THE USE OF MEDICAL KNOWLEDGE IN THE CRIME INVESTIGATION

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ABSTRACT
Introduction: Investigation of many types of crimes is accompanied by the involvement of health care workers. They, with the help of their special skills in the sphere of medicine, assist the investigator in identification, fixation and caption of evidence. Health care workers take part in many investigative procedures, carry out forensic, psychiatric and other kinds of examinations.

The aim: To reveal modern forms of using medical knowledge during the crime investigation.

Materials and methods: The abstract is based on the teachings of scholars of forensic physicians, criminologists, the results of our survey of investigators and forensic experts, the results of our generalization of criminal proceedings regarding the investigation of murders, normative and legal acts of Ukraine and other sources. The system of scientific knowledge methods: historical, statistical, questionnaires, generalizations and others, was used during the research.

Review: Our research reveals the following forms of using medical knowledge during crime investigation. This is the participation of physicians as specialists in investigative procedures, like the review of the scene, interrogation, investigation experiment, examination, participation in the selection of biological samples for carrying out expert examinations, physicians’ assistance in the form of the recreation of the deceased person’s face with a view of its identification, also the consultations of physicians - cardiologists, traumatologists, surgeons, forensic experts, etc., carrying out of forensic and forensic and psychiatric examinations, use of medical knowledge in the form of molecular genome research with the view of person’s identification. The argumentative issues on the interaction between the investigator and the physician during the review of the scene, interrogation and other investigative procedures, implementation of molecular genome research and certain issues arising in the appointment of forensic and forensic psychiatric examinations are reviewed in the abstract.

Conclusions: The use of medical knowledge is necessary for investigation of many types of crimes. The forms of using medical knowledge in the crime investigations such as the participation of physicians as specialists in the carrying out of investigative procedures, the physicians’ assistance in the form of the recreation of the deceased person’s face with a view to its identification and physicians’ consultations are widely spread nowadays. The conduct of forensic, medical and forensic and forensic psychiatric examinations is the most widespread. The use of medical knowledge in the form of genotypic and molecular genome research carried out in order to identify a person during the crime investigations is popular nowadays.

KEY WORDS: forensic knowledge, physicians, medical knowledge, medical forensics, molecular genome research, crime investigation, forensic medicine

INTRODUCTION
The crime investigation has never existed without the use of special knowledge, and medical knowledge occupy the main place among it. Forensic medicine has been used to establish the truth in the crime investigation for centuries. Physicians and forensic experts are widely involved for participation in investigative procedures, carrying out of the molecular genomic investigations for the identification of the deceased and so on. In Ukraine there are different legal acts that regulate medical relations between the subjects of such relations. The main legal act regulates not only the medical relations but also all the relations that may exist on the territory of Ukraine and sets up the main rules of behavior, rights, freedoms and duties of the citizens and other person that are on the territory of Ukraine on legal grounds. The Constitution of Ukraine [1, p. 57]. The rights and responsibilities of forensic physicians with their participation in investigative procedures and carrying out of the expert investigations are determined by a number of normative and legal acts in detail. These are the “Regulation on the bureau of forensic examination of oblast executive committees’ health departments and on the republican bureau of the Autonomous Republic of Crimea” [2], the “Rules for carrying out forensic examination (investigations) of corpses at the bureau of forensic examination” [3] and other normative and legal acts.

Today, a big number of health care workers take part in the criminal proceedings. However, the scientific literature does not adequately cover the possibilities of healthcare workers in their participation in the investigation. Thus, the participation of physicists in pre-trial investigation and in court sessions is very briefly described in a book edited by V. F. Moskalenko and B. V. Mykhailychenko, that is used for preparation of the future physicists[4, p. 36-37].
THE AIM
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MATERIALS AND METHODS
The abstract is based on the teachings of scholars of forensic physicians, criminologists, normative and legal acts of Ukraine the results of our survey of investigators and forensic experts, the results of our generalization of criminal proceedings regarding the investigation of murders, and other sources. The system of scientific knowledge methods: historical, statistical, generalizations(73 criminal proceedings on the murder investigation), questionnaires (230 investigators of the Ministry of Internal Affairs of Ukraine and Security Service of Ukraine and also forensic experts of the Ministry of Health of Ukraine) and others, was used during the research.

REVIEW AND DISCUSSION
Our generalization of 73 criminal proceedings on murders shows that forensic physicians are involved into inspection the scene in 64.47% of these proceedings. Even Hans Gross said that the physician should be invited in cases of forensic medical properties only. These include necropsy, bodily injuries, pathological phenomena, determination of physical strength, age, ability to perform a certain action and simulation, etc. [5, p. 1-3, 191-228]. The participate of the health care workers in the investigation of certain categories of crimes is a widespread practice in Ukraine. However, investigators are not yet fully use the possibilities of physicians’ assistance during their mutual interaction. According to the results of the questionnaires, when investigating, for example, road traffic accidents, the physicians are involved for assistance in inspection of the place of the accident only in 23.0% of cases [6, p.128], which, in our opinion, is insufficient.

