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NOISE-INDUCED HEARING LOSS AS AN OCCUPATIONAL AND ENVIRONMENTALLY RELATED DISEASE: MODERN APPROACHES TO DIAGNOSTICS

Angela V. Basanets[1], Mykola H. Prodanchuk[1], Viktor A. Hvozdetskyi[2]

[1]L.I. Medved's Research Center of Preventive Toxicology, Food and Chemical Safety of the Ministry of Health of Ukraine (State Enterprise), Kyiv, Ukraine
[2]Institute of Otolaryngology named after prof. O. S. Kolomiychenko National Academy of Medical Sciences of Ukraine (State Enterprise), Kyiv, Ukraine

Abstract

Introduction. According to the WHO, from 4 to 10 million occupational diseases are registered annually worldwide. The issue of diagnosing, registering and monitoring diseases associated with exposure to high noise levels, toxic substances on the hearing organ is extremely important, given the high risks of exposure to causal agents in certain professions. Acquired hearing loss is one of the most important components of acubarotrauma, and can be diagnosed in the military and representatives of certain professions in the territory of hostilities.
Aim. To analyze the international system of recognition of occupational noise-induced hearing loss (NIHL), to compare the diagnostic criteria with the national ones and to provide recommendations for the adaptation of the national system to international requirements.
Materials and methods. An analytical review of scientific publications was performed using reference databases of scientific libraries PubMed, MEDLINE and text databases of scientific publishing houses PubMed Central, BMJ Group and other reputable databases. Analysis of reporting materials from the State Labor Service of Ukraine, and the International Labor Organization (ILO) was also conducted. The methods of system, comparative and content analysis were used.
Results. About 1000 new cases of occupational NIHL are registered annually in Ukraine. Hearing loss is one of the most important components of acubarotrauma, accounting for 23.7% of injuries among the wounded soldiers. Significant discrepancies have been identified in the system of recognition of occupational NIHL in Ukraine compared to the ILO 2022 Guidance. Ukrainian regulatory documents do not define the characteristics of critical noise levels, the signs of clinical manifestations and diagnostic criteria of the disease. The absence of defined terms for the minimum duration of exposure and maximum latent period makes it difficult to objectify the diagnosis, confirm the etiology of the disease, and leads to distortion of statistical indicators of occupational morbidity.
Conclusions. The system of recognition of occupational NIHL in Ukraine needs to be adapted to the requirements recommended by the ILO. The problem is particularly urgent given the high additional risks of developing the pathology in the military and civilian populations in connection with the war-related injuries.

Keywords: **noise-induced hearing loss, occupational disease, industrial noise, acubarotrauma**

INTRODUCTION

Diseases associated with exposure to high noise levels occupy leading positions in the structure of occupational diseases in many countries of the world. Noise exposure in the workplace is one of the most common occupational risks in the world. According to researchers, 1-4% of workers are exposed to noise, and 16% of disabling hearing impairments worldwide are the result of excessive noise exposure at the workplace [1]. In Ukraine, about 1000 new cases of occupational hearing impairment caused by noise are registered annually, which ensures the 3-4th ranking in the structure of occupational diseases [2, 3]. The highest risks of pathology development are observed in the coal mining industry, metallurgical and machine-building production [4, 5].

In Ukraine, the problem of acquired hearing loss due to physical factors has become especially important in the context of war, which entails additional risks of developing hearing pathology in both the military and civilian populations. Acubarotrauma is one of the most common injuries in areas of hostilities, and can be diagnosed in the military and representatives of certain professions (State Emergency Service, firefighters, etc.) [6].

At the 307th session of the ILO Governing Body in March 2010, the ILO List of Occupational Diseases (LOD) approved by the Meeting of Experts on October 27-30, 2009 in Geneva, was revised. This document was entitled «ILO List of Occupational Diseases (Revised 2010)» and its purpose was to assist countries in the prevention, recording, notification and, if applicable, compensation of diseases caused by dangerous and hazardous working conditions [7].

