

УДК: 616-036.886:616-057

SUDDEN CARDIAC DEATH AT WORKPLACE

Basanets A. V.¹, Ostapenko T. A.¹, Cherkesov V. V.², Fartushna O. Y.¹¹SI «Institute for Occupational Health of National Academy of Medical Sciences of Ukraine», Kiev²State Enterprise «Research Institute of medico-ecological problems of Donbass and coal industry», Donetsk

Introduction. There has been a marked increase in the incidence of the sudden death (SD) and «rejuvenation» contingent suddenly dead in the last decade. There are improved and developed new technologies for diagnosis and treatment of cardiovascular diseases, which is the basic cause of the SD. However, even in the developed countries the problem of the sudden cardiac death (SCD) remains unresolved. The SCD at workplace, according to the WHO statistics, makes 7 %. Among those, who died as a result of the SD, is a significant proportion of young people under 35, and among the reasons noted – sudden physical or psycho-emotional stress.

Purpose. To determine the prevalence of the SD at workplace in different occupational groups and to define peculiarities of its occurrence, depending on their working conditions and professional responsibilities.

Results. This article presents data on the prevalence of the SD at workplace in Ukraine. In the study it is determined that in 2012 there have been registered 966 workplace SD cases in Ukraine, which is 5,3 per 100 000 of the working population and 14,1 per 100 000 of the population, working in harmful work conditions. The analysis of the SD cases, depending on gender, age and work experience shows that almost 95 % referred to males; their average age was 50–60 years, and work experience – more than 30 years. The majority of cases of the SD at workplace were recorded in Dnepropetrovsk and Kiev regions, reaching from 10,76 % to 15,8 % in the structure of the general mortality. Also, the analysis covered cases of the SD at workplace, depending on the branches of industry, socio-cultural sphere among them, took the principle place – 33 %, transport – 15 %, machine building and metallurgy – 14 %, coal mining and minerals industry – 9,3 %. The SD cases at workplace in miners of underground mines have been analyzed in details, where work conditions are characterized by exposures to physical and emotional strain, overheating and, so, can exert unfavorable effect on the blood-circulation system and result in fatal consequences. The measures for preventing the SD at work place have been proposed.

Key words: Sudden death, sudden cardiac death, sudden death at workplace

Introduction

By the definition of the WHO, which was developed by a group of experts of the Department of cardiovascular diseases, a sudden death (SD) at workplace is a death which can occur in a person due to a sharp deterioration in health status directly at workplace or after work within hours from the onset of a disease in a healthy person or a patient in a satisfactory state.

The destruction of industrial medicine in Ukraine has led to many negative consequences. One of them, perhaps the most significant, is the fact that the employees in the companies denied the opportunity to receive adequate medical support timely and the correct medical treatment when necessary. As a result – production loses its workers, but instead, a society gets disabled persons, and in some cases a deteriorated health can be fatal. Unfortunately, in Ukraine in the past 20 years, it was a 5–6 time decrease of the number of health units in industry, the number of beds for occupational patients, which could be treated and improve health workers hazardous productions.

In the same proportion the decreased number of occupational pathologist for providing health care to workers is recorded, medical care service at enterprises almost has stopped its functioning. The number of medical units, which are closer to the center of production in providing medical care, makes today 109, which is 4 times less than in 1928. Occupational health problems in Ukraine are very complicated, because they are combined with the demographic crisis and are now, one of the most “sensitive” in their manifestations. The extremely high mortality rates among men of the working age are recorded in the country.

According to the national and world literature, we can conclude that the problem of SD at workplace is not a priority direction in scientific elaborations in Ukraine and abroad: the number of publications is limited, the data is not systematic and do not reveal a full picture of cause and effect relationships of such serious and dangerous phenomenon as death of the employee while performing his/her professional duties.

Results of the study

The problem of sudden death abroad

The incidence of sudden cardiac death (SCD) in the world, according to the WHO data, is 30 cases per week per 1 million populations, i.e. more than 4500 cases per day. By the age distribution of the affected persons aged 60–69 years are prevailing – 44,7 %; the deceased aged 50–59 years constitute 28,3 %, those of 40–49 years old – 20,2 %, 30–39 years old – 5,9 %. And in this SCD in males was 2,5–3–4 times more often, than in females; 95 % cases of SD in the world falls on the coronary death, 5 % – brain death.

One of the most well-known epidemiological studies in the world today is a research of a Japanese scientist Sakai A., covering a six-year period (1981–1987) – 20 685 cases of SD among male workers (Fig. 1)[1]. In this case not just the number of sudden deaths was analyzed, but, also, the index per 100 000 workers was calculated, the most objective for estimation of the prevalence of that phenomenon. In the study it was determined that the most common SD was among workers aged 55–59 years (107), in the age group of 45–54 the same index was 2 times lower and is still twice decreasing in the group of workers aged 35–44.

