressed by a family member or a husband/partner, with a history of previous domestic violence.
- The crimes were not premeditated murders, but committed in an altered state of consciousness due to the alcohol abuse or psychotic disorders.
- The aggressor used brute force and handy objects
- Low increase in the number of cases during pandemic was notice

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INJURY PATTERN IN INTIMATE PARTNER SEXUAL VIOLENCE



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Introduction

According to WHO (World Health Organization), Intimate partner violence is “any behavior within an intimate relationship that causes physical, sexual or psychological harm, including acts of physical aggression, sexual coercion, psychological abuse, and controlling behavior.” In the context of intimate partner violence, sexual abuse refers to physically forcing a partner to have sexual intercourse who did not want it, forcing a partner to do something that they found degrading or humiliating, harming them during sex, or causing them to have sex without protection.

Methods

A retrospective study of all medico-legal reports of victims of intimate partner violence was conducted for ten years at the Clinic of Forensic Medicine and Deontology in Sofia. Special attention was pointed toward women reporting sexual violence by a former or current partner.

Results

For the studied period, 2623 forensic medical examinations were cases of victims of intimate partner violence. Out of them, only 24 were such with information concerning the perpetration of sexual violence.

The following information was obtained – age of the victim; marital status (ex or current spouse, cohabitant or intimate partner); type of injuries and their localization over the victim’s body and time of the assault.

Conclusions

Intimate partner sexual violence is an underreported crime, limiting the literature specific to this type of violence. Women sexually assaulted by partners are less likely to seek medical care or desire preventive contraception and protection against sexually transmitted diseases.

Our research supports past findings that intimate partner sexual violence co-occurs with intimate partner violence. The results provide original and substantial material to better understand sexual violence between intimate partners. Forensic units worldwide have a central role in collecting and publishing such cases to fill the missing gap in the literature.

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Introduction

By Order no. 1 of August 22, 2022 issued by the Financial Supervisory Authority (ASF) together with the Ministry of Health approved the trauma scoring in case of injury to the bodily integrity or health of persons following vehicle accidents .

The insurance medicine evaluation report is used therefore to obtain amicable compensation from insurance companies in Romania through

Methods

The trauma score is a detailed technical analysis of the sufferings of the victim of the road accident and is materialized through the document called the trauma score report, a document that is drawn up by an expert evaluator and is based on a evaluation chart attached to the issued order.

Results

Unlike the days of medical care that are granted depending on the most serious traumatic injury suffered by the victim, the evaluation report for insurance medicine sums up the trauma injuries and gives the corresponding score for each individual injury. Values of all injuries sums up to a grand total that represents the overall trauma score.

Conclusions

The trauma points do not influence the criminal aspects of the file regarding the traffic accident because they only concern the civil aspect, of the compensations that can be obtained.

Days of medical care in the medico-legal certificate/expertise report have a decisive role in establishing the criminal nature of the act.

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VERTEBRA FRACTURES AS A ROAD TRAFFIC INJURY

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Introduction

Road traffic injuries caused by motor vehicle crashes are one of the major causes of vertebral fractures. Vertebral fractures and related conditions also come to the fore as a cause of serious morbidity and mortality after road traffic injuries. In this presentation, it is aimed to retrospectively review the vertebral fracture cases evaluated in a tertiary forensic medicine clinic.

Methods

Age, gender, information about the event and injury were compiled from patient files and reports of individuals with vertebral fractures who applied to the Forensic Medicine Clinic of our university between 01/01/2022 and 31/12/2022. Simple frequency analysis of the data, Chi-square test for categorical data and Kruskal-Wallis test for numerical data were performed assuming $p=0.05$, and the results were discussed in the light of literature findings.

Results

75 patients with 986 vertebral fractures who applied to our center between 01/01/2022-31/12/2022 were selected, their average age was 41.65 (SD = 16.11 years). It was determined that 73 of them (97.3%) applied due to injuries resulting from a traffic accident and 53 of them (70.7%) were men. All but 2 cases applied for the determination of the disability rate due to compensation claims. When vertebral fractures were examined, the most common localization was the lumbar region ($n = 40, 53.33\%$).