In connection with the reintegration process of Ukraine's accession to the European Union, the system of recognition, registration, and recording of occupational diseases and the related legislative and methodological framework should be adapted to international requirements and recommendations.

RESULTS AND DISCUSSION

According to the Global Burden of Disease (GBD) resource the highest level of YLDs (Years lived with disability), caused by exposure to high noise levels in the world is observed in China – 162 per 100,000 people. In Ukraine the rate reaches 78 per 100,000 population, which is comparable to the countries of Eastern Europe, the Baltic States, and the former Soviet Union (68-95 per 100,000 population) and higher than in Western Europe and Scandinavia (50-55 per 100,000 population) (Figure 1) [8, 9].

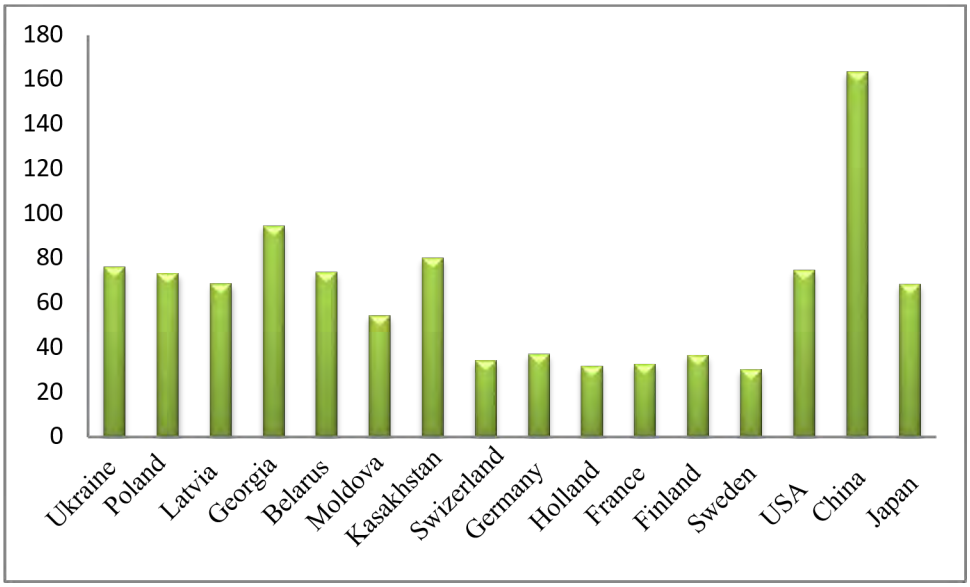

Figure 1. YLDs in countries around the world due to diseases associated with exposure to high noise levels (per 100,000 population).

According to epidemiologic studies, acubarotrauma in the context of war in Ukraine accounts for 6.6%-7.1% of the total structure of combat sanitary losses [6]. It has been found that in military mobile hospitals, acubarotrauma accounts for 23.7% of all combat injuries. Sensorineural damage as a result of acubarotrauma affects the quality of life of victims and leads to their disability. Among the sources of noise in modern warfare are the use of artillery weapons, with modern powerful and accurate types of ammunition prevailing. Such impact, given the peculiarities of warfare, is usually complex, and acubarotrauma includes not only the problem of hearing loss, but a wider range of lesions: central and peripheral nervous system, mental and behavioral disorders, etc. [10, 11].

In many countries, the LOD roughly corresponds to the LOD recommended by the ILO The ILO LOD (2010) consists of four sections [7]: 1) occupational diseases caused by exposure to agents arising from work activities (chemical, physical, biological agents and infectious or parasitic diseases); 2) occupational diseases by target organ systems (respiratory, skin, musculoskeletal, mental, and behavioral disorders); 3) occupational cancer; 4) other diseases.