According to the Center for Forensic Medicine of the University of Frankfurt on Main, there were registered 4578 cases of sudden deaths due to natural causes for the period of 1979–1988, of which 2542 cases – due to SCD. The authors indicated that in 776 (16,9 %) the death occurred at workplace and them there were workers of 142 professions [2].

By the data of researchers from Pennsylvania (USA) in the analysis of SD by occupational categories of «construction» and «service» it was found that among 212 cases, the rate of deaths per 100 000 workers for service workers (27,0) was higher as compared with construction workers (24,3). The authors note that these values exceed the general population death rate by 2 and 4,4 times, respectively. The important fact was that in 1 % of deaths the level of alcohol in blood exceeded 0,1 mg/100 ml, which corresponded to intoxication level [3].

A unique publication by A. Faisal is available now, a scientific study regarding the structure of deaths among workers exposed to ionizing radiation, made in Indonesia in 2003, covering 400 observations (Fig. 2) [4]. By the author's data, the death rate in this category of workers due to SD makes 14 %. This figure is

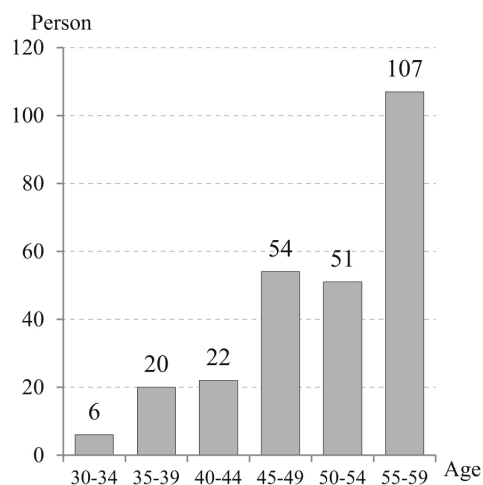


Fig. 1. The incidence of SD among male workers per 100,000 workers in Japan

almost the same as the mortality rate from diseases of the circulatory system (16,75 %) and two times lower than the mortality due to cancer pathology (30,5 %) which is in this category of workers can be attributed to the occupational diseases.

Japanese researchers have devoted their attention to the problem of the sudden death in heavy industry workers [5]. The study covered 196,775 workers of 10 industrial enterprises in the country, including 264 identified cases of SD. Of these, there were 251 men and 13 women and in the calculation per 100 000 workers that made 21,9 and 5,7, respectively. The death at workplace was recorded in 45 persons (17 %), making 3,9 per 100 000 workers.

Except SD in industrial workers in Japan, a cohort of SD in occupational drivers also has been studied [6]. It was investigated 188 autopsies in drivers, who died from nonviolent death, and in 15 of

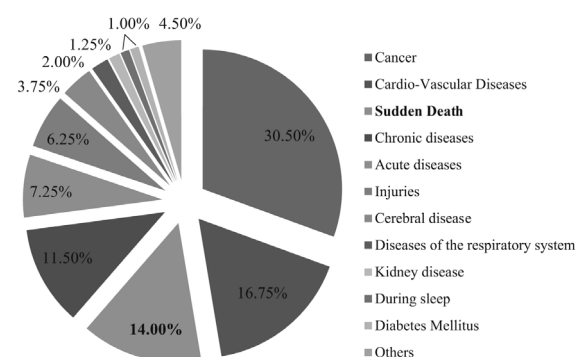


Fig. 2. Structure of deaths among worker exposed of ionizing radiation (Indonesia)

them SD was registered at workplace, making 8 % of the total number.

In the well-known Scandinavian research there was studied the standardized mortality rates in workers of iron-alloy production in Norway, covering 14 730 observations [7]. According to the study the rate of SD in the production exceeded the general mortality rate in that cohort of workers as well as mortality rates from cardiovascular diseases (Fig. 3). In addition, it was found that the mortality rate was 2,5 times higher among people, who had contacts with manganese compounds (i. e., FeMn, SiMn) than the rate of the general mortality.

In recent years the problem of the so-called «burn-out diseases» – «burnout at workplace» is under heat discussion, covering psychological, mental and physical disorders, associated with exposure to environment factors of modern urban society, namely – high responsibility, necessity to adopt solutions in short time, insufficient time for rest and recovery of body functions, limitation of social contacts.

To one of manifestations of the burnout syndromes can be referred Karoshi – death from fatigue at workplace, first recorded in 1969 in a 29-year employee of one of the publishing houses in Japan (province Karoshi). [8] The thing is about the prevalence of high priority requirements at production, unlimited working hours, stress, etc. over the quality of medical care, level of control stressful situations and social support. Since 1987, the Ministry of Labor of Japan is engaged in statistical accounting of cases of this syndrome, which thereafter, is compensated to the families of the deceased. The Karoshi syndrome was the cause of death of the Prime Minister of Japan Keidzo Obuchi in 2000, who being at that post within 20 months, had only 3 days off and worked no less than 12 hours a day.

