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OCCUPATIONAL RISKS OF DEVELOPMENT OF INDUSTRIAL CONDITIONALITY IN EMPLOYEES OF METALLURGICAL ENTERPRISE

Sharavara Larisa
PhD, Associate Professor,
Department of General Hygiene and Ecology,
Zaporizhzhia State Medical University

Introduction. In modern production employees of metallurgical enterprises are exposed to a complex of harmful and dangerous factors of the production environment, which have a detrimental effect on their health and cause the development of occupational diseases. The structure of harmful production factors that affect the body of workers in this industry is a complex that includes increased noise, general and local vibration, ultraviolet radiation and harmful chemicals released into the air of the work area, as well as adverse factors of the labor process, including forced labor. posture and functional overstrain of the extremities [5].

The aim of the study. Identify occupational risks of industrial-related morbidity among employees of a metallurgical enterprise.

Research methods.

The incidence of workers (R), relative risk (RR), attributive risk (AR) in absolute terms and as a percentage (ARe,%), population attributive risk (PAR) per 1000 persons per year and population attributive risk as a percentage (PAR%) were calculated to assess the occupational risks of industrial-related morbidity among employees of the studied metallurgical enterprise, according to the incidence of temporary disability for individual nosological forms . These indicators were calculated for agglomeration and smelting shops, repair shops of metallurgical furnaces, where working conditions are harmful. Employees of the plant management department working in acceptable working conditions were used as a control group.

Results and discussion.

As a result of the risk assessment of agglomeration workers, it was found that the highest levels of risk and statistically significantly higher frequency than in the control group, among the following nosological forms: respiratory diseases, nervous system diseases, musculoskeletal diseases.

The level of respiratory morbidity among employees of the agglomeration shop was 8.4 per 1000 workers, in the control group – 0.8 per 1000 workers. The relative risk for the disease was RR 10.8 with a Cl 95% of 9.1–13.7, which has an almost complete degree of work-related nature and refers to respiratory diseases as occupational. The share of diseases caused by working conditions among the workers of the agglomeration shop was 90.1% (Cl 95%; 60.9−94.03%), among the general population 68% (Cl 95%; 67.4−69.7 %).

The incidence of diseases of the nervous system among the workers of the shop was 19.6 per 1000 workers, in the control group – 4.7 per 1000 workers. The relative

risk for diseases of the nervous system was RR = 4.2 at Cl 95% 2.1−6.3, which has a very high degree of conditioning and refers to this disease as production-related. The share of diseases caused by working conditions among the employees of the agglomeration shop was 76.2% (Cl 95%; 29.1−91.9%), among the general population 41% (Cl 95%; 39.8−42.2 %).

The incidence of diseases of the musculoskeletal system among employees of the agglomeration shop (112.04 per 1000 employees) exceeded the corresponding indicator in the control group by 2.7 times (42.8 per 1000 employees). The relative risk for the disease was RR = 2.6 at Cl 95% 1.74−3.93, which has a high degree of association with working conditions and refers to diseases of the musculoskeletal system as production-related. The share of diseases caused by working conditions among the workers of the agglomeration shop (ARe,%) significantly exceeded the share among the general population (PAR,%) - 61.8% (Cl 95%; 42.5-74.6%) and 26% (Cl 95%; 24.6−27.6%), respectively.

Calculations of occupational risk of health problems of employees of the smelting shop showed that the highest levels of risk and statistically significantly higher frequency than in the control group were observed among diseases of the nervous system, diseases of the musculoskeletal system and connective tissue, respiratory diseases.

The incidence of diseases of the nervous system among employees of the smelting shop was 19.2 per 1000 workers, in the control group – 4.6 per 1000 workers. The relative risk for diseases of this group was RR = 4.1 at Cl 95% 1.1–14.6, which has a very high degree of association with working conditions and refers to this disease as production-related. The share of diseases caused by harmful working conditions among the workers of the smelting shop ARe – 75.7% (Cl 95%; 13.9−98.1%) significantly exceeded the corresponding figure among the general population PAR – 30.3% (Cl 95%; 28.9— 31.6%).

The incidence rate of respiratory diseases among employees of the smelter was 850.9 per 1000 workers, in the control group – 529.6 per 1000 workers. The relative risk was RR = 1.6 at Cl 95% 1.4−1.9, which has an average degree of association with working conditions and refers to this disease as production-related. The share of diseases caused by harmful working conditions among smelters was ARe – 37.7% (Cl 95%; 26.6−47.2%), among the general population PAR – 7.8% (Cl 95% 5.9−9.6%).

