The significance of external body examination during crime scene investigation

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Abstract: Precise activity of crime scene investigating physician is especially important for the further work of medical examiner. Factors that may significantly affect the activities of the investigating physician include advanced decay post mortem changes of the human body.

Our first case deals with a man, where the physician stated heart failure as the cause of death. In the second case, the physician determined a disease of high blood pressure as the cause of death. In two other cases, bodies were found in advanced stage of decay changes – firstly, a dead body of man was found immersed to the middle of the body in a metal barrel full of rainwater, which presumed asphyxia by drowning; and secondly, a dead body of woman was found in the bush near highroad, where a syringe with unknown content was found near the body, which led to the suspicion of an overdose from a foreign substance.

In the first case, the autopsy clearly confirmed that the death occurred as a result of the conduct of another person – “throttling”. The finding of medical examiner of the second case was a firearm injury of the head. In the last two cases, injuries from the effect of sharp instruments were found.

The aim of the work was to demonstrate substantial discrepancies between autopsy findings of medical examiner and the findings of crime scene investigating physician. These findings point out at the importance of on-site inspection of the body as a unique and unrepeatable act and at no less importance of autopsy as an irreplaceable investigative method. Demonstrated cases point to the fact that putrid changes may mask serious mechanical damages, such as cutting or stabbing wounds. Finally, we can assume that the phenomenon of under-performed examination negatively affects the work of law enforcement.

Key Words: external body examination, crime scene investigation, autopsy, cause of death, discrepancies

External examination of a dead body at the scene of death, investigation of crime scene, as well as subsequent autopsy are unique and unrepeatable proceedings. In Slovak republic, examinations of dead bodies at the scene of death and the realization of autopsies are in the competence of Health Care Surveillance Authority. In addition, this Authority controls the quality of provided health care services and inspects the activities of health insurance companies.

In Slovakia, procedures taken in the case of death are regulated by a number of legislative acts, some of which are reported below. According to the Act no. 576/2004 Coll. [1] § 41, whoever has received any information on death outside a medical facility or has found a dead body is obliged to notify the nearest provider of health care without undue delay; or the Police force or attending physician.
The provider of health care is without undue delay obliged to notify the announced death and the death in a medical facility to persons related to the dead person and if these persons are unknown, to the municipality pursuant to the permanent address or temporary address of the dead person; if neither the permanent nor the temporary address is known, to the municipality where the medical facility being notified of the death or in which the death occurred operates and to the Health Care Surveillance Authority. The provider of health care is also obliged to notify the pertinent Police force on the death of a person in a medical facility being treated in connection with injury, or health damage caused by another person or by poisoning.

According to § 42, examination of the dead body identifies the death, time and cause of death. Examination of the dead body is performed by a physician entrusted by the Health Care Surveillance Authority. Every person is obliged to provide information on circumstances of the death to the doctor examining the dead body. The doctor performing examination of the dead body is obliged to notify the pertinent civil registry without undue delay on the death; in the case of suspicion that the death was caused by criminal act or suicide or in the case of death of a foreigner to the pertinent Police force as well.

Autopsy can be ordered after the examination of the dead body only under conditions stipulated in a separate regulation. Paragraph 43, which regulates identification of the death, besides other things stipulates that once death is detected by a physician or the board of consultants, the dead body can only be subjected to an autopsy, health care performances for the purposes of removal of organs, tissues and cells and healthcare performances leading to birth in the case of a pregnant woman. Performance of autopsies is governed by the Act no. 581/2004 Coll. [2], in § 48 sec. 2, which says that autopsy can be ordered only in cases specified by this law, and that even after death the dignity of dead person cannot be impaired. In general, autopsy is ordered by Heath Care Surveillance Authority on the basis of examination of a dead body at the scene of death, then in the cases when it is necessary to determine whether health care was provided properly, or in other cases stipulated by this act.

The Authority under the conditions provided in this act shall order autopsy: on the death of people in the hospital 1) to verify the disease and the therapy used, 2) in connection with surgery and anaesthesia (mors in tabula), then in the cases of death caused by infectious diseases or if there is a suspicion of infectious disease, on the death of a person when contamination of the dead body from radioactive substances is suspected, in cases of sudden and unexpected death, when - by the examination of a dead body or otherwise it is not possible to determine the cause of death, after the removal of organs from deceased donors for transplantation, of a person deceased outside a medical facility or if a person died in the hospital but there is a suspicion of malpractice in the provision of health care or the performance of healing activities, on death caused by industrial poisoning or other poisoning, on death due to occupational disease or in the suspicion of death from these causes, on deaths related to occupational accidents or other injuries, on death in connection with traffic accident, in cases of violent deaths, including suicide, on death of a person in custody or imprisonment, or in cases stipulated by Act no. 301/2005 Coll. [3], when autopsy is ordered by authorities of law enforcement.