In contrast to the ILO LOD (2010), the Ukrainian LOD is classified into 7 groups mainly by etiologic factor [12]: I – diseases caused by chemical agents; II – diseases caused by exposure to industrial aerosols; III – diseases caused by physical agents; IV – diseases associated with physical overload and overstrain of individual organs and systems; V – diseases caused by biological agents; VI – allergic and toxic-allergic diseases; VII – malignant tumors («occupational cancer»).

In the ILO LOD, hearing loss caused by noise exposure is included in section 1.2. «Diseases caused by physical agents» and is coded by ICD-10 codes H83.3 and Z57.0 [7].

The ILO LOD (2010) Guidance identify **common characteristics of causal agents** of NIHL and define them to better understand the pathogenesis of the disease. The term «noise» covers all unwanted and disturbing sounds with unpleasant acoustic characteristics which can lead to hearing loss or be harmful to health. Noise is the result of pressure fluctuations or vibrations in an elastic medium (e.g., air, water, solids) generated by a vibrating surface or turbulent fluid flow. When a sound wave propagates in air, which is the medium most commonly encountered in occupational exposures, pressure fluctuations above and below atmospheric pressure appear as compression and rarefaction waves that alternate (sound frequency) in the range of several (hertz, Hz) to several thousand (kilohertz, kHz) times per second. The interface of mechanical waves with the hearing system and its subsequent neural processing gives rise to human perception of sound [13, 14].

One of the acoustic wave parameters commonly used to assess sound exposure is the sound pressure level, expressed on a logarithmic scale in decibels (dB). The magnitude of sound perceived by an individual (i.e., its loudness) varies with frequency. Within the range of sound frequencies audible to human beings (from 20 Hz to 20 kHz), the ear is most sensitive to the frequencies of 3-4 kHz. In this context, the purpose of the weighting scales currently used in sound-level meters is to simulate isoloudness curves over frequency under different sound intensity conditions [15]. In particular:

– A-weighting adjusts the measurement according to the frequency sensitivity of the human ear at low levels. Noise measurements made using the A-weighting scale are expressed as dB(A).

– C-weighting adjusts the measurement according to the frequency sensitivity of the human ear at very high noise levels and is typically used for peak measurements. Noise measurements made using the C-weighting scale are expressed as dB(C).

Noise can be classified as continuous or impulsive, according to the temporal variation in sound pressure levels. Continuous noise maintains a relatively stable level over a period of time. Impulsive noise is a sound characterized by the development of energy over a very short time through a very elastic medium, resulting in a high shock frontal pressure. This is typical for energy transformation through solids (for example, hammering a metal), as well as for explosions in the air. This is the mechanism of noise exposure observed in acubarotrauma as a result of explosions during military operations and in certain technological processes in various professions (use of jackhammers by miners, explosions in open-pit mining, etc.) [16, 17].

To assess the exposure-disease relationship, it is extremely important to analyze the **characteristics of the etiological factor** that caused the disease. Developed countries have gradually established a system to protect workers from noise exposure, while developing countries tend to experience increasing levels of urban and industrial noise [18, 19]. Massive metalworking and construction equipment such as hammer presses, perforators, drills, and cutting blades dissipate most energy as shock waves in the material being processed, resulting in loud intermittent (hammer) or continuous (drills, cutters) noise [4]. Noise is also generated by the operation of moving parts of mechanical machines used in all branches of working activity, creating friction and vibration [5]. Industrial printing is a traditional workplace where rotary presses generate loud and continuous noise. Noise is one of the most common etiologic health risk factors in the textile industry and bottling plants [20].

In agriculture, noise is generated by large assemblies of animals, especially in the intensive rearing of cattle, pigs and chickens. Large agricultural machinery, such as tractors and tractor-operated machinery, are powered by large engines, and their moving parts generate significant noise levels [20].