For diseases of the musculoskeletal system and connective tissue the incidence rate was 86.5 per 1000 workers, in the control group – 42.8 per 1000 workers. The relative risk was RR = 2.02 at Cl 95% 1.2−3.4, which has a high degree of association with working conditions and refers to this disease as production-related. The share of diseases caused by working conditions among smelter workers (ARe,%) significantly exceeded the corresponding indicator among the general population (PAR,%) - 50.5% (Cl 95%; 15.7−70.9%) and 12,5% (Cl 95%; 10.7−14.2%), respectively.

The risk assessment of health problems of employees of the metallurgical furnace repair shop showed that the highest levels of relative risk and statistically

significantly higher frequency than in the control group were found among skin and subcutaneous tissue diseases, nervous system diseases, musculoskeletal diseases and connective tissue diseases, diseases of the genitourinary system.

The incidence of skin and subcutaneous tissue diseases among the employees of this shop was 65.4 per 1000 workers, in the control group – 10.9 per 1000 workers, which is almost 6 times more. The relative risk for the disease was RR = 6.0 at Cl 95% 3.2−11.4, which has an almost complete degree of association with working conditions and refers to the disease as occupational. The share of diseases among the workers of this shop was 83.3% (Cl 95%; 68.3−91.2%), while among the general population – 55.5% (Cl 95%; 54.6−56.4 %).

The incidence of diseases of the nervous system in employees was 4 times higher than in the control group and amounted to 16.3 per 1000 employees, while in the control group – 4.6 per 1000 employees. The relative risk for the disease was RR = 3.5 at Cl 95% 1.1−10.4, which has a very high degree of association with working conditions and refers to this disease as production-related. The share of diseases caused by working conditions among the workers of this shop was 71.4% (Cl 95%; 14.9−90.4%), among the general population 38.5% (Cl 95%; 37.2-39, 6%).

The incidence of diseases of the musculoskeletal system and connective tissue among employees of the repair shop of metallurgical shops was 126.2 per 1000 workers, in the control group – 42.8 per 1000 workers. The relative risk for this nosological form was RR = 2.9 at Cl 95% 2.02-4.2, which has a high degree of association with working conditions and refers to the disease as production-related. The share of diseases caused by working conditions among workers (ARe,%) significantly exceeded the corresponding indicator among the general population (PAR,%): 66% (Cl 95%; 50.6−76.6%) and 32.7% (Cl 95%; 31.4−34.04%), respectively.

The incidence of diseases of the musculoskeletal system and connective tissue among employees of the repair shop of metallurgical shops was 126.2 per 1000 workers, in the control group – 42.8 per 1000 workers. The relative risk for this nosological form was RR = 2.9 at Cl 95% 2.02-4.2, which has a high degree of association with working conditions and refers to the disease as production-related. The share of diseases caused by working conditions among workers (ARe,%) significantly exceeded the corresponding indicator among the general population (PAR,%): 66% (Cl 95%; 50.6−76.6%) and 32.7% (Cl 95%; 31.4−34.04%), respectively.

The incidence of diseases of the genitourinary system among employees of the repair shop of metallurgical furnaces was 102.8 per 1000 workers, in the control group – 38.9 per 1000 workers. The relative risk for the respective disease was RR = 2.6 at Cl 95% 1.7−3.9, which has a high degree of association with working conditions and refers to this disease as production-related. The share of diseases caused by harmful working conditions among workers (ARe,%) exceeded the corresponding indicator among the general population by 2 times (PAR,%) - 62.1% (Cl 95%; 43.2−74.7%) and 29.1% (Cl 95%; 27.7−30.5%), respectively.

Conclusions.

Peculiarities of morbidity formation at a metallurgical enterprise are the influence of harmful factors of the production environment, which is confirmed by high indicators of relative risk of disease development. For some nosological groups the degree of association with working conditions is estimated from medium to almost complete, which allows them to be classified as production-related, and in some cases – as occupational diseases.

The share of diseases among workers working in harmful conditions is much higher (37.8% −90.1%) compared to the control group (7.8% −68%), which confirms the impact of production factors on the health of workers in harmful working conditions.

To prevent adverse effects of working conditions on employees of metallurgical enterprises, a system of occupational risk management is proposed. It includes the following measures: determining the list of production-related morbidity for employees of the enterprise, according to morbidity data; measures of primary, secondary prevention, measures of social protection of workers.

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