Occupational pathologies and personal identification

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Abstract. The article deals with the application of factual data on occupational pathologies to resolve issues of personal identification. It is postulated that the signs of occupational diseases find their external expression on the skin and skin derivatives, and also lead to pathological changes in the normal course of physiological processes. This makes it possible to apply data on occupational pathologies to solve problems of forensic identification.

Keywords: criminalistics, forensic examination, identification, unidentified corpse, professional pathologies.

No less valuable identification and diagnostic information can be obtained by studying the type of occupation (activity) of the identified person. When carrying out work, a person comes into contact with various tools. A person's labor activity takes place under various working conditions. This leads to the appearance of various signs that find their expression both on the surface of the skin and in morphological changes of internal organs.

Such changes can be both physiological and pathological in nature. In the latter case, they talk about occupational diseases. If the changes are physiological, then these are professional signs.

At the same time, occupational diseases should be considered those in the development of which the main role belongs to production factors.

Occupational diseases are a valuable material for conducting identification research.

From the point of view of forensic identification, occupational diseases and their signs that have developed on the basis of physical, chemical and mechanical factors should be recognized as the most informative.

The influence of mechanical factors leads to the formation of identification and diagnostic signs on the exposed parts of the body (hands, face).

Currently, the following classification of signs of occupational diseases can be used for identification purposes:

a) staining, which is a consequence of the penetration of coloring substances into the stratum corneum of the skin;

b) deposits of various substances on the skin;

c) cracks and abrasions;

d) bone changes as a result of mechanical and chemical influences;

e) pigmentation due to increased deposition of pigment;

f) homozolennosti;

g) scars and atrophy;

h) implants and tattoos.

When conducting an external examination of a corpse or examining a living person, in order to identify professional signs, attention should be paid to the exposed parts of the body, the parts directly in contact with the instrument or device.

However, to identify them, it is necessary to have special knowledge in the field of medicine, treatment of occupational diseases. Therefore, for the production of investigative actions aimed at establishing the identity, it is advisable to resort to the help of a specialist.

Numerous well-known occupational diseases are caused by a variety of chemical factors that have a selective effect on the entire body, organ systems and individual organs: heart, lungs, kidneys, liver, etc.

In this connection, V. V. Chochlov rightly points out that «... there are no poisons with a strictly isolated localization of action, each poison acts on the entire body, but its stronger selective effect affects some organs and even entire systems»[1].

This effect can be detected by a thorough internal examination of the corpse. The algorithm for examining the corpse is spelled out in detail in the order of the Ministry of Health and Social Development of 12.05.2010 No. 346n «On approval of the procedure for organizing and conducting forensic medical examinations in state forensic expert institutions of the Russian Federation»[2] and other departmental normative legal acts.

Pathological changes in the tissues of the bronchi also occur with the direct effect of the intoxicant on the peribronchial tissue. This makes it possible for a forensic medical expert to put forward a version that chronic bronchitis developed as a result of exposure to a toxic substance.

Dust in the air of workshops, mines, enterprises often leads to the emergence and development of such occupational diseases as pneumoconiosis. One of the manifestations of pneumoconiosis is the progressive development of lung fibrosis.

The most common of all pneumoconioses is silicosis. This disease develops when silica (silicon dioxide) is in the air. Silicosis can be found in workers engaged in stone processing, grinding, molding in the mining, foundry, ceramic industry.

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[1] Hohlov V. V., Andrejkin A. B. Sudebnaya medicina. Moskva, 2019. p. 2.

[2] Ob utverzhdenii poryadka organizacii i proizvodstva sudebno-medicinskih ekspertiz v gosudarstvennyh sudebno-ekspertnyh uchrezhdeniyah Rossijskoj Federacii : prikaz Minzdravsocrazvitiya ot 12 maya 2010 g. № 346 n. Dostup iz spravochno□pravovoj sistemy «Konsul'tantPlyus». Tekst elektronnyj.

The pathomorphological picture of changes in the lung tissue is quite diverse. The pathogenesis is determined by the type of dust, the duration of its inhalation and the individual characteristics of the patient's body. In medical science, it is customary to distinguish three stages of the clinical course of silicosis, depending on the data of clinical X-ray analysis: silicosis of the I, II, III stages. Such a classification can be quite correctly applied to solve issues related to identification.

The determining factor in the development of this disease is the type of inhaled dust. The most dangerous is the inhalation of asbestos and talc dust, since this chemical compound contains the largest amount of carbon dioxide. The values of dust grains (its dispersion), its concentration in the inhaled air, the duration of inhalation, the age of the employee are also important (the development of silicosis in young people proceeds more rapidly).

During the X-ray examination, characteristic changes in the lung tissue are revealed in the form of compaction of the walls of the bronchi, splitting and compaction of the roots of the lungs, strengthening of the pulmonary pattern, the appearance of additional shadows.

When inhaling coal dust, anthracosis develops. In medical science and practice, there are two groups of patients employed in the coal industry:

- the first group consists of sinkers. They most often develop silico-anthrocosis, since the occurrence of coals is observed in the rocks of siliceous sandstone. During its processing, quartz dust is formed;

– the second group is formed by miners, drivers of mining machines and mechanisms. They have contact with black coal dust, so they most often have pure anthrocoses.

Another type of pneumoconiosis is siderosis. It develops when inhaling dust that has iron in its composition. It is observed in persons engaged in the extraction of red ironstone, foundry workers of blast furnaces, processing (grinding and polishing of metal).

Bissinosis occurs in people engaged in cotton production. Cotton dust has a very complex chemical composition. It contains substances of organic and inorganic origin. With an increase in the quality of cotton, the content of proteins in its dust increases. Its specific gravity is not high, the size is about one micron. This is explained by the penetration of dust deep into the lungs up to the alveoli. In clinical laboratory studies of the sputum of patients with bissinosis, cotton fibers are found in the sputum.

It is not possible to fully describe the clinical picture of the manifestation of pneumoconiosis within the framework of this textbook. We believe that this is not necessary. We will only point out that in order to solve the problems of forensic identification of an individual, it is necessary to carefully examine the skin during an external examination of a corpse and pay close attention to morphological changes in internal organs. It is important to establish and

evaluate the relationship of the pathomorphological changes that have arisen with the features of the professional activity of the person whose identity is being established.Among occupational diseases, a significant place is occupied by bronchopulmonary diseases of toxic and chemical etiology. These include bronchitis, bronchiolitis, pneumosclerosis, pneumonia, pulmonary edema.

The degree of damage in this case directly depends on the concentration of the harmful substance in the air, the duration of inhalation and the general condition of the body. When establishing an identity, cases of prolonged inhalation of a toxic substance of a small concentration, leading to the development of chronic diseases, are of particular interest.

Prolonged industrial intoxication leads to the development of occupational hepatitis. All hepatotropic poisons can lead to the development of dystrophic changes in liver parenchyma cells, including massive and submassive liver cirrhosis. There may be pathologies of the biliary tract: edema of the walls of the gallbladder, fullness of the serous membrane.

The group of occupational diseases includes pathologies of the kidneys and urinary tract. However, only bladder tumors are considered occupational diseases.

Dust in the air of workshops, mines, enterprises often leads to the emergence and development of such occupational diseases as pneumoconiosis. One of the manifestations of pneumoconiosis is the progressive development of lung fibrosis.

Among the occupational hazards, the traces of which have forensic significance, it is necessary to take into account the following:

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