

Emergencies with Human Casualties and Defects In The Provision Of Medical Care In The Republic Of Kazakhstan

A. Derbisbekova, T. Polyakova, T. Zhakupova, V. Osipov, Yu. Kolosov, R. Mesheleva-Bekh

Department of Forensic Medicine, JSC "Astana Medical University," Research and Education Center of Evidence-Based Medicine, Astana, Republic of Kazakhstan

Abstract

Aim: The objective of the present research was to study the activities of a specialist in forensic medicine and forensic sciences in the process of eliminating the consequences of disasters associated with mass deaths of people that arose for various reasons and proceeded in different conditions. **Material and Methods:** In order to develop main stages of study and solve the problems, an integrated approach has been adopted with forensic-histological, chemical and biochemical, medical-forensic and biological examination subjected to analysis. Five(5) corpses, three(3) incident investigation protocols, 125 corpse identification protocols, 4 criminal cases and two documentary videos included in the research. **Results and Discussion:** In order to study the forensic medical examination of victims of emergencies, to solve problems and develop the main stages of the study, we used an integrated approach. There are different emergency situations such as natural catastrophes, technological incidents and terrorist acts which could lead to a great number of victims required emergency medical service including forensic autopsies. These accidents significantly affect the usual work schedule of forensic services at different levels, require additional resources and actions in order to provide the service efficiently and professionally. **Conclusion:** Study indicates a clear need for a thorough analysis of the causes and types of defects in the provision of medical care based on the results of medical documentation research, the development of an algorithm for analyzing the medical care provided to patients with acute abdominal surgical infection.

Key words: Defects in the provision, forensic medicine, emergency situation.

INTRODUCTION

X century was marked by a series of global challenges. One of such challenges is the rapid growth of natural, technogenic and environmental disasters. From the time of the appearance of the first human on Earth and to the present day, mankind has seen many examples of natural disasters that lead to a very complex medical and sanitary situation with a significant amount of sanitary and irretrievable loss, destruction of material values, deterioration of the sanitary and epidemiological situation in the emergency(ES) zone [1]. Local military conflicts, terrorist acts can lead to a sharp increase in mortality among the population in a short period of time [2]. This is evidenced by a wave of man-made disasters, accidents and natural disasters that swept in recent years in the territories of various states, which determines the need to be in constant readiness of medical

units, including the forensic medical service in the Republic of Kazakhstan.

As a rule, any natural disaster, accompanied by mass casualties, requires a great deal of stress in the work of health authorities, rethinking the principles of organizing and forecasting medical care, and an advanced system of stage treatment. From these positions, we will try to consider possible problems in management the forensic medical service in an emergency.

Bette to delete, all catastrophes are characterized by a large number of simultaneously injured people, including those

Address for correspondence:

A. Derbisbekova, JSC "Astana Medical University,"
Research and Education Center of Evidence-Based
Medicine, Astana, Republic of Kazakhstan.
E-mail: derbisbekova_174@mail.ru

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who died. Delete following the Criminal Procedure Code, the operative production of forensic medical examination of the victims is required. Obviously, the law enforcement agencies will first appoint the examination of corpses to determine the cause of death, the existence, nature, mechanism and duration of the formation of injuries, as well as typical, group and individual characteristics with the purpose of identifying the identity of the deceased. Therefore, the greatest burden falls on the experts in the first day after the accident, when the bulk of the dead is delivered to the morgue.

An important negative fact is that the currently available forensic medical morgues do not meet the minimum requirements of SNIP and do not allow the mass arrival of corpses to create the proper conditions for carrying out activities related to the technological process of their examination, identification, storage and delivery for burial. In addition, low-power refrigerators in morgues exclude long-term storage of a large number of corpses [3].

Analysis of the specialized literature on various aspects of the work of forensic experts in the context of mass disasters allows us to state that at the present time, although significant results have been achieved in this direction, the issues of identifying all victims, especially in catastrophes accompanied by various degrees of destruction of corpses, have been resolved not to the end.

The obvious importance of the problem of operational identification of a person depending on the type of catastrophes and their complexity, the degree of destruction of corpses determined the aim and objectives of this study.