Lightweight equipment such as powered saws, drills and cutters used in industry, agriculture and the informal sector of crafts and repair work are also potential noise sources. In modern open-space offices and call centers elevated noise levels are recorded due to crowding and necessity for continuous conversation [20, 21]. Moreover, the actual noise level in such workplaces can be comparable to noise in manufacturing plants. Traffic noise reaching offices on the lower floors can add to the noise generated in the production facility, increasing the risk of NIHL developing [20, 22, 23].

Exposures capable of causing occupational **acoustic trauma** are those where very high levels of noise are produced in a short time, such as explosions (e.g. in mining, tunnel construction and building demolition) and any other source of loud noise (e.g. jet aeroplane take off). Acoustic trauma is one of the components of acubarotrauma that occurs during explosions in the territory of military operations. Hearing loss resulting from such exposure is usually defined as «conductive» because the damage mainly occurs in the sound-conducting structures of the outer and middle ear.

«Acoustic trauma» is caused by short-term exposure to a single very loud noise with an intensity of at least 140 dB, such as an explosion, and is coded by ICD-10 codes H83.3 + Z57.0. In this case, the sharp impact of the sound wave can damage the tympanic membrane, which leads to immediate bleeding and subsequent hearing

loss. As a rule, hearing loss due to acute acoustic trauma is conductive or mixed (conductive and sensorineural), depending on the impact – asymmetric or symmetric and, as a rule, partly reversible, depending on the energy of the sound wave. It should be emphasized that acoustic trauma is an integral component of acubarotrauma, one of the most common injuries in modern warfare [6].

Signs and symptoms of acoustic trauma usually appear immediately or at most within a few days after exposure and include hypoacusis, which can lead to dizziness, tinnitus, and perceived hearing loss with a decreased ability to hear acute sounds, up to total deafness. With hearing loss, tinnitus can usually be the most problematic and persisting symptom for patients. In addition, a rupture of the tympanic membrane with bleeding and physical damage to the middle ear and cochlea can be diagnosed [11].

In most cases, a conductive loss detected at the pure tone audiometry may be present if there is rupture of the tympanic membrane and damage to the ossicular chain. Bilateral and symmetrical sensorineural loss, starting in the 4-6 kHz range and then expanding to the lower frequencies, can be observed. Other methods, such as auditory brainstem or cortical evoked potentials, may be useful in confirming the hearing loss [7, 11].

To determine the etiology of the disease, the following must be considered when assessing occupational exposure:

– history of occupational exposure: confirmed occupational exposure to sudden and very loud noise (usually over 140 dB);

– minimum duration of exposure: one exposure is sufficient to cause the injury;

– maximum latent period: a few days after the noise exposure event.

Exposure to continuous or intermittent noise in the workplace can cause **chronic occupational NIHL**, which slowly develops over several years and is usually defined as «sensorineural», because the damage mainly occurs in the nerve structures of the inner ear. The risk of chronic NIHL increases with cumulative noise exposure above a threshold intensity level, expressed as daily noise exposure levels (including impulse noise), taking into account the duration of exposure in years [24, 25]. Chronic hearing impairment caused by noise, according to ICD-10, is coded as (H83.3) + Z57.0.

Worldwide, excessive noise exposure is the most common cause of preventable hearing loss. Prolonged exposure to noise in excess of 80 dB(A) is potentially hazardous, both because of the level and the duration of exposure. After prolonged exposure to a stimulating sound intensity, such as a typical hazardous industrial noise above 85 dB(A) during an 8-hour workday, a change in hearing threshold or temporary threshold shift (TTS) can occur that by definition recovers to pre-exposure levels over a short (minutes to hours) or longer (days to weeks) period.

The pathophysiological mechanisms of the disease are associated with changes in cochlear blood flow and biochemical changes in the sensorineural component of hearing involving the hair cells, stereocilla, organ of Corti and supporting structures as well as the auditory nerve. If TTS occurs repeatedly, the recovery becomes less complete, and about three weeks after exposure, a permanent threshold shift (PTS) occurs due to damage to the hair cells. The first to fail permanently are the outer hair cells in the basilar part of the cochlea, in the area that responds to 4 kHz, as well as in the adjacent areas of 3-6 kHz. It is in this interval that the ear is most sensitive due to the harmonic resonance of the ear canal for wavelengths approximately four times the length of the ear canal and also because of cochlear damage [7, 26].