While the number of cases with fractures in the vertebral body was 51 (68%), process fractures were detected in 41 (54.67%) cases. A significant difference was found between the disability rates of cases with high compression in the corpus and cases with low compression.

Conclusions

Road traffic injuries still seem to be a major cause of vertebral fractures and can cause serious morbidity in victims. The severity of corpus compression can be indicative for morbidities that cause disability in people.

Familicide-double suicide: case presentation

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Introduction

Homicide-suicide and dyadic death –incident where a homicide is committed, followed by the suicide of the perpetrator
Familicide-suicide can be defined as the killing of one’s current or former spouse or one intimate partner plus or minus one or more children followed immediately or very soon by suicide by the homicidal offender. Hanging as a method of suicide in familicide-suicide is infrequently reported in literature, and doublesuicide(hanging together with burns) is not reported in literature.

Case presentation

a 59-year-old man:
Stabbing his wife and after:
- throw gasoline over his own body
- put a noose around his neck
- set himself on fire and then hanged himself

Figure 1



Figure 2



Autopsy findings

External signs:

- hanging groove
 - burns lesions (degree 1,2)
 - bite mark (from his wife)
- ### Internal signs:
- hemorrhagic infiltration (cervical tissues)
 - red-pink coloration of the blood and muscles
 - asphyxia signs

Figure 3



Conclusions

Particularity of the case: familicide-double suicide (hanging together with burns)
Suicide is the act of intentionally causing one’s own death. Mental, physical disorders and substance abuse are risk factors.

Actually, suicide is the 10th leading cause of death worldwide.

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CASE OF ROAD TRAFFIC ACCIDENT AND DEATH DUE TO MEDICAL MALPRACTICE

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Introduction

Indisputably, road traffic accidents are one of the main reasons for death worldwide because of the severe traumatic injuries often caused, especially when driving at great speed. Frequently, there is a combined body trauma that involves more than one organ or system. That is why qualitative and well-timed medical assistance is fundamentally important for favorable outcomes. This case is a convenient example of medical malpractice due to wrongful interpretations and subsequent improper behaviors by the medical staff, following the death of the patient.

Methods

A 16-year-old woman is involved in a car accident and rushed into the emergency room. Immediate diagnostic and treatment measures were undertaken – venous sources were secured, blood and urine samples were taken for laboratory tests, primary surgical treatment of the wounds was performed, as well as imaging studies – computed tomography and radiography. The laboratory tests indicate acute blood loss (low hemoglobin, erythrocyte, and hematocrit values) but the CT interpretation does not demonstrate any hemorrhages in the abdomen cavity. A transfusion of erythrocyte mass and plasma substitute products was undertaken. Due to hemodynamic changes, the patient was intubated, and cardio-pulmonary resuscitation was performed, with no effect, and a fatal outcome was registered.

Results

An autopsy was performed, and the following severe traumatic injuries were determined: contusion and rupture of the spleen, partial rupture of the mesenterium of the colon, fracture of the right pubis, fracture of the sacrum with rupture of the peritoneum, rupture of the left common iliac vein and left external iliac vein with massive hemorrhage in the abdomen cavity. .

Conclusions

With an autopsy performed, the immediate cause of death was determined as a traumatic and hemorrhagic shock as a complication of severe body trauma including head, chest, abdomen, pelvis, and upper and lower limbs. The CT was wrongfully interpreted by the radiologist and the massive hemorrhage was not diagnosed. No measures were taken to detect the source of bleeding as the laboratory tests indicated blood loss. No explorative laparotomy was undertaken.

Every combined body trauma refers to a life-threatening condition that requires emergency medical attention until it is established whether internal organs and blood vessels are affected. It is a significant mistake to misdiagnose acute bleeding and rupture of organs or blood vessels and definitely leads to unfavorable outcomes.

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Evaluation of Different Brands and Different Colours of Nail Polishes in Terms of Forensic Sciences

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Introduction

In cases of sexual assault, murder, or other violence, nail polish/nail polish transfers evidence that can be commonly found at the crime scene. Chemical analysis of nail polish-covered nail fragments or other nail polish-contaminated items can offer useful information to help reconstruct a crime. The components of nail polishes vary according to their brands, colours, and usage purposes. There is no much studies about this subject in Turkey.



