SEVERE ABDOMINAL TRAUMA FOLLOWING FATAL SKIING ACCIDENT – CASE REPORT

Balkan Academy of Forensic Sciences

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Introduction

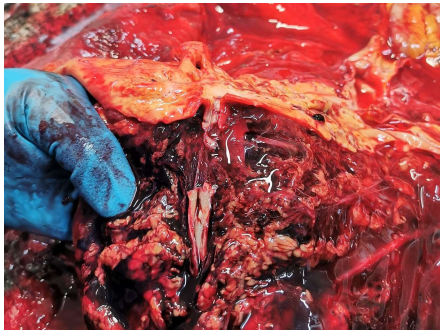
Skiing and snowboarding are some of the most popular winter sports, which gain more and more popularity worldwide every year. This results in increased reported traumatic injuries associated with falls, collisions, and accidents in the skiing areas.

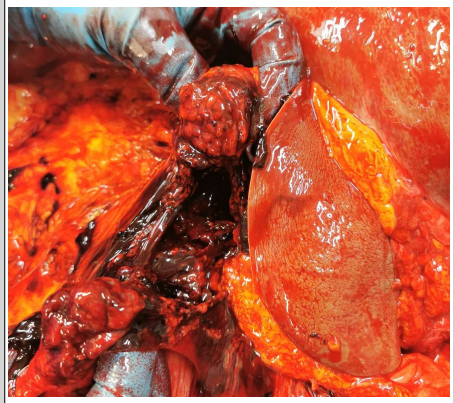
Case Presentation

A 75-year-old man died in a skiing accident following a collision with a tree. The deceased's body was sent for an autopsy, which was performed the next day at the Department of Forensic Medicine and Deontology in Sofia. The external examination of the body did not show any significant findings.

The internal examination revealed the following: bilateral rib fractures, lung contusion, and severe abdominal trauma consisting of tearing of the left renal artery, complete separation of the pancreas, and contusion with stratifying of the stomach mucosa.

A massive amount of blood was found in the abdominal cavity and the retroperitoneal space. The toxicology result was negative for alcohol and drugs.





Conclusions

In most of the traumatic fatalities, head injury was found to be the primary cause of death. The second most commonly reported cause of death was severe thoracic injury. We present an extremely rare case in the forensic medical practice of a tree-collision fatality with a severe abdominal injury, which was concluded to be the primary cause of death.

Although death is a rare event in such winter sports, it is crucial to raise awareness for the possible fatal outcomes, which could provoke a change in snow riders' behavior and lead to a reduction in the number of accidents. The study of the type of sustained injury and their localization is important for medical practitioners. Knowing what to expect could help them make different strategies for fast and adequate medical treatment when needed.

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CASE OF PENETRATING STAB WOUND OF THE CHEST AND DEATH DUE TO PULMONARY THROMBOEMBOLISM

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Introduction

From a medico-legal point of view, sharp-force injuries are prevalent in our practice in cases of suicides or homicides. Our task is to establish the type of injury and what tissues, organs, or vessels are affected; to define the main reason for death; to identify the weapon, to determine the qualification of injury, etc. Stab wounds of the chest may lead to life-threatening conditions, respectively to death. The following case presents a penetrating stab wound of the chest which is surgically treated but the patient dies from complications.

Methods

A 31-year-old man is attacked by an unfamiliar group of men. He was stabbed in the right chest with a knife with a blade length of 28 cm and rushed into the emergency room. Immediate diagnostic and treatment measures were undertaken by the medical staff. Imaging studies – computed tomography and radiography were performed, and a penetrating stab wound of the right chest, laceration of the lung, and hemopneumothorax were established. Thoracocentesis, thoracotomy, and laparotomy were undertaken. The lung was found collapsed and lacerated. A rupture of the right internal thoracic artery, rapture of the diaphragm, liver laceration, and hemoperitoneum were established. The patient was sent to the intensive care unit for subsequent active treatment. After twelve days his condition improved and stabilized. Two more days later, a severe sudden shortness of breath and cyanosis on the face occurred and the patient died..