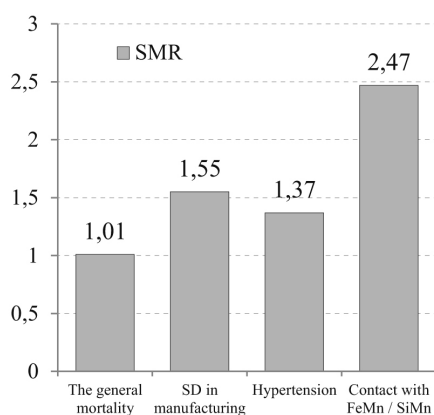


Fig. 3. Standardized indices of mortality in workers of ferroalloy production in Norway (1962–1990)

SD at work in Ukraine

Among the total number of sudden deaths in Ukraine 4,83 % died at workplace. Analyzing the structure of fatal accidents in Ukraine in 2012, it was found that in 1866 cases in 51,8 % of the deceased the diagnose the sudden death was stated due to natural causes, and the remaining 48,2 % died as a result of an accident. Thus 94 % is coronary sudden death, 4,97 – cerebral death, 1,03 % – pulmonary embolism.

In 2012 in Ukraine there were registered 966 cases of SD at place, making 5,3 per 100 000 working population and 14,1 per 100 000 populations, working in hazardous conditions (Class 3 by the «Hygienic classification of work» of 27.12.2001, № 528).

Among those at risk of SD two main categories should be mentioned: modifying and nonmodifying. The first group covers at first and foremost cardiovascular diseases (hypertension, atherosclerosis, cardiac arrhythmia), states involving metabolic disorders (hyperlipidemia, etc.), hemostatic disorders, overweight, alcohol consumption, exposure to external factors (including production) of the environment. Nonmodifying risk factors cover age, gender, ethnicity, heredity, climate, and so on. To the occurrence of SD at workplace the impact of hazardous factors of the working environment and the working process is of the most significance, such as: physical factors (vibration, noise, ionizing radiation, physical activity), unfavorable microclimate (hypothermia, overheating), stress and emotional strain.

Only 29,4 % subjects in all sectors of the economy in Ukraine meet State Statistics Committee sanitary requirements. At workplaces in industry in 90 % of cases levels hazardous factors exceed the permissible ones, including 31,3 % cases – by 10 to 100 times, in 7,3 % – more than 100 times. Such situation leads to the worsening the health of workers, development of acute and chronic occupational diseases, and death at workplace.

Epidemiological studies conducted in Ukraine indicate that the most frequent cases of SD at workplace are registered in Donetsk, Dnipropetrovsk and Kyiv regions, reaching from 10,76 % to 15,8 % in the structure of total mortality (Fig. 4). The following rank positions are taken by Kharkiv, Luhansk, and Poltava regions (6,80 %–7,56 %).

The analysis of case distribution of SD at workplace in Ukraine by manufacturing industries show their prevalence in such sectors of the economy as: socio-cultural sphere (22,0 %), transport (15,0 %), machinery and metallurgy (14,0 %) (Fig. 5). In our