Autopsy cannot be performed if a person or his/her legal representative throughout the life of the person has refused the autopsy. The rejection of autopsy must be in written form, has to contain information enabling clear identification of the person that has refused autopsy, his/her handwritten signature, and the date of issue. The form of the rejection of autopsy must be received by Health Care Surveillance Authority, which records and stores it yet another 10 years after the date of death.

The Authority maintains the list of persons who have refused autopsy. Even if autopsy has been refused during the lifetime of a person, it can nevertheless be performed in cases of suspicion that a dead person had infectious disease, in suspicion of contamination of a dead body from radioactive substances, in cases of sudden death, if the cause of death is not apparent, in cases of impeachment of a examining physician about the cause of death or about the circumstances of the death, after organs and tissues from a deceased donor were removed, in the cases of the removal of tissues from a deceased donor if transplantation is addressed to the recipient at increased risk, in cases of violent death, and from reasons established by Act no. 301/2005 Coll.. Autopsy may be performed only by a physician who...
has completed university studies in the field of general medicine, with a specialization in pathological anatomy or in forensic medicine.

Autopsy cannot be performed by the doctor who was treating the deceased before his/her death, was in the employment relationship or in other similar relationship with the provider of health care if the death occurred in the hospital, and by the doctor who carried out the removal of organs from the dead body.

The activity of examining physician is of crucial importance for the follow-up work of medical examiner. The goal of the inspection of a body at the scene of death is to stipulate death, to determine its cause, time and mode, to decide about other procedures that need to be taken with the body, to call the police or medical examiner when necessary, to fill-in Death certificate, and to write a Report for medical examiner.

The most frequent errors of examining physicians during examinations at the scene of death are: examination of dead body is not carried out at all, only the forms are filled-in (which is very common when dead body is in advanced stage of post-mortem decomposition, or when dead body is dirty and frowsy, or in bad weather), incorrect estimation of the time of death (incorrect evaluation of post-mortem changes), severe injuries are not recognized or vital injuries are classified as post-mortem changes or post-mortem spoliation, incorrect evaluation of injuries and of the mode of death, comments about the fault of another person (which is a question for an expert), autopsy is not directed when necessary (because of the “pressure” of relatives of the deceased) eventually autopsy is ordained when it is not reasonable, incorrect and incomplete infilling of necessary forms, report on death is not written at all, suspected crime is not recognized, movement to relatives is inappropriate etc. It is necessary to mention that sometimes the work of examining physicians during examination is considerably hindered. Factors that may significantly affect the performance of examining physician in a negative way include post-mortem decomposition of human body, mostly putrefaction.

Aim
The aim of this work is to focus on some selected cases from the praxis of medical examiner and thus demonstrate serious discrepancies between the diagnosis of examining physician at the place of first inspection of a body and the final statement of medical examiner after conducting autopsy. This should point out at the importance of precise first examination of a dead body at the scene of death.

Patients and methods
In all cases complete macroscopic and microscopic necroptic examination and additional laboratory investigations were realized.

Case 1
The first case focuses on a 42-year old man, who was found by his brother lying dead in bed in their family house in the prone position. His anamnesis was: chronic alcoholism, hard smoker, and diabetes mellitus treated with oral antidiabetic agents. The examination of the corpse was carried out in morning hours (10:25 a.m) on August 15 in a room with daylight. The findings of the examining physician were: dried small blood spots on the blanket near the head of the body, post-mortem hypostasis of violet colour indicated on the whole front side of the body, rigor mortis developed throughout the whole body, and signs of facial injuries (haematoma and swelling in the area of the right eye and tiny injuries of right eyebrow area). The conclusion of the examining physician was: the cause of death is unknown.

Autopsy findings: abrasions on both sides of the neck (Fig. 1, 2), conjunctival haemorrhages, ecchymoses under pleural surface, haemorrhages in the muscles of the neck - predominantly on the left side, fracture of the upper left horn of the thyroid bone (Fig. 3), and liquid blood. Toxicological analysis of the blood and urine samples, taken at the autopsy, detected alcohol in the concentration of 3.15 g.kg⁻¹ in the blood and 4.44 g.kg⁻¹ in the urine. The conclusion of the autopsy was: the cause of death: suffocation due to throttling, the manner of death: attack by throttling.
Case 2

The second case concentrates on the 51-year old man who was found in early morning hours by his companion in the yard of their family house. According to anamnesis, he was on medical treatment because of high blood pressure. The examination of the corpse was realized at 05:45 a.m. on July 31. The examining physician during the external examination of the body at the place of death alleged supine position with the limbs and trunk on the sidewalk and the head in a bed of flowers planted nearby. The conclusion of the examining physician was: sudden death (suspected acute myocardial infarction) due to hypertension; moreover, in the death certificate he stated natural death as the manner of death. The corpse was brought to the Institute of forensic medicine in the afternoon and the autopsy was carried out only the next day.