MATERIALS AND METHODS

The subject of the study was the activity of a specialist in forensic medicine and a forensic expert in the process of eliminating the consequences of disasters associated with mass deaths of people that arose for various reasons and proceeded in different conditions.

A total of 105 conclusions of forensic-histological examination, 124 conclusions of chemical and biochemical examinations, 31 conclusions of medical-forensic examination, and 44 conclusions of biological examination were subjected to analysis. In addition to this, five journals of corpses were studied in a forensic morgue; three incident investigation protocols, 125 corpse identification protocols, four criminal cases, two documentary videos, summary corpse tables, and identification results, a summary table of identifying signs on corpses and people missing (Table 1).

The distribution of objects by types of emergencies and by identifying signs is presented in Tables 2, 3. In addition to expert analysis, general scientific methods of research

were used: Observation, description, generalization, systematization in accordance with the basic requirements for these methods (Table 2 and 3).

The observation consisted in a purposeful study of the activities of specialists in the field of forensic medicine in the elimination of the consequences of emergencies at the scene, forensic experts in the forensic medical examination of the corpse and in identifying the dead.

The observation was both direct in the process of the authors' work as a physician of a specialist in forensic medicine and a forensic expert in eliminating the consequences of emergencies, as well as mediated - in the process of studying expert opinions, "Corpses registration journals in forensic morgue", incident investigation protocols, protocols of identification, materials of criminal cases. During the observation, the initial information was obtained on the essential properties of the object of observation (sex, special signs, the nature of the injuries, the cause of death), the organizational and procedural relations that arise when examining corpses at the scene and for forensic examination of corpses.

RESULTS AND DISCUSSION

In the general structure of examinations on health care profiles, we systematized the data and identified the following areas:

- Therapeutic profile (including pulmonology, neurology, ophthalmology, cardiology, rheumatology, dermatology, nephrology);
- Surgical profile (neurosurgery, otorhinolaryngology, surgery (thoracoabdominal, purulent), cardiosurgery, dentistry, vascular surgery, traumatology, urology);
- Obstetrics and gynecology;
- Pediatric (therapeutic and surgical diseases);
- Oncological;
- Infectious (including phthisiatric);
- Other (cosmetology, MCEC, first aid).

Of the total number of patients, 53.8% of women and 46.2% of men were women. The average age was 55.05 ± 18.23 years, the minimum age was 17 years, the maximum age was 88 years. The length of stay of patients (both operated and not operated) in the hospital averaged 5.82 ± 3.7 days, a minimum - a day or less, a maximum of 16 days.

Table 1: Total number of emergencies

Year	Total number of emergencies	Injured person	Dead person
2012	15842	4083	1287
2013	16541	4262	1333
2014	17779	4251	1202
2015	17678	4105	1237
2016	16823	3691	1196

Table 2: Type of emergencies

Year	Total number of deaths	Men	Women	Identified corpses	Unidentified	Types of emergencies					
						Road accident	Aviation	CO	Falling from height	Drowning	Other
2012	1287	903	394	1240	47	867	17	83	17	201	102
2013	1333	942	391	1299	34	997	11	103	15	196	11
2014	1202	896	306	1171	31	843	9	154	11	168	17
2015	1237	913	324	1213	24	895	13	102	11	201	15
2016	1196	927	269	1167	29	867	7	84	17	203	18

CO: Carbon monoxide

Table 3: By identifying signs

Identifying features	Years				
	2012	2013	2014	2015	2016
Appearance	109	131	97	131	98
Common facial features	202	213	81	107	91
Constitution	6	2	11	14	17
Scars (after wounds, surgery)	5	4	8	11	15
Clothes	9	2	5	14	9
Hair	7	4	11	9	9
Mustache, beard	5	3	9	11	10
Daktokarte	85	49	43	47	49
Dullness of teeth	10	9	17	9	9
Spreading of sutures	25	11	19	9	10
DNA research	3	2	3	2	2
By several features	821	903	898	873	877
Total	1287	1333	1202	1237	1196

DNA: Deoxyribonucleic acid

The defects were analyzed according to the following scheme (Table 4):

1. Defects of diagnostics;
2. Defects of treatment: General, medical-surgical, therapeutic-tactical;
3. Defects in the organization of medical care;
4. Defects in the maintenance and processing of medical records.