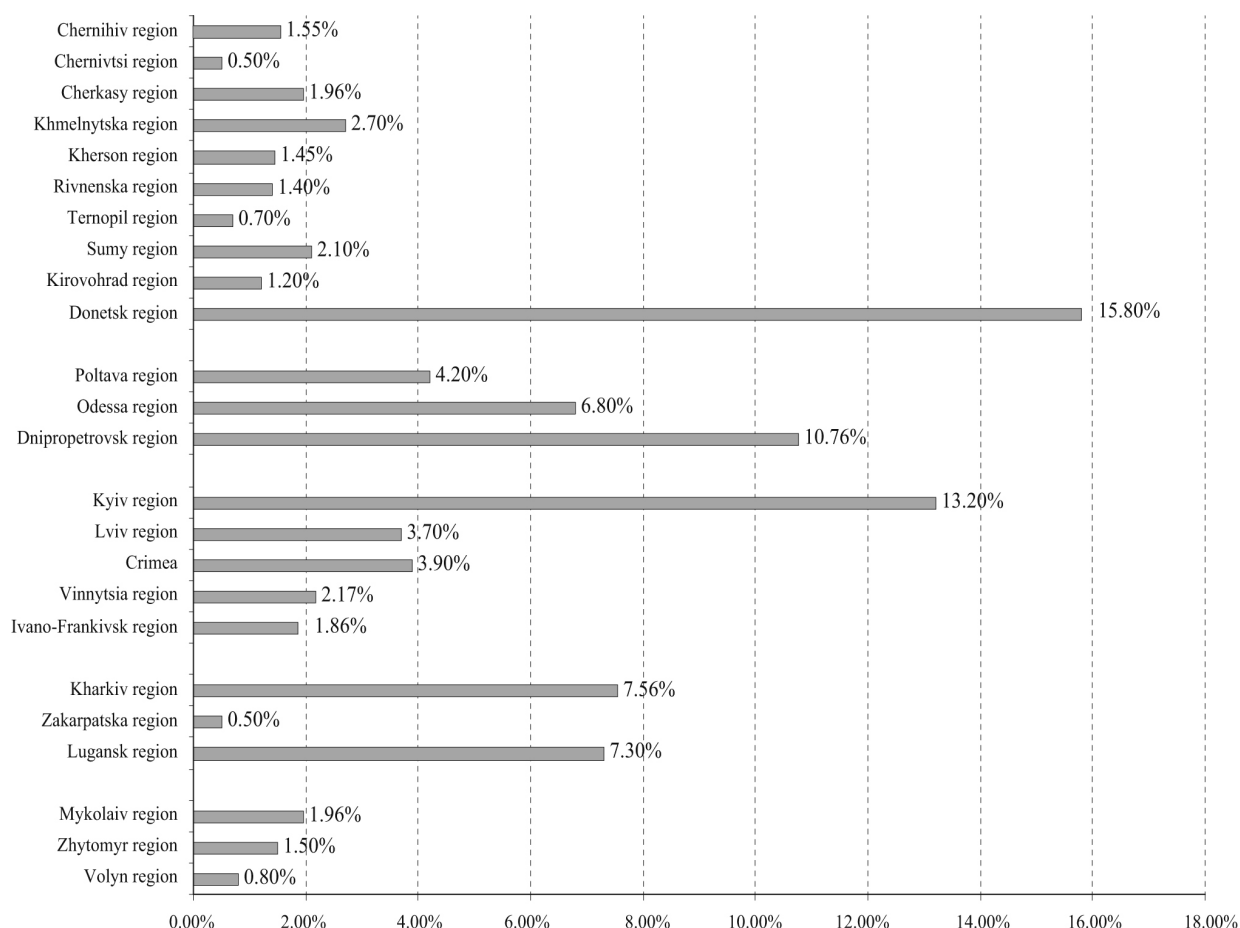


Fig. 4. Distribution of cases of SD at workplace in Ukraine by regions (2012)

opinion, these data demonstrate the shortcomings in statistics, because the leaders in the prevalence of SD should be those types of industry, which are associated with the effect of severe conditions, emotional stress, overheating and which can adversely affect the state of the circulatory system and result in fatal consequences. First of all, such conditions in Ukraine are characteristic for the work of miners of underground coal mines and steel production.

According to the «Hygienic classification of work» by indices of harmfulness and hazard of environment factors, heaviness and intensity of the work process, among suddenly dead at workplace 43,8 % work places are characterized by high risk level, 30,8 % – average risk, and only 25,4 % by low risk. 94,9 % deceased are men. About half of the affected individuals aged 50–60 years. However, among sudden deceased at work 6,5 % are workers under 40 years old (Fig. 6).

The analysis of statistical data shows that the majority of victims (55,3 %) due to SD have work experien-

ce of more than 30 years (Fig. 7). However, in 8,5 % of them the work experience was up to 10 years.

Over the last decades in Ukraine the problem SD at workplace in miners was studied by the State Enterprise «Research institute of medico-ecological problems of Donbass and coal industry». According to researchers, most of cases of SD in mines of Ukraine is registered in underground conditions (54,7 %) and in the first hours after starting the work (15,7 %) [9, 10]. The studies show that the age structure of sudden deaths at workplace miners coincides with the data for Ukraine in general, namely among the injured miners of main occupations of 70–85 % are persons aged 40–59. Among dead mining face workers and sinkers – 4 % were persons under 30 years old.

The maximum number of cases of SD in miners is recorded in spring – 44 %, almost twice less – in winter and summer (22–23 %) and the lowest number of cases – in autumn. Over a period of death development from the beginning of the terminal attack in 10 % of all