Results

An autopsy was performed, and it was established that the cause of death was cardiac arrest. A documentary expertise was appointed to our crew to determine if there is a connection between the stab wound and the cause of death. We performed a histopathological examination on tissues of internal organs that were taken during the autopsy but were not examined yet. We made a conclusion that the cause of death was pulmonary thromboembolism.

Conclusions

With an autopsy and following histopathological examination performed, the immediate cause of death was determined as a cardiovascular and respiratory failure as a result of pulmonary thromboembolism. The liver injury caused a release of blood coagulation factors with an increase in thrombus formation and passage of thrombotic masses into the pulmonary vessels.

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INFANT PNEUMONITIS DUE TO TRACHEOSOPHAGEAL FISTULA: TWO AUTOPSY CASE STUDIES.

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Introduction

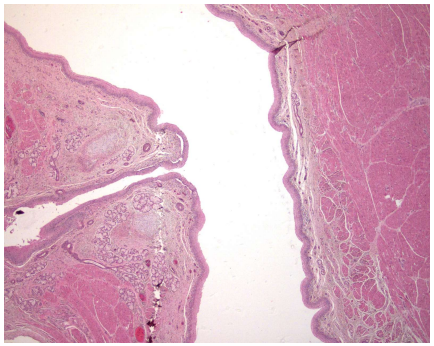
Although esophageal atresia is uncommon, it represents the most common upper GI birth defect. EA/TEF can be anatomically classified into five subtypes using the Gross classification. In type E/H the esophageal continuity is not interrupted, therefore the onset of symptoms is delayed, and the diagnosis is often missed.

Aspiration pneumonitis represents a chemical injury due to the inhalation of sterile gastric contents, while aspiration pneumonia has an infectious course due to the inhalation of oropharyngeal secretions.

Methods

Report of two cases and review of relevant literature. We searched PubMed for English-language articles using the key words "aspiration pneumonitis", "aspiration pneumonia", "tracheoesophageal fistula", "esophageal atresia infants".

Figure



H&E, x25, Tracheosophageal fistula

Results

We present two infant cases of aspiration pneumonitis with TEF involvement. The macroscopic and microscopic findings in both cases revealed a fistula between the esophagus and the trachea suggesting an H type tracheoesophageal fistula, while the histopathology findings of the lungs suggested the aspiration pneumonitis diagnosis. Also, histopathological examination revealed findings compatible with pulmonary hypertension in one of the cases.

Conclusions

Aspiration pneumonitis is a rare clinical condition but very common among infants with TEF. Early endoscopic and radiographic diagnosis along with surgical intervention and comorbidity management, may improve the outcome by reducing the possibility of complications such as aspiration pneumonitis.

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ACUTE ESOPHAGEAL NECROSIS (BLACK ESOPHAGUS): AN AUTOPSY CASE STUDY

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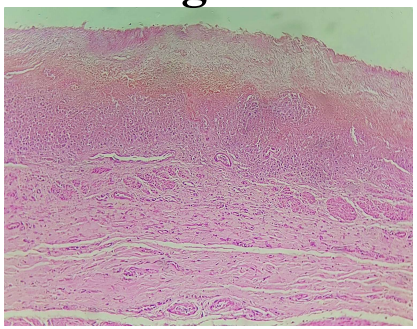
Introduction

AEN is a rare entity, appearing more often in men (mean age being 67 years at the time of the diagnosis), usually affecting patients with poor nutritional status and multiple comorbidities. While AEN's etiology is not yet specified, ischemia and gastric outlet obstruction often coexist. Distal esophagus involvement is almost always present. Perforation, hemorrhage, or esophageal stenosis may be present in AEN. Perforation, hemorrhage, or esophageal stenosis may be present in some patients.

Methods

Case report and review of the literature. We searched PubMed for English-language articles using the key words "acute esophageal necrosis," "necrotizing esophagitis", and "black esophagus".

Figure



H&E x50, Oesophageal mucosal necrosis

Results

We present the case of a 78-year-old woman with a history of Parkinson's disease and depression disorder. PME revealed a blackened and thinned esophageal wall suggestive of necrosis of the distal esophagus while the esophageal lumen and the stomach were full of blood and blood clots. Histopathological examination confirmed the diagnosis of AEN confined to the mucosa, including infiltration by neutrophils lymphocytes, although in some areas the inflammation involved the submucosa and muscularis. Histopathological examination of the stomach and of the duodenum revealed erosive gastritis and duodenitis. Cause of death was hemorrhage of the upper peptic track.