Autopsy findings: entrance firearm wound with circular soot deposition on the boundary line between the header and the back side of the neck, a little left from midline (Fig. 4), (The autopsy was then interrupted and the police was notified. The police came to the place were body was found approximately after 40 hours since the estimated time of death.), massive haemorrhages in the muscles at the back of the neck, more to the left, fired channel going onward, projectile in the soft tissues under the skull basis, more to the left (according to the X-ray examination of the head, Fig. 5, 6), two tiny fissures of the skull basis, near foramen occipitale magnum to the left, with haemorrhages in the surrounding soft tissues, gentle subarachnoidal haemorrhage in the area of brain-stem, contusion of pons Varoli, local contusion of cerebellum in the left, and massive oedema of the brain. Toxicological analysis did not detect any active toxic substances. Lunge test for the presence of gunpowder was positive in the dross of skin from the surroundings of the firearm defect. The cause of death: central - cerebral death, manner of death: attack by a shot from a short gun.

Case 3

The third case discusses a 36-year old man who was found by a small boy in a position upside down, submerged to the middle of the body in a metal barrel full of rainwater, which was buried in the ground, in an abandoned cottage in a garden area (Fig. 7).
The body was in advanced stage of post-mortem decomposition. The examination at the scene of death was conducted on August 19 at 11:00 a.m. The examining physician did not state the cause of death; only advanced post-mortem decomposition – putrefaction was alleged. The police, after consulting medical examiner, ordered autopsy.

Autopsy findings: advanced post-mortem decomposition of all organs and tissues, deep incised wound in the front and side areas of the neck exposing deep neck structures with complete transverse disruption of the thyroid cartilage, larynx, pharynx, both external jugular veins, external carotid arteries, and neck muscles (Fig. 8, 9), and the presence of black muddy substance with fir-needles in the trachea and bronchi (Fig. 10). Additional laboratory tests detected the presence of rare species of diatoms - Nitzschia and Diatoma in the lungs. Toxicological analysis of the sample of the spleen, taken at the autopsy, detected ethanol in the concentration of 1.17 g.kg-1. The cause of death: massive bleeding from the incised wound - cutting injury of the cervical organs and blood vessels in combination with asphyxia due to aspiration of blood, water and foreign substances into the airways and the lungs, manner of death: attack by sharp object (ground-in aluminum spoon).

Case 4

The fourth case deals with a 41-year old woman, who was found in a bush vegetation, 15 m from a road route, nearby a large chemical factory, in a locality of frequent presence of prostitutes. The body was in advanced stage of post-mortem decomposition. The examination of the dead body was carried out on August 6 at 15:15 p.m. The examining physician could not determine the cause of death at the scene of death, and since there was a syringe containing an unknown substance and blood under her T-shirt, he expressed the suspicion of intoxication from toxic substances.

Autopsy findings: putrid changes of all organs and tissues; in the area of secondary defects of the skin, resulting from putrid decomposition and activity of fly larvae, similar fusiform defects were found, later identified as stab wounds – the total number of stab resp. incised wounds on the whole
body was 35; stab resp. incised wounds of ribs, defects of pleura, defect of pericardium, defect of lungs, diaphragm, spleen, small intestine, and stomach. Similar defects were also found on the clothing. The toxicological analysis of blood sample and of skeletal muscle, taken at the autopsy, detected ethanol in the concentration of 0.42 g.kg-1. In the sample of blood, amphetamine in the concentration of 0.08 µg.g-1 and methamphetamine in the concentration of 0.30 µg.g-1 was detected. The cause of death: bleeding shock due to multiple stab wounds, especially of the chest and the abdomen. Mode of death: assault with a sharp object.

Figure 11. Overall view of the body at the place of death
Figure 12. Syringe on the chest of the dead
Figure 13. Multiple stab wounds, some of them modified by the activity fly larvae
Figure 14. Stab wounds in the chest wall

Conclusion
The aim of the work was to practically demonstrate the fundamental discrepancies between autopsy findings and the findings of the examining physician in the cases of deaths caused by serious crimes. Our findings point out at the importance of examination of a dead body at the scene of death as a unique and unrepeatable act and at no less importance of autopsy as an irreplaceable investigative method.

Demonstrated cases focus on the fact that putrid changes may mask serious mechanical damages, such as stabbing or incised wounds. All cases demonstrate serious crimes. We can allege that the phenomenon of under-performed examination negatively affects the work of law enforcement authorities.

References
1. Act no. 576/2004 Coll. on health care, health care - related services and on the amendment and supplementing of certain laws.
2. Act no. 581/2004 Coll. on health care insurance companies, and surveillance over health care and on the amendment and supplementing of certain laws.