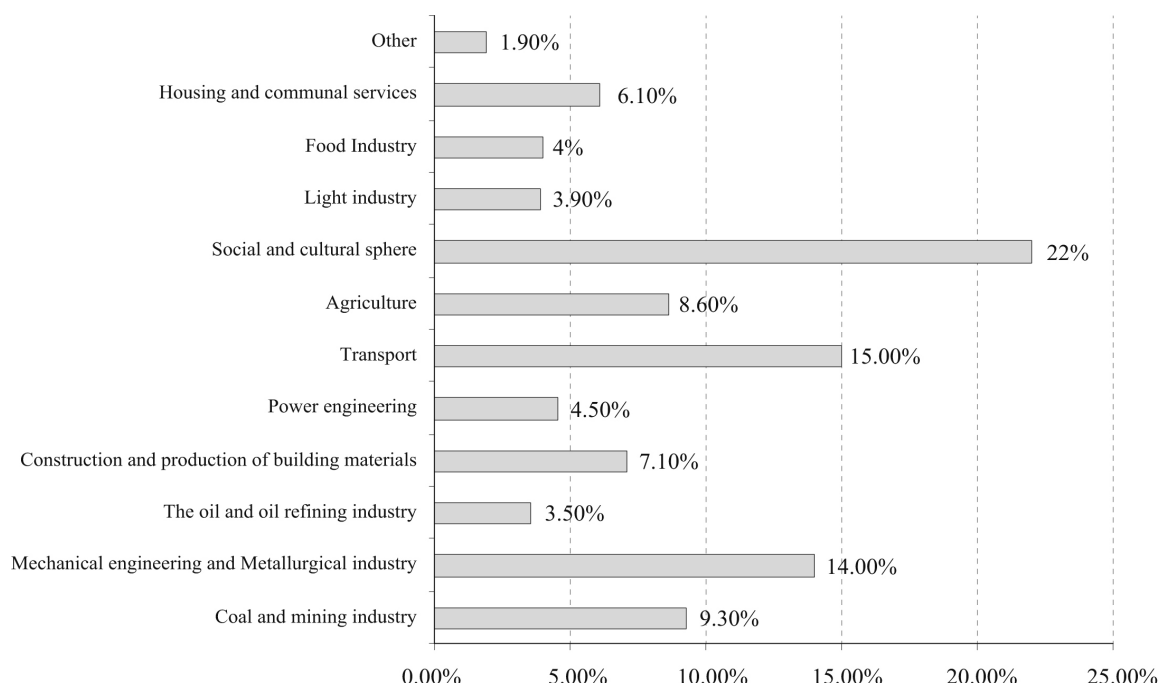


Fig. 5. Distribution of cases of SD at workplace in Ukraine by branches (2012)

cases the SD occurs in the first 5 minutes, 40% - within an hour, and the remaining 50% - within 6 hours from the moment of initial signs of worsening of health.

These data suggest that in mines of steeply pitching stratum the persons, affected by SD, are almost 4 times more than in mines of flat-lying seam (Fig. 8). Sudden deaths from cardiovascular diseases in miners of main occupations of mines with steeply pitching stratum are 8 times higher than in the same professions in flat-lying seam mines. This is likely due to more severe physical work for miners, taking into account geological peculiarities.

According to Kopytina R.A. et al [11] the main pathomorphological peculiarity of the increase of SD

cases in coal miners is atherosclerosis of the aorta and coronary arteries (87%), long eccentric stenosis of the coronary arteries (57%) and left ventricular hypertrophy (53%) (Fig. 9).

Metallurgy industry is one of the most dangerous for the risk of developing SD at workplace. From 2009 to 2011 in employees in this sector in Ukraine there were registered 199 cases of SD, including 85,6% - in metallurgists. The detailed study of working conditions show that 73,4% of them work in conditions of psycho-emotional strain, work conditions of 85,6% workers are characterized by a significant physical loads and unfavorable microclimate parameters (overheating).

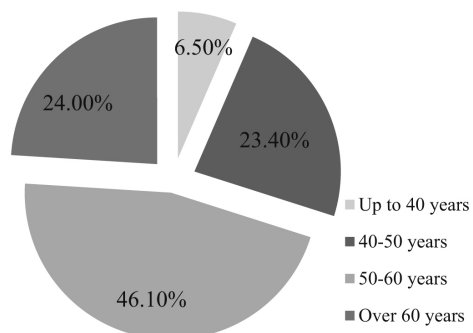


Fig. 6. Distribution of cases of SD at workplace in Ukraine by age

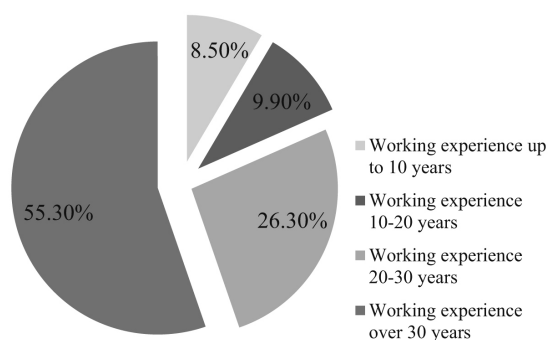


Fig. 7. Distribution of cases of SD at workplace in Ukraine, depending on the work experience