Conclusions

AEN is a rare and often fatal entity. Its high mortality is directly linked to the significance of each case's comorbidities.

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Mind the Neck: Particular Patterns of Suicide in the Cervical Region

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Tirana, Albania

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First Case

The first case a 41-year old male was found dead lying in supine position in his bedroom, after the relatives broke the main door entrance of the house. He did not reply to phone calls, and left no message to the family.

Attempts to resuscitate him were useless, and he had an elastic band wrapped around the neck. The elastic thread was cut immediately into pieces, but when paramedics arrived at the scene, they could only witness the death and call the coroner. *(Fig. 1A and 1B)*

Second Case

The second case, a 53-year old male was found in the bathroom while bleeding deeply from the neck. The wife sent him with the help of neighbors to the local hospital where he was declared dead upon arrival.

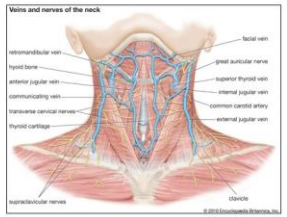
There was a history of ethanol abuse, but as in all other cases, relatives tend to downplay the importance of abuse and addiction.

The autopsy documented a deep, lacerating wound starting from the right supraclavicular area and going deep in the median cervical structures. Several hesitating marks were visible below and above the central, lethal wound. *(Fig. 2A and 2B)*

The Neck Predilection

- Hanging, cut through injuries to the neck and self-strangulation are suicidal methods of high brutality, prevalent among **Male Victims**

- Literature is particularly rich with unusual and atypical cases, since victims use different methods of suicide that have all slight differences in between



It is as well terminological and maybe methodological issue to define 'atypical' cases and to separate these from 'typical' ones.

Fig. 1A: (Left Inset): Elastic band wrapped several times around the neck.

Fig. 1B: (Right Inset): the pieces of elastic band as collected in the crime scene.

Fig. 2A: (Left Inset): Deep lacerating wound in the anterior neck region, with several superficial, hesitating marks.

Fig. 2B: (Right Inset): The kitchen knife used for inflicting of the wounds.

Overview

- There is an impressive diversity on suicidal methods, and reports of rare cases are numerous. The authors present here two cases both male with self-inflicted lethal wound to the neck.
- The cases presented here are unusual *"atypical"* due to some factors;

➢The first one used an elastic thread that served as a tourniquet when wrapped around the neck.

➢The second one self- inflicted a deep wound cutting through the right carotid artery, jugular vein and paratracheal structures, with several hesitating marks being visible as well.

Referring To

➢The common streak connecting these cases were the unexpected event, the fact that both were males of adult ages, neck injuries, and almost an irrelevant psychiatric history. Toxicology yielded no proof of any drug of abuse in both cases.

➢In our case, the victim cut the left carotid artery and jugular vein and the injury reached tracheal structures. Obviously, exsanguination and hemorrhagic shock caused the death, with no time left for any surgery or resuscitation measures.

➢There are cases when no hesitating marks or tentative cuts existed. The lack of these hesitating marks will obviously raise the doubts always existing of differentiating between a homicide and a suicide.

➢The first case, that used an elastic thread or band wrapped tight several times around the neck, is unusual, since we rarely encounter this type of material for suicidal purposes.

➢Victims generally use cables, strings or wires whose consistency is tight and inflexible.

➢Of pathogenetic importance might be the fact that elastic bands have the effect of a tourniquet, with an enhanced blocking role on the circulatory system.

➢ Venous compression will cause congestion and facial hyperemia, which were very much visible in our case.

➢Some authors suggest that strangulations through a tourniquet like mechanism are mostly homicidal; while ligature strangulations are common as a suicidal tool, even in specific settings such as in custody.