Hearing loss is the most serious health consequence that occurs due to irreversible damage to the hearing mechanisms of the inner ear. Classically, after exposure to noise, hearing loss manifests itself as an audiometric notch, usually maximal at a frequency in the range of 3 to 6 kHz. With prolonged exposure to noise, hearing loss extends to adjacent frequencies. Workers usually notice hearing loss at speech frequencies of 2-3 kHz [27]. Chronic NIHL can occur soon after exposure, depending on the nature of the noise exposure, such that an audiometric notch may be noticeable even within 6-12 months of starting a job. Since both ears are usually exposed to the same noise level, the hearing loss is symmetrical.

In occupational medicine, hearing impairment is defined as a pure-tone average threshold across frequencies 1,000, 2,000, 3,000, and 4,000 Hz of 25 dB or more in either ear. The WHO defines disabling hearing loss more broadly as a permanent unaided hearing impairment above 40 dB hearing level in the better ear for the four frequencies 500, 1000, 2000, and 4000 Hz. It should be noted that definitions of hearing impairment differ from country to country and are often linked to compensation systems. The classification of NIHL adopted by the WHO in 1991 is presented in Table 1 [7].

Chronic occupational NIHL is considered to be always sensorineural and is usually characterized by bilateral and symmetrical hearing loss. The first sign of hearing loss due to noise exposure is a «notching» of about 10 dB in the audiogram within the range of 3-6 kHz, usually maximal at 4 kHz. At the same time, at a frequency of 8,000 Hz, the audiometric curve usually recovers. The exact location of the audiometric notch is dependent upon the frequency of the industrial noise and the length of the ear canal. In addition, the effects of ageing can obscure the usual «notch» showing a bulging away from the expected age-associated hearing loss. Noise exposure alone usually does not produce a loss greater than 75 dB in high frequencies and 40 dB in lower frequencies. However, individuals with superimposed age-related losses may have hearing threshold levels in excess of these values [21, 28].

Table 1

Classification of NIHL Adopted by WHO in 1991

Grade of impairment	Audiometric ISO values (dB, better ear)	Performance
0 No impairment	≤25	No or very slight hearing problems. Able to hear whispers.
1 Slight impairment	26-40	Able to hear and repeat words spoken in normal voice at 1 m.
2 Moderate impairment	41-60	Able to hear and repeat words using raised voice at 1 m.
3 Severe impairment	61-80	Able to hear some words when shouted into better ear.
4 Profound impairment, including deafness	≥81	Unable to hear and understand even a shouted voice.

Chronic NIHL is usually characterized by the following phases:

– Phase 1: In the first 10-20 days of noise exposure, tinnitus occurs at the end of the work shift, along with a feeling of fullness and pressure in the ears, mild headache, fatigue and daze, and hearing loss, which is reversible if exposure is stopped.

Phase 2: In this phase, which can last from several months to many years, there are no subjective symptoms, except for tinnitus (which may occur occasionally), and alterations that can be detected only by an audiometric examination (e.g., a PTS at 4 kHz).

– Phase 3: The patient realizes that their hearing capacity is not normal, as he is unable to hear the ticking of a clock or understand all the words in a conversation, especially in noisy environments. A phenomenon called «recruitment» may occur, characterized by sounds becoming rapidly louder with increasing sound level; the threshold shift at 4 kHz worsens and involves other frequencies.

– Phase 4: There is a clear sensation of hearing impairment and impaired speech discrimination occur.

In most cases, pure tone audiometry reveals bilateral and symmetrical neurosensory hearing loss, which begins in the 4-6 kHz range and then extends to lower frequencies [1, 29].