Table

Occupational and age structure of suddenly deceased miners in Donbass coal mines

Occupation	Age groups (years)				
	20–29 (n = 18)	30–39 (n = 109)	40–49 (n = 350)	50–59 (n = 279)	60 and more (n = 48)
Mining worker of purifying face (n = 123)	4,10 ± 9,90	16,30 ± 8,50	48,00 ± 6,60	24,30 ± 7,96	7,30 ± 9,20
Sinkers (n = 101)	4,0 ± 11,3	15,8 ± 9,4	38,6 ± 7,9	34,7 ± 8,2	6,9 ± 10,3
Timbermen (n = 43)	0	9,3 ± 14,5	32,6 ± 13,0	51,2 ± 10,9	6,9 ± 17,9
Mining face workers (n = 59)	1,7	10,2 ± 13,5	44,1 ± 9,9	42,4 ± 10,1	1,6
Auxiliary personnel (n = 250)	1,6 ± 7,2	16,0 ± 5,9	39,2 ± 5,0	37,6 ± 5,0	5,6 ± 6,4
Engineering and technical personnel (n = 76)	0	9,2 ± 11,8	39,5 ± 9,1	42,1 ± 8,9	9,2 ± 11,8
No data (n = 152)	2,6 ± 9,2	10,5 ± 7,9	55,3 ± 5,5	27,0 ± 7,0	4,6 ± 8,6

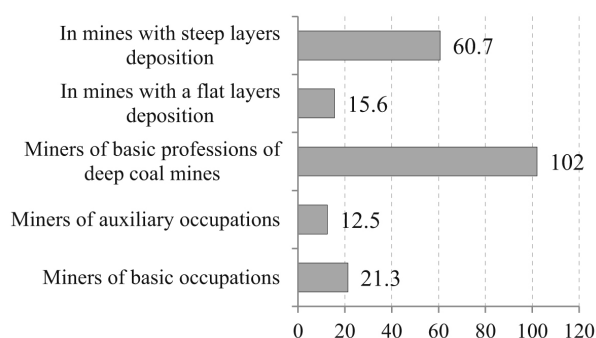


Fig. 8. Cases of SD in coal miners (per 100,000 workers)

The procedure of recognition of a worker's death, related to occupational conditions, is regulated in Ukraine by the Cabinet of Ministers of Ukraine of 30.11.2011 № 1232 in the Decree «Procedure of examination and registration of accidents, occupational diseases and accidents at work», p. 15. According to circumstances, in which an accident is recognized as

being associated with work, an Act is drawing up by the form H-, where it is stated: «Sudden worsening of health of the victim or his/her death, occurring while performing his/her working duties as a result of the effect of a dangerous or a harmful factor and/or factors of heaviness or intensity of the work process, is confirmed by a medical conclusion, or by the fact that a worker has not pass the required medical examination according to the legislation, and that the work in which it has been involved is contraindicated to the victim, according to medical conclusion». The list of circumstances under which the insured event of the state social insurance of citizens occurs, related to accidents at work and occupational diseases, is prescribed in Annex 6 to the Regulations.

In view of the importance of the SD problems at work in Ukraine, both in medical and socio-economic aspects, it seems necessary to introduce measures to prevent the occurrence of death of employees at work, among which the top priority should be the following:

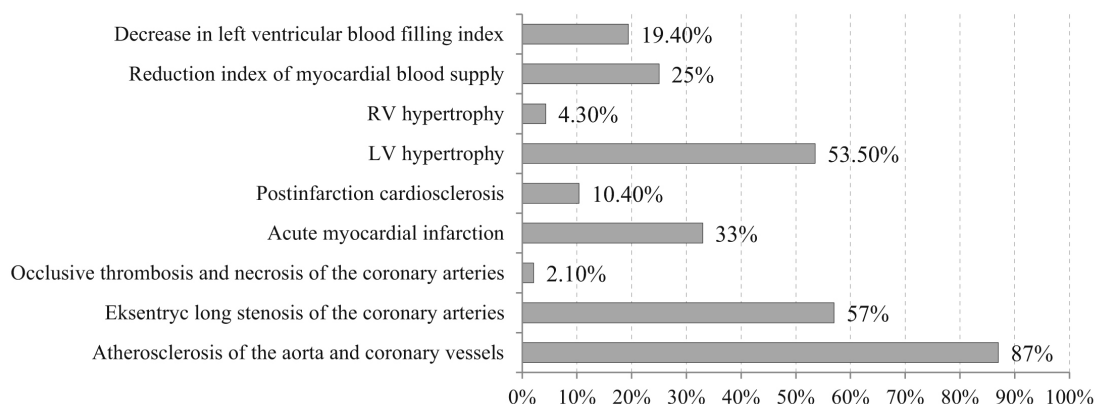


Fig. 9. Pathomorphological peculiarities of the cardiovascular system in SD in miners