EXPOSURE TO INFLUENCING FACTORS OF THE WORK ENVIRONMENT AND THEIR IMPACT ON THE HEALTH OF FORENSIC PATHOLOGISTS IN EUROPEAN COUNTRIES

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Background

Forensic medicine (FM) is a unique multidisciplinary scientific field that combines knowledge and skills of the biomedical and legal profession. FM specialists provide investigators observations and facts according to the causality of injury or death as connected with criminal acts. The medico-legal autopsy has been considered as a basic method on clarifying occurrences found on dead body. Performing requires special knowledge, competence, and environmental demands which in return exposes FM specialists to substantial occupational risks, hazards, and sterns due to many hazardous sources and influencing factors. Important good practice prerequisites lie upon the quality-managed and secure-supported working environment which is the base for achieving cooperation that will result in irrefutable facts further provided to the investigators.

Aims

To investigate and describe the occurrences of factors in the working environment considered as influential due to their qualitative and quantitative impact on work and health sustainability of FM experts.

Table 2.

Health risks on the Liker scale

	1 Never N (%)	2 Don't remember N (%)	3 Once N (%)	4 Several times (<10) N (%)	5 Many times (>10) N (%)	Central tendency	
						Median	IQR
Sharp instrument injury	3 (1,9)	0 (0,0)	21 (13,2)	86 (54,1)	49 (30,8)	4	4-5
Bone fragment injury	39 (24,5)	4 (2,5)	43 (27,0)	55 (34,6)	18 (11,3)	3	2-4
Eye injury	110 (69,2)	7 (4,4)	16 (10,1)	26 (16,4)	0 (0,0)	1	1-3
Direct exposure to toxic material	55 (34,6)	5 (3,1)	40 (25,2)	50 (31,4)	9 (5,7)	3	1-4
Direct exposure to infectious material	17 (10,7)	1 (0,6)	1 (0,6)	38 (23,9)	102 (64,2)	5	4-5
Direct exposure to electricity	88 (55,3)	15 (9,4)	36 (22,6)	6 (3,8)	14 (8,8)	1	1-3
Fall or slipping	65 (40,9)	18 (11,3)	37 (23,3)	33 (20,8)	6 (3,8)	2	1-3
Collision injury with working environment object	38 (23,9)	44 (27,7)	2 (1,3)	67 (42,1)	8 (5,0)	2	2-4
Heavy lifting or carrying injury	67 (42,1)	37 (23,3)	18 (11,3)	37 (23,3)	0 (0,0)	2	1-3

Table 2.

Work factors on the Liker scale

	1 None N (%)	2 Not enough N (%)	3 Somewhat N (%)	4 Significantly N (%)	5 Completely N (%)	Central tendency	
						Median	IQR
Sressful nature of the work	2 (1,3)	17 (10,7)	71 (44,7)	67 (42,1)	2 (1,3)	3	3-4
Fieldwork	84 (52,8)	38 (23,9)	30 (18,9)	6 (3,8)	1 (0,6)	1	1-2
Administrative work	2 (1,3)	1 (0,6)	54 (34,0)	70 (44,0)	32 (20,1)	4	3-4
Exposure to injuries and infections	37 (23,3)	49 (30,8)	66 (41,5)	4 (2,5)	3 (1,9)	2	2-3
Exposure to criticism and conflicts	60 (37,7)	48 (30,2)	37 (23,3)	13 (8,2)	1 (0,6)	2	1-3
Tehnical conditions of the workspace	48 (30,2)	60 (37,7)	39 (24,5)	10 (6,3)	2 (1,3)	2	1-3
Equipment	81 (50,9)	26 (16,4)	43 (27,0)	8 (5,0)	1 (0,6)	1	1-3
Work organization	38 (23,9)	60 (37,7)	45 (28,3)	14 (8,8)	2 (1,3)	2	2-3

Methods

Group (N=159) of FM specialists employed in institutions accross the EU filled an anonymous questionnaire and assessed the status of general and specific factors of the working environment, conditions and modes of work, incidental circumstances during work, specific working conditions and crisis communication with the environment.