The total number of defects detected during the analysis of 911 expert opinions of forensic medical examinations in patients with acute abdominal surgical infection was 89 cases. Diagnostic defects accounted for 33.3% of the case, treatment defects - 25.51% of the case, defects in the organization of medical care - 3.9%, defects in management and registration of medical documentation - 37.3%.

Analysis of the medical records of the in-patient patient showed that there is not a single medical record in which one or another type of defect in the design or maintenance of medical records could not be found. Various deficiencies in the history of the disease were encountered in more than 80% of cases. The most common of them were defects in the form of careless writing, illegible handwriting, writing with

different ink and handwriting, corrections (36.4% of medical records). The brevity, stereotypedness, stereotypedness of diary entries with the non-reflection of disease dynamics and the patient's condition occurred in 34.1% of medical records. Unprofessional registration of the protocol of operation was noted in 31.7% of medical records. The lack of a formal consent for operative treatment was noted in 22.5% of medical records. Defects in writing the final clinical diagnosis were noted in 17.5% of cases.

Diagnostic defects also occurred in each analyzed case and accounted for 31.4% of the total number of defects in the provision of medical care. The main of this group of defects was the underestimation of the severity of the patient's condition, which was noted in more than 40% of cases. Incomplete laboratory and instrumental examination was noted in 54.5% of cases, not carrying out the additional diagnostic tests shown in this particular case, in 37.5%. Reassessment of the data of the conducted studies was revealed in 19.7% of cases.

Defects of treatment accounted for 24.2% of all detected defects and were also found in each analyzed case. The

Table 4: Commission forensic medical examinations for the Republic of Kazakhstan for 2012–2016 for medical cases, defects in the provision of medical care

Year	Total number	Defects in the provision of medical care	Other reasons destination	Civil cases	Criminal proceedings	Defects in the provision of medical care are detected	Profile						
							Obstetric and gynecological	Surgical	Therapeutic	Pediatric	Infectious	Oncological	Other
2012	2611	392	2219	11	381	36	125	110	63	43	23	16	12
2013	2654	504	2150	13	491	47	151	136	91	50	41	15	20
2014	2854	713	2141	18	695	61	207	178	142	86	71	22	7
2015	2913	815	2098	23	792	73	269	236	122	73	50	16	49
2016	3117	966	2151	27	939	82	299	251	164	77	58	96	21

incidence of medical and surgical defects is 34.1%. Technical errors during the operation were revealed in 42.6% of the total number of operated patients. Incorrect amount of surgical intervention was detected in 34.1% of cases. Also, a high level of technical defects in the period of postoperative treatment and improper care of patients in the postoperative period - 26.3% of observations was noted.

Medical-tactical defects were detected in 32.7% of all treatment defects. Inadequate preoperative preparation was noted in 13.9% of patients, errors in establishing indications or contraindications to surgical treatment - in 19.4%, incorrect determination of the terms of surgical treatment was detected in more than 30% of patients. The absence of dynamic monitoring of severe patients in the postoperative period was revealed in 32.5% of operated patients.

Defects in the organization of medical care account for 3.9% of all defects. Most often among this group the following defects were noted: Untimely call of the necessary consultant (19.4%), untimely convocation of the consultation (11.6%).

The study of defects allows us to identify the objective and subjective causes of the appearance of defects in the provision of medical care. Among the objective reasons can be identified the most common: The difficulties of differential diagnosis revealed in the treatment of 16.5% of patients; the lack of continuity in the examination and treatment of patients - in 11.2% of patients. Diagnostic difficulties in the clinical evaluation of symptoms distanced from the affected organ were found in 11.2% of patients.

Among the subjective reasons, the leading place belongs to non-observance of the regulated diagnostic system (56.9%), incorrect interpretation of the results of laboratory and instrumental survey methods (54.2%), insufficient volume of examination of patients (56.3%), haste in the examination of patients (46, 35%). Absence of dynamic monitoring of patients' condition revealed 30.5% of cases, non-compliance with the regulated system of surgical treatment - in 27.8%. Unjustified over diagnosis was detected in 15.8% of cases.