It should be mentioned that a forensic medical officer should work under the direction of an investigator during the inspection of the scene and the corpse. The questioning of investigators conducted by us shows that in their opinion, a specialized physician should act under the direction of the investigator during the inspection of scene, as it was mentioned by 43.0% of the respondents, and take into account the instructions of the investigator, as it was mentioned by 40.0% of investigators. When examining the scene the duties of the forensic expert are: the identification of signs that allow judging the time of death and the mechanism of injury creation on the human body; consultation for the investigator on the issues related to the examination of the corpse at the place of its detection and its further examination; assistance in working with physical evidence; providing by the forensic expert the explanations for all actions performed by him. At the site of a corpse examination, the forensic medical physician should make sure that all necessary for saving the life has been made, check the presence or absence of breathing and palpitation, establish early signs of death that indicate irreversible processes in the central nervous system of the person [7, p. 47-53]. The nearest physician despite his specialization is involved for examination in case of impossibility to invite a forensic expert. The former should follow the “Rules of a specialized physician’s work in the sphere of forensic medicine during the external examination of the corpse in the place of its detection (incident).” Here, the explanations of the physician are provided orally and of a consulting nature. And the physician who examined the corpse at the place of its detection, can do its further opening and draw up a written conclusion [4, p. 92]. However, the debatable question about whether a physician of any specialization can help the investigator in the corpse's examination on-site arises. Ukraine has insufficient number of forensic experts in the bureau of forensic examination, who are involved as experts in the examination of the scene and corpse. That's why, in certain cases the investigator has to wait for the physician to arrive, postponing the examination of the corpse for a while.

There is also a debate about the necessary number of concurrently invited medical experts and other specialists of other sphere of knowledge for the examination. It depends on the complexity of the investigative proceeding, the number of objects to be examined, the size of the territory of the scene and the characteristics of the objects themselves, that requires the use of special knowledge of different profiles. According to the results of our generalization of criminal proceedings, in the investigation of murders such experts are involved: one medical specialist, as indicated in 64.47% of our generalized protocols; two specialists of different profiles, as indicated in 27.63% of our generalized protocols; three or more specialists on criminal proceedings, as indicated in 7.0% of our generalized protocols. It is advisable to invite concurrently several physicians in cases when the investigation of serious or especially grave crimes is held in the presence of a large number of victims.

There is a debatable question about the reflection of the forensic physician's activity during the examination of the scene. There are opinions about the need for a forensic physician to draw up his own protocol, that will be an annex to the main protocol drawn up by the investigator during the examination. The results of our generalization of criminal proceedings on murders show that the activity of a physician is reflected only in 22.41% of protocols. In our opinion, it is necessary to cover all the actions of a forensic physician during the examination of the scene and corpse.

The importance of health care workers during interrogation is tremendous. The conducted by us questioning of the investigators shows that 37.4% of investigators invite physicians for the interrogation. The forms of using physicians can be different. Thus, 52.6% of investigators coordinate with the physician the questions that are put to the interrogated person. In addition, according to the results of our survey, 13.5% of the investigators often address a medical specialist’s explanation on the interrogated person’s testimony.

During our interviewing and questioning of forensic experts from the Ministry of Health, they indicate that when they participate in the interrogation, they ask questions...
to the interrogated person with having the investigator’s permission. 81.7% of the respondents stated that. The investigator may also agree with him the formulating of the questions. 26.0% of the questioned forensic experts stated that. It is worth pointing out that namely the physician’s asking questions during the interrogation is very appropriate. Thus, 79.1% of the investigators, who we interviewed, consider it appropriate when namely the medical expert asks questions during the interrogation. When interrogation on crimes against the life and health of a person, investigators invite forensic experts from Ukraine who ask questions to an interrogated person about life-long chronic diseases that could, under certain conditions, lead to death of a person, and also about injuries, scars on the body of the victim. They help to identify the false testimony provided by the interrogated person by using their special knowledge in the sphere of medicine.

The results of our carried out survey with investigators show that 39.6% of investigators involve a medical expert during an investigative experiment. For example, the invited physician will help the investigator to confirm or refute the suspect’s given evidence in the proceedings when it comes to determining from which side and at what angle the hits were made on the victim. When conducting an investigative experiment, the physician takes part in the application of the following tactical techniques: staging questions to the participants of the investigative procedure and analyzing their responses; physician’s assistance to the investigator in the reconstruction of the situation, the determination of similar conditions of the experiment and individual experiments, tests (the mechanism of injury creation on the human body); the physician’s assistance to the investigator in the analysis of the received results of experiments or tests and answers of the participants. When conducting an investigative experiment, a specialized physician should follow the investigator’s instructions and work under his guidance.