Results

Stress was the most influential factor in the working environment that greatly changed the quality of work and the sustainability of health. High presence of stinging and cutting injuries was noted (11.9% respondents had it more than ten times). Most of the respondents answered "to a large extent" or "completely" to the question of the stressful nature of the job comparing to respondents who answered the same question "no even" (OR=52.51, 95%CI 1.84-1.500.32, P=0.021).

Conclusions

High incidence of stress is an omnipresent factor in the work environment of FM specialists, which significantly reduces the quality of work and health sustainability, which cannot be prevented by usual methods and improvements in the working environment, so reduced weekly working hours and beneficial retirement remains as preventative measures of choice.

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ROAD TRAFFIC SAFETY IN CANADA FROM 2003-2017

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Background

The objective of this study was to analyze conditions relating to road traffic safety in Canada from 2003 to 2017.

Figure 1.

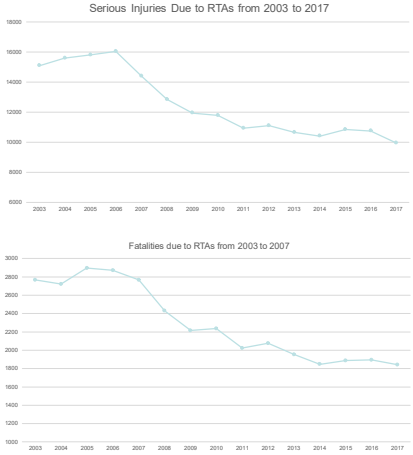
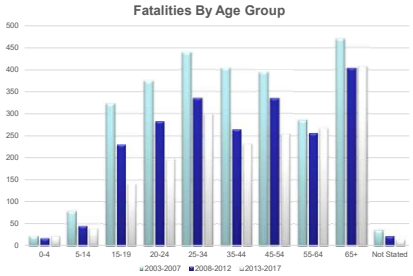


Figure 2.



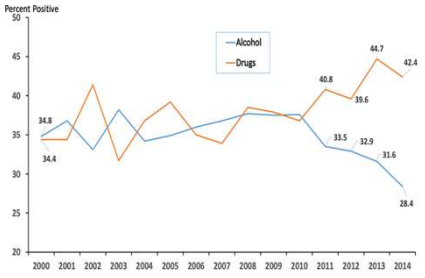
Methods

Data was collected by using the Canadian Motor Vehicle Traffic Collision Statistics reports, Canadian Centre on Substance Use and Addiction, and Canadian Council of Motor Transport Administrator's NORP reports. Research focused on three consecutive five-year periods (2003-2007, 2008-2012 and 2013-2017) in accordance with Canadian national road safety strategies. Statistics was performed using Kruskal-Wallis test to compare the difference among the three time-period clusters for the major RTA outcomes - fatal collisions, fatalities, injuries and serious injuries. Descriptive data (age, location and driving impairment) helped illustrate RTA demographics to aid in future study methodologies.

Results

During 2003 to 2007, the median number of fatalities was 2,768 (2,755.8-2,877.0). In the second time cluster median was 2,216 (2,062.8-2,286.3) and in the third it was 1889 (1846.3-1909.8), a decrease of 879 fatalities. The initial five-year time period showed a median of 15,605 (14,930.5-15,870.0) serious injuries followed by a decrease to 11,796 (11,072.0-12,179.0) in the second data cluster and again to 10,662 (10206.5-10783.8) serious injuries in third time cluster. Difference in three five-year periods in terms of fatal collisions, fatalities, injuries and serious injuries was statistically significant (P=0.02).

Figure 3.



Conclusions

There was a significant difference in the amount and type of injuries and fatalities when compared as three sets of five-year clusters. Most of fatalities were in the 65 and over age group, and most injuries were sustained mostly by the 24 to 34 age group. Fatal collisions were more likely to occur on a rural roadway rather than an urban road. There has been a steady increase in the seatbelt usage in Canada. Impaired driving due to alcohol has seen a decrease, while drug-induced road fatalities unfortunately made an increase.

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Optimization of the "Diatom Test" method: YES OR NO

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Introduction

In cases of drowning victims, diatom tests are not commonly employed during autopsies."Diatom test" method - first of all requires the development of spatial and human capacities, and a good knowledge of the taxonomy of silicate algae (diatoms).