Methods

3 different brands and 3 different colors of samples
0.001 g of samples were dissolved in 2 ml of acetonitrile and acetone, separately. For the TLC procedure; Ethyl acetate:Ethanol: Water, (60:20:20), acetonitrile: methanol (5:1) and pure acetone were used, can be seen in Figure 1.

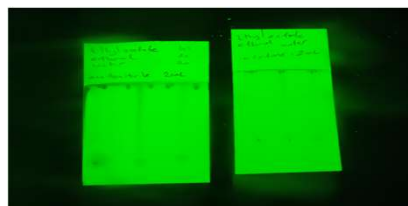
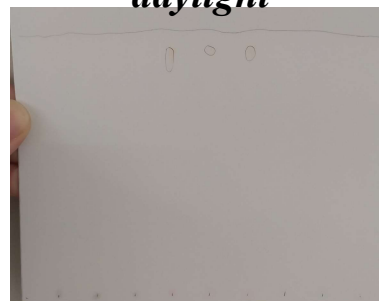


Figure 1: Samples dissolved in Acetonitrile and acetone

Results

All experiments has no significant variation was observed among the same colors of different manufacturer As a result of the analysis, it is possible to separate the nail polishes especially red ones. In Figure 2, red nail polishes have their spots and are visible in daylight.

Figure 2: Red nail polishes TLC result in daylight



Conclusions

TLC analysis of nail polishes is shown to be a good screening technique for discriminating samples if there are more confirmatory studies. The enhance the TLC method for this purpose, more products should be studied.

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THE IMPORTANCE OF FORENSIC TEXTILE EVIDENCE IN FORENSIC SCIENCE

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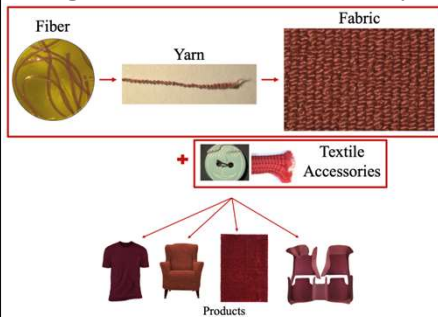
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Introduction

Starting with fibers to the final product in the textile hierarchy, various textile materials can be encountered at the crime scene and these evidence can help solve forensic cases.

Figure 1. Textile Hierarchy



Methods

Various forensic case scenarios involving forensic textile evidence have been created with the **Planner 5D** design application.

Results

Figure 2. Murder Case

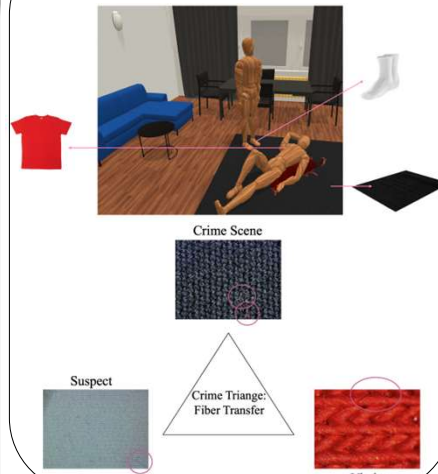


Figure 3. Stabbing Case

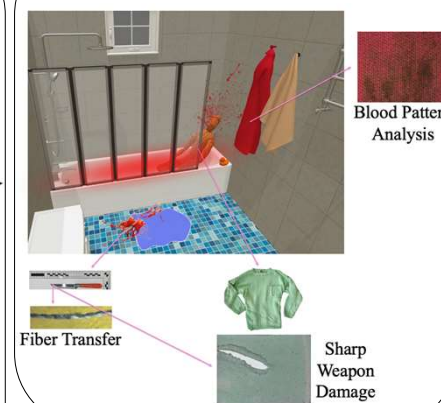


Figure 4. Shooting Case



Figure 5. Sexual Assault Case

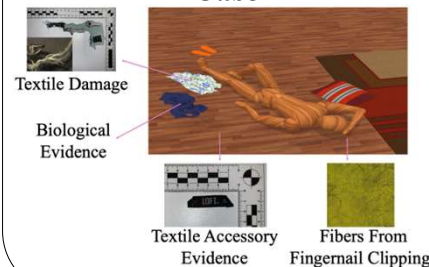
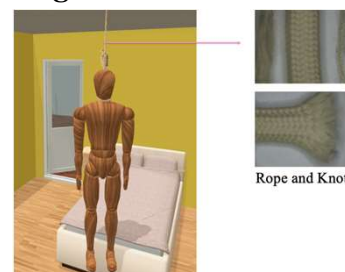