The participation of physicians in the examining of people when it is possible to detect a trace from the tattoo, even when it is destroyed, is the form of use of medical knowledge during an investigation. Also, a physician can detect a tattoo on the corpse, even after a long time [5, p.1-3, 191-228]. The physician participates in the study of living people in order to determine the degree of bodily injuries’ severity; examine sex conditions; determine the percentage of the working capacity lost; set age; determine the traces of past wounds; determine the self-injury and simulated illnesses [8, p. 1-10].

Health care workers are actively involved as experts into the selection of samples for expert investigation. These samples are material objects that are given to the expert for comparison with the objects that are identified or diagnosed [9, p. 327].

Conducting of the forensic examinations is one of the forms of medical knowledge use in the investigation of crimes. The Ministry of Health of Ukraine pays significant attention to the development of the forensic medical service, namely, to the improvement of the equipment at the bureau of forensic examinations, to the increase of scientific relevance and value-based evidence of the forensic expert’s conclusion, taking into account the essential requirements for the quality of conducting the forensic examinations and its great role in the control against the crime[10, p.10-11].

Medical knowledge is closely intertwined with forensics during the crime investigation. Thus, the integration of knowledge, its association aimed at optimal solution of the tasks of counteracting the crime is the important trend of criminalistics at the present stage of its development [11, p. 4]. Thus, the debatable question is where the boundary between forensic and medical knowledge. Mykola Serhiiovych Bokarius, the world famous forensic physician and criminalist, writes about the connection between forensic medicine and criminalistics during the crime investigation for the first time, and describes the damage of the skull bones by dull objects, the mechanism of their cracks’ formation, the mechanism of the skull bones damage formation from the firearms’ shot, damage on the clothes of the corpse [12, p. 430-432]. The departments of forensic medical criminology functionate in the bureau of forensic examination in Ukraine nowadays[4, p. 41]. It should be noted that clothing, organs and tissues of the corpse, some probable means of injury are sent for the examination to these departments[3]. Among the questions arising in the investigation, a special place belongs to the definition - whether there were no damage or other traces, whose formation is connected with the crime, at the result of the action of a specific object. The solution of such questions can’t be carried out only by the methods of forensic examination of a corpse or a living person. That is why the forensic medical criminalistics deals with it [13, p. 5-7]. Physicians widely use the principles of identification, which are applied during forensic examinations, when determining the instrument of crime with the help of traces or injuries on the body and clothing of the victim, during the identification of a deceased person or during interrogation[14, p. 1]. The person’s identification by his skull using computer technology and special programs which is carried out at the forensic medical criminalistics branches of the Forensic Medical Examination Bureau, is also the important form of use of medical knowledge in the crime investigation. More evident methods of personal identification with the help of the skull are used in forensic medical practice, including photographic matching and computer technologies. To be able to conduct such an examination, a lifetime picture of the face of the person to be identified and the skull of an unidentified dead body are required [15, p. 222].

New interdisciplinary studies, such as genotyposcopy, molecular-genome [16, p. 159-162], which combine medicine and criminalistics, appear. DNA (deoxyribonucleic acid) analysis was categorized there as a method of personal identification [17, p. 260-261]. Now there is a new technology for determining the molecular genetic structure in the samples. Today the term “genome dactyloscopy” or “genome fingerprinting” is introduced to the medical lexicon. Polymeric chain reaction is in use. The method emerged at the end of the XX century and is considered to be the foundation of technologies of the XXI century. Its essence is in the ability to multiply DNA fragments by
CONCLUSIONS

The use of medical knowledge is necessary in the investigation of such types of crimes as gunshot injuries caused by the use of firearms; poisoning; body injury by various objects; road accidents; railway accidents; fires; various types of murders (unintentional and intentional), and so on. The knowledge of forensic medicine, forensic traumatology, forensic psychiatry and other medical sciences is used during the criminal proceedings. The research carried out by us proves the existence of various forms of medical knowledge use in the crime investigation. This is the participation of physicians as specialists in the conduct of investigative proceedings, the physicians’ assistance in the form of the recreation of the face of a deceased person with the purpose of its identification, consultations of physicians (cardiologists, traumatologists, surgeons, forensic experts, etc.) regarding the medical issues that are necessary for the investigator when planning an investigation. Forensic medical and forensic psychiatric expertise is the most popular forms of using medical knowledge during the investigation nowadays. Today, the use of medical knowledge in the form of medical and forensic expertise performance, as well as molecular genome research, is used.

REFERENCES

Conflict of interest:
The Author declare no conflict of interest.

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