Occupational NIHL should be differentiated from the following conditions: a history of deafness since childhood (congenital deafness may be associated with rubella, influenza, or prenatal medications, birth trauma); familial deafness; childhood illnesses (such as measles – usually leads to bilateral deafness or mumps – usually leads to unilateral deafness, encephalitis, meningitis, cerebral abscesses); prolonged use of ototoxic drugs (such as streptomycin, gentamicin, or neomycin); history of traumatic head injury; history of radiotherapy (especially of the head and neck); presbyacusis (especially in people over 50 years of age); infectious ear diseases (e.g. otitis media); otosclerosis; barotraumas; Meniere's disease; brain tumors (e.g., acoustic neuroma); excessive exposure to noise from non-occupational sources (e.g., nightclubs, concerts, or headphones regularly used with personal music devices) [14, 26, 30, 31].

When assessing the etiology of the disease, the patient's **occupational history** should be carefully examined. In accordance with ILO recommendations prolonged or repeated exposure to noise levels exceeding 85 dB(A) during an 8-hour workday or to repeated peak noise levels exceeding 137 dB(C) in the workplace supports an occupational etiology of NIHL. It should be noted that exposure to noise over 80 dB(A) during an 8-hour workday and intermittent peak noise over 135 dB(C) may already represent a source of mild occupational hearing loss [5, 7]. The minimum duration of exposure for chronic NIHL is generally five years at levels exceeding 85 dB(A) during an 8-hour workday [7].

Another important occupational factor is the ototoxic effect of certain chemicals with a synergistic effect. Organic solvents (e.g., styrene, toluene, xylene), carbon monoxide and monoxide, and metal vapors can accelerate hearing loss due to ototoxic effects. It should be kept in mind that high noise levels can cause adverse extra-auditory effects, including increased blood pressure, decreased performance, sleep disorders, irritability, and stress [27, 30, 32].

Prevention of occupational NIHL is based on the implementation of the principles of occupational prevention: elimination of the source of exposure, engineering and administrative control, and use of personal protective equipment [7, 26].

Elimination of the source of exposure is based on avoidance of the use of noise-generating equipment by replacing it with less noise-generating technology whenever possible [23].

Other preventive measures include engineering control of working conditions, such as enclosing of the noise-generating equipment parts, installation of anti-vibration systems, using of distance protection between different mechanisms, and installing soundproofing on the roof and walls [14].

Only when measures to ensure proper working conditions are insufficient to reduce the noise level in the workplace to a safe level, workers must be equipped with appropriate personal protective equipment (PPE). Earplugs, headphones and other hearing protection devices should be selected depending on the level of exposure [22, 26].

In any occupation where there may be exposure to industrial noise, regular noise monitoring at the workplace should be conducted; employees should be informed of the results of the monitoring, and preventive measures should be taken as necessary [24].

The clinicians who monitor employees' hearing abilities should take into account that individuals with noise-induced hearing loss may experience significant morbidity due to hearing loss, associated tinnitus, and impaired speech recognition. Other disorders associated with hearing loss can include depression, social isolation, anxiety, irritability, lowered self-esteem, and increased risk of accidents. Thus, the mainstay of prevention of occupationally related noise injuries is to reduce noise levels at the source, whenever possible, removing an employee from noise exposure will help to avoid the progression of hearing loss that exceeds the rate associated with age-related changes.

It should be noted that control of noise levels at the workplace may bring additional benefits in minimizing the potential extra-auditory effects of noise exposure. The ILO Guidance emphasize that the legislation of each country or region determines the possibilities for supporting and improving measures to prevent occupational NIHL at the workplace. An authoritative example in this regard is the EU Directive 2003/10/EC, which clearly defines a set of obligations for employers, arising from the measurement and assessment of the noise levels to which employees are exposed at work [16, 26].