Figure 6. Suicide Case



Conclusions

Understanding the evidential value of forensic textile evidence will help solving forensic cases such as murder, injury, sexual assault, theft, looting, substance abuse, hit-and-run, suicide and kidnapping. They are also used in incidents such as burials, mass deaths, and in disaster victim identification studies.

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FTIR SPECTROSCOPY APPLICATIONS in FORENSIC SCIENCES



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Introduction

FTIR (Fourier Transform Infrared Spectroscopy) is a vibrational spectroscopy and is a technique in which the absorption and emission infrared spectrum of matter is obtained. FTIR spectroscopy can simultaneously collect broad spectral data at high resolution. It characterizes the sample in a non-invasive way and is used to identify various evidence such as body fluids, paints or drugs obtained in forensic cases by spectral modelling [1,2].

In this study, it is aimed to reveal the application areas of FTIR spectroscopy in forensic sciences by showing some studies about identification and classification of various evidence [3-5].



Figure 1. FTIR spectroscopy used at Uskudar University Institute of Addiction and Forensic Sciences laboratory

Methods

Studies that characterize body fluids (blood, semen, saliva, urine) and various evidence obtained from the crime scene (condom materials) with FTIR spectroscopy conducted in Turkey were brought together, and the characteristic functional groups in identifying this evidence with FTIR spectroscopy and their analysis was evaluated (Fig. 1).

Study	Material	Year
Identification of various body fluids obtained from the scene with FTIR and their time-dependent changes	Blood, seminal fluid, saliva and semen samples	2021
Condoms in Turkey for the Clarification of Sexual Assault Cases Determination of Lubricant Profiles and Creation of a Database	Condoms for lubricant analysis	2022
Identification of Mixed Biological Samples Obtained After Sexual Assault by Using FTIR Spectroscopy	Semen and vaginal fluid samples	2022

Figure 1. Some of studies conducted in Uskudar University Institute of Addiction and Forensic Sciences by using FTIR

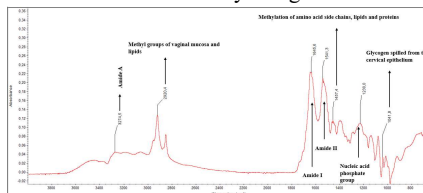


Figure 2. Spectrum obtained for vaginal fluid stain on white cotton fabric

Results

As a result of the studies compiled in this study, it has been determined that each of the biological fluids such as urine, blood, semen, and saliva can be identified and separated from each other.

In addition, characteristic regions that will enable the separation of make-up materials belonging to various brands have been determined and it has been observed that their classification has been achieved (Fig. 2-4).

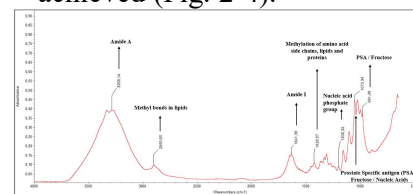


Figure 3. Spectrum of seminal fluid obtained by FTIR

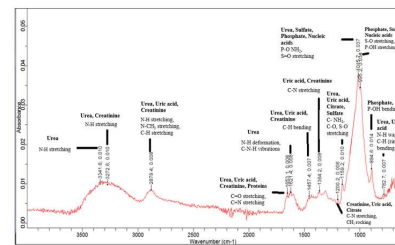


Figure 4. IR Spectrum of urine sample

Conclusions

According to the results obtained in the studies, it is possible to identify biological fluids using FTIR spectroscopy from materials or swab samples obtained from the crime scene.

In this way, it is possible to detect biological fluids proving sexual assault against men and women in clothes obtained after incidents such as sexual assault, without spending any consumables and without damaging the sample, and it is concluded that it is suitable for forensic analysis.

All in all, FTIR spectroscopy is a useful tool for identification and classification studies in forensic science.

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