A direct consequence of defects in the provision of medical care is the natural development of adverse outcomes of a particular stage of treatment. Of the total number of cases, primary surgery was performed in 39 patients. Development of postoperative complications was noted in 75.2% of operated patients. The most frequent postoperative complications occurred after operations on the intestine (19 cases) and operations on the stomach and duodenum (13 cases).

One of the first places of surgical treatment is such a defect as the incorrect definition of the timing of surgical intervention: Delay in conducting primary surgical treatment was noted in 27 patients and averaged 16.04 hours. The delay in re-operative treatment was 41.5 hours on average, a minimum of 6 hours, and a maximum of 96 hours.

The number of repeated surgical interventions was 38 cases. The most frequent re-performed operation was relaparotomy. It was performed in 86.8% of cases. Among the reasons for the implementation of relaparotomies, the first place is the inconsistency of the sutures and anastomoses of the gastrointestinal tract.

The number of postoperative complications revealed and indicated in the clinical diagnosis from the abdominal and abdominal organs was more than 100 cases. The leading place among the total number is postoperative peritonitis (about 40%).

68 postoperative complications were not diagnosed. The first place is occupied by postoperative peritonitis, the incidence of which was 42.6% of cases, then there is suppuration of the postoperative wound and surrounding soft tissues -11.5% of cases and abdominal abscess - 9.9% of cases.

Of the total number of postoperative complications, 86.8% of their total number are complications that have developed as a result of revealed defects in the provision of medical care, and the development of the remaining 13.2% of complications is due to the course of the disease against the background of the patient's severe condition.

Thus, the obtained data indicate that defects in the provision of medical care in emergency abdominal surgery occur with all nosological forms and at all stages of the treatment process. In most cases this leads to adverse consequences for patients. The results of treatment depend on the quality of the performance of treatment-diagnostic measures.

The conducted sociological study of surgeons in emergency abdominal surgery by anonymous questioning in medical institutions in the city of Moscow, yielded the following results.

The work experience in the specialty of surgeons in emergency abdominal surgery averaged 11.4 ± 2.7 years. 53% of surveyed surgeons had a qualification category. The overwhelming majority of respondents did not have a scientific degree. Most surgical interventions were performed by experienced surgeons with 11-15 years of experience. The main sources of improving their professional level, most surgeons noted the reading of special medical literature and a visit to scientific conferences.

According to the survey, almost every third surgeon admitted admission of a medical error, which led to an unfavorable

outcome. At the same time, every fourth interviewed surgeon will not inform the management about this in connection with possible punishment and loss of authority among colleagues. The main reasons for the emergence of conflict situations is the negative attitude of the patient's relatives (42.7%). The main way to resolve the conflict situation was considered by the surgeons - an attempt to resolve the situation on their own, through additional conversation and detailed explanation of the situation (65.5%).

CONCLUSION

The existing form of the medical chart of a stationary patient to date does not satisfy 64.0% of surgeons. Most surgeons (57%) make out medical records when there is time for this. In the conditions of limited time and high workload of the surgeon in the treatment of patients in emergency abdominal surgery, filling out the present form of the medical chart of a stationary patient requires a lot of time. Therefore, it is necessary to rework the existing form of the patient's medical chart according to the working conditions.

All of the above indicates that there is a clear need for a thorough analysis of the causes and types of defects in the provision of medical care based on the results of medical documentation research, the development of an algorithm for analyzing the medical care provided to patients with acute abdominal surgical infection.

REFERENCES

1. Arutyunov SD, Zazulin VA, Dallakyan V.F. Analysis of forensic medical examinations in some technogenic emergency situations//Selected issues of forensic medical examination. - Khabarovsk, 2013. - № 13. - P. 32-35.
2. Tuchik E.S. Organizational principles of the work of forensic medical examination in railway accidents// Materials of the III All-Russian Congress of Forensic Medicine. Part 1. - Saratov, 1992. - P.33-36.
3. Kuzin S.G. Organization of the work of the forensic medical service in the elimination of the consequences of man-made disasters and sudden emergencies. Kuzin, A.V. Pyatlin, S.G. Sukhanov//Ecology of man. 2005. № 5. - P. 22-25.

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