1. Reestablishment of the system of health care for workers, exposed to dangerous work environment factors, to make it closer to production facilities (health units, health departments, etc.).
2. Improving the quality of the previously undertaken medical examinations in accepting for employment, and of preventive medical examinations of employees.
3. Implementation of more strict criteria for assessment of medical and professional fitness to work conditions in the effect of hazardous work environment factors (heavy physical work, stress, unfavorable climate, etc.). Using prognostic criteria for assessing an individual risk level when accepting for work in hazardous work conditions.
4. Improving emergency care to victims at the pre-hospital stage in the case of acute cardiac and cerebral states.
5. Increasing responsibility of business structures in preservation of health of the working population. Ensuring strict following the Law of Ukraine «On work protection, regarding responsibility for creating appropriate, safe and healthy work conditions».
6. Promoting implementation of principles of economic expediency in mechanisms of stimulation to creating proper work conditions by employers.
7. Involvement of employees in the process of improving work conditions and preservation of their health.

References

1. Sakai, A. 1990, «Sudden deaths among male employees: a six-year epidemiological survey», *J. Cardiol.*, Vol. 20, no. 4, pp. 957–961.
2. Brettel, H. F., Drewniok, K. 1994, «Sudden cardiac death and occupational activity», *Versicherungsmedizin*, Vol. 46, no. 1, pp. 15–17.
3. Robinson, C. C., Kuller, L. H., Perper, J. 1988, «An epidemiologic study of sudden death at work in an industrial country in 1979–1982», *Am. J. Epidemiol.*, Vol. 128, no. 4, pp. 806–820.
4. Faisal, A. 2003, «Causes of radiologists' death: a survey of 400 cases in the literature», *Radiat. Med.*, Vol. 21, no. 3, pp. 108–111.
5. Kawamura, T., Kondo, H. 1999, «Sudden death in the working population: a collaborative study in Central Japan», *Eur. Heart J.*, Vol. 20, no. 5, pp. 338–343.
6. Osava, M., Yukawa, N. 1998, «Sudden death in driving: case studies in the western area of Kanagawa», *Nihon Hoigakawasshi*, pp. 315–318.
7. Hobbesland, A., Thelle, D. S. 1997, «Mortality from cardiovascular diseases and sudden death in ferroalloy plants», *Scand. J. Work Environ. Health*, Vol. 23, no. 5, pp. 334–341.
8. Hiyama, T., Yoshihara, M. 2008, «New occupational threats to Japanese physicians: karoshi (death due to overwork) and karoji satsu (suicide due to overwork)», *J. Occup. Environ. Med.*, Vol. 65, no. 6, pp. 428–429.
9. Cherkesov, V. V. 1997, Prevalence, risk factors and pathomorphological peculiarities of the sudden cardiac death in miners, Cardio-vascular diseases in miners. Donetsk: Donbass, pp. 57–80 (in Russian).
10. Cherkesov, V. V., Kobets, G. P., Kopytina, R. A. et al. 1983, «Occupational aspect of the sudden cardiac death in coal miners», *Vrachebnoye delo*, no. 9, pp. 84–87 (in Russian).
11. Kopytina, R. A., Cherkesov, V. V., Kobets, G. P. 1993, «Prevalence and pathomorphological peculiarities in development of the sudden coronary death in coal miners», *Terapevticheskiy arkhiv*, no. 9, pp. 41–43 (in Russian).
8. Implementation of an audit system for work protection and socio-hygienic monitoring of work conditions and health status of the working population.

Conclusion

The problem of sudden death at workplace is still not sufficiently studied both in Ukraine and abroad. The studies concerning the mentioned problem are sporadic, related mainly selected types of industry, almost not covering clinical aspects, determination of the morphological structure of pathological states, which is an etiological factor of the sudden death at work, risk factors in its occurrence. It should be mentioned that legal aspects of the death recognition of an employee at work also require much improvement, concerning more specific definition of circumstances of death occurrence, giving more accurate terminology.

The implementation of the proposed preventive measures, the most important of which is the reestablishment of the system of health care for workers, being under the influence of dangerous factors of the work environment, will undoubtedly lead to the decrease of the sudden death cases at workplace and the saving the employment resource in Ukraine.

Басанець А. В.¹, Остапенко Т. А.¹, Черкесов В. В.², Фартушна О. Є.¹**РАПТОВА СЕРЦЕВА СМЕРТЬ НА РОБОЧОМУ МІСЦІ**¹ДУ «Інститут медицини праці НАМН України», м. Київ²ДП «НДІ медико-екологічних проблем Донбасу та вугільної промисловості», м. Донецьк

Вступ. В останнє десятиріччя відмічається збільшення випадків раптової смерті (РС) та «омолодження» контингенту раптово померлих. Удосконалюються та розробляються нові технології діагностики та лікування серцево-судинних захворювань, що є основою причиною РС, однак, навіть у розвинених країнах проблема раптової серцевої смерті (РСС) залишається невирішеною. РСС на робочому місці за даними ВООЗ складає 7 %. Серед осіб, померлих внаслідок РС, значну частку становлять молоді особи у віці до 35 років, а серед причин відзначається раптове фізичне або психоемоційне навантаження.