In addition to all the methods applied during the death examination, the use of diatoms can be a good support.

The aim of this study is to optimize the "Diatom Test" method in forensic medicine in Bosnia and Herzegovina.

Methods

A total of 32 adult albino rats, were included in the experiment and divided into groups as follows:

1. Group A (8 rats with causes of death other than drowning);
2. Group B (8 rats with causes of death other than drowning, which was then submerged for 72 hours after death);
3. Group C (8 rats that were immediately autopsied after drowning);
4. Group D (8 rats that underwent a 48-hour postmortem period after drowning).

Results

Microscopic analysis revealed the presence of diatoms in the stomachs of rats within groups B, C, and D, but were not observed within group A. Within group D, EIGHT taxa were identified: Epithemia adnata, N.palea, E. ventricosa, G. minutum, C. pediculus, E. minutum, N. lanceolata, U. ulna, and Cyambella sp.

Slika 1. *Diatoma vulgaris* (G-B5)

Slika 2. *Melosira varians* (G-C3)

Slika 3. *Epithemia adnata* (G-D1)

Slika 4. *Cymbella* sp. (G-D3)

Conclusions

Optimization of the "Diatom Test" method could potentially lead to its future use as a routine method within experimental settings.

This experimental study is a starting point that guides us towards the optimization of tests and sampling in cases of unexplained etiology.

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EVALUATION OF DEATH DUE TO TIRED BULLET INJURIES WITH AUTOPSY FINDINGS AND FORENSIC MEDICAL ASPECTS

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Introduction

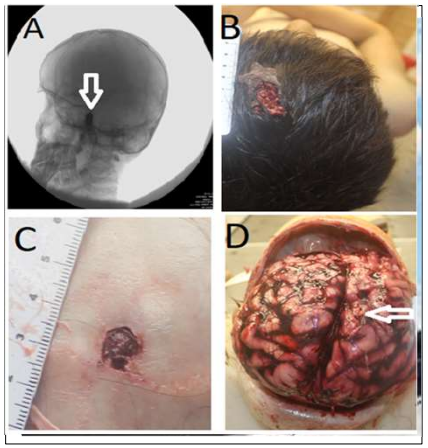
When there is shooting towards the air, perpedicular to the floor; the bullet goes upwards first and after a while loses its kinetic energy and starts to fall gaining speed again with the effect of gravity. This free-falling bullet is called a “tired bullet”. Which causes serious injuries and death (1-3). In our study; we aimed to raise social awareness and contribute to the literature by discussing the deaths due to tired bullets, with their forensic, legal and social aspects for which we performed autopsies.

Fig1:Shotgun pellet injury, frontal region skin and bone defects

Methods

We retrospectively evaluated 9 tired bullet cases, for which we performed autopsies, in the study. We examined the news about fatigued bullet injuries from the websites of local and national newspapers. We researched the decisions made by the high court for the tired bullet perpetrators.

Fig2: An 8-year-old boy died as a result of a bullet wound while playing in the park and was taken to the hospital because he was thought to have hit his head with a seesaw.



Results

There were 9 cases, 6 of which were male and 3 were female, and the average age was 32.5. It was seen that the bullet was found in the head of 7 cases. At the time of the events, gunshots were heard in only 3 cases, and it was determined that there was a random bullet injury during the examinations performed at the hospital, (Fig1, Fig 2, Fig 3). This situation is also compatible with the data obtained from the national press. It was determined that campaigns were organized in the national and local press for all cases, and the perpetrators were often punished for possible premeditated murder.

Fig3:Left eye bullet entry wound and bullet

Conclusions

With the increase in individual armament all over the world and in our country, there is an increase in the number of tired bullet cases, and it emerges as an important public health problem that requires urgent precautions with its medical, legal and social aspects (1,4). In order to prevent such injuries, it is necessary to inform the society and raise awareness about the dangers of firearms, and to develop policies that prevent individual armament and increase controls. Deterrent criminal sanctions should be applied to the perpetrators of the incidents. Frequent campaigns should be organized at national and international levels with the participation of all public institutions and organizations and non-governmental organizations under the leadership of the media.

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