In Ukraine, the List of Occupational Diseases is approved by the Resolution of the Cabinet of Ministers of Ukraine No. 1662 «On Approval of the List of Occupational Diseases» dated 08.11.2000. It is the main document to be used in establishing the diagnosis of an occupational disease, its connection with the work or profession performed, resolving issues of work capacity examination, medical and work rehabilitation, as well as in considering issues related to compensation by the owner of an enterprise, institution, or organization or its authorized body for damage caused to employees [12]. According to the Ukrainian LOD, occupational NIHL are included in Section III «Diseases caused by physical agents», paragraph 4, ICD-10 code H903.

The Order of the Ministry of Health of Ukraine No. 374/68/338 of 29.12.2000 «On Approval of the Instruction on the Application of the List of Occupational Diseases (as amended by the Order of the Ministry of Health No. 2911/99/738 of 29.12.2021)» approved the Guidance for the LOD [34]. In contrast to the ILO's Guidelines, similar documents in Ukraine do not provide general characteristics of the causal agent, occupational exposure, short profile of the biological mechanisms, short description of the disease, diagnostic criteria, including clinical manifestation and exposure assessment. Also, the Guidelines do not cover the main measures for the prevention of occupational diseases. It should be noted that although the national Guidelines do not describe the etiologic factor characteristic, it do contain information on the list of jobs and industries where occupational diseases may occur.

The list of jobs and industries where occupational NIHL may occur includes «all types of work associated with exposure to intense noise in industry, construction, agriculture, transportation, telephone station, etc.» [12]. The lack of information on the specifics of occupational exposure, clinical manifestations of the disease, and diagnostic criteria makes it impossible to take a unified approach for expert issues and leads to distortion of statistical indicators.

CONCLUSIONS

NIHL is one of the most widespread occupational diseases in Ukraine and globally, leading to serious medical and social consequences for both the patient and society in the form of deterioration of health, loss of ability to work, disability, significant economic losses associated with treatment and social compensation for victims, etc. The problem of NIHL in the military and civilian population has become especially important in connection with the war in Ukraine.

Despite the general principles of recognition of occupational diseases in Ukraine and Europe, the system of recognition of occupational diseases and, in particular, NIHL, in Ukraine has certain discrepancies compared with the European system recommended by the ILO in 2022. First of all, this concerns the LOD and the Guidance for its application. The Ukrainian documents do not contain important information on the pathogenesis of the disease, critical levels of noise exposure to the hearing organ, clinical manifestations, diagnostic criteria, and differential diagnosis. The minimum duration of exposure that causes an occupational disease, the maximum latent period, and prevention measures are not specified. The lack of reference to these legally defined indicators affects the objectivity of diagnosis, and its unification, which leads to a distortion of statistical indicators of occupational morbidity in Ukraine.

According to the global trend, the principles of diagnosis of occupational and environmental diseases are the same and are based on the principle of presumption of the etiologic factor. Therefore, the proposed ILO

criteria can be used in the diagnosis of hearing loss in acubarotrauma victims.

In connection with the reintegration process of Ukraine's accession to the European Union, the system of recognition, registration, and recording of occupational diseases, including occupational NIHL, and the related legislative and methodological framework should be adapted to international requirements and recommendations.

Perspectives for further research. Drafting a new LOD and improving the Guidance, taking into account international recommendations and the experience of European countries, will improve the system of recognition of occupational diseases, in particular, NIHL, and influence the objectivity of the occupational morbidity indicators formation in Ukraine.

COMPLIANCE WITH ETHICAL REQUIREMENTS

This review article is based on an analysis of publicly available scientific data in peer-reviewed journals, clinical guidelines, and databases. No ethics committee approval was required, as the study does not contain clinical trial results.

The authors adhered to the ethical principles of the Declaration of Helsinki of the World Medical Association and international standards for publications in medical journals, including the recommendations of the ICMJE (International Committee of Medical Journal Editors).

No element of the work contains plagiarism or data fabrication. All sources of information are appropriately cited and formatted.

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AUTHOR CONTRIBUTIONS

Basanets A. V.[A, B, D, F]