Мета дослідження. Встановити розповсюдженість РС на робочому місці у різних професійних групах та визначити особливості її настання залежно від умов праці та професійних обов'язків потерпілих.

Результати. У статті наведено дані щодо розповсюдженості РС на робочому місці в Україні. Дослідженням встановлено, що в 2012 році в Україні зареєстровано 966 випадків РС на робочому місці, що становить 5,3 на 100 000 працюючого населення та 14,1 на 100 000 населення, працюючого в шкідливих умовах праці. Проведений аналіз випадків РС залежно від статі, віку та стажу роботи свідчить, що майже 95 % — це особи чоловічої статі, їхній вік становив 50–60 років, а трудовий стаж — більше 30 років. Найчастіше випадки РС на робочому місці зареєстровані в Донецькій, Дніпропетровській та Київській областях, досягаючи від 10,76 до 15,8 % у структурі загальної смертності. Представлений аналіз розподілу випадків РС на робочому місці в Україні за галузями виробництва, основними з яких є соціально-культурна сфера — 22 %, транспорт — 15 %, машинобудування та металургійна промисловість — 14 %, вугільна та гірничо-видобувна промисловість — 9,3 %. Детально проаналізовані випадки РС на робочих місцях шахтарів підземних вугільних шахт, умови праці яких пов'язані з впливом фізичного та емоційного навантаження, високих температур, що можуть несприятливо позначитись на стані системи кровообігу й призвести до фатального наслідку. Запропоновані методи профілактики РС на робочому місці.

Ключові слова: раптова смерть, раптова серцева смерть, раптова смерть на робочому місці

Басанец А. В.¹, Остапенко Т. А.¹, Черкесов В. В.², Фартушная Е. Е.¹**ВНЕЗАПНАЯ СЕРДЕЧНАЯ СМЕРТЬ НА РАБОЧЕМ МЕСТЕ**¹ГУ «Институт медицины труда НАМН Украины», г. Киев²ГП «НИИ медико-экологических проблем Донбасса и угольной промышленности», г. Донецк

Вступление. В последнее десятилетие отмечается увеличение случаев внезапной смерти (ВС) на рабочем месте и «омоложение» контингента внезапно умерших. Основной причиной ВС являются сердечно-сосудистые заболевания. Несмотря на усовершенствование и разработку новых технологий в диагностике и лечении заболеваний органов кровообращения, даже в развитых странах проблема внезапной сердечной смерти (ВСС) остается нерешенной. ВСС на рабочем месте по данным ВОЗ составляет 7 %. Среди лиц, умерших вследствие ВС, немалую часть составляют молодые лица в возрасте до 35 лет, а среди причин выделяют внезапное физическое или психоэмоциональное напряжение.

Цель исследования. Установить распространенность ВС на рабочем месте в разных профессиональных группах, особенности ее наступления в зависимости от условий труда и выполняемой работы.

Результаты. В статье приведены данные о распространенности ВС на рабочем месте в Украине. Исследованием установлено, что в 2012 году в Украине зарегистрировано 966 случаев ВС на рабочем месте, что составляет 5,3 на 100 000 работающего населения и 14,1 на 100 000 населения, работающего во вредных условиях труда. Проведенный анализ случаев ВС в зависимости от пола, возраста и стажа работы свидетельствует, что почти в 95 % случаев — это лица мужского пола, средний возраст которых составлял 50–60 лет, а трудовой стаж — более 30 лет. Наибольшее количество случаев ВС на рабочем месте зарегистрировано в Днепропетровской и Киевской областях, достигая от 10,76 до 15,80 % в структуре общей смертности. Представлен анализ случаев ВС на рабочем месте в Украине по отраслям производства, основной из которых является социально-культурная сфера — 22 %, транспорт — 15 %, машиностроение и металлургическая промышленность — 14 %, угольная и горнодобывающая промышленность — 9,3 %. Детально проанализированы случаи ВС на рабочих местах шахтеров подземных угольных шахт, условия труда которых характеризуются воздействием физического и эмоционального напряжения, высоких температур и могут неблагоприятно повлиять на состояние системы кровообращения, и привести к фатальным последствиям. Предложены методы профилактики ВС на рабочем месте.

Ключевые слова: внезапная смерть, внезапная сердечная смерть, внезапная смерть на рабочем месте

Надійшла: 20.01.2014 р.

Contact person: Basanets A. V., SI «Institute for Occupational Health of National Academy of Medical Sciences of Ukraine», Kiev. Tel. +38 0 44 284 34 37. E-mail: basanets@ioh-ams.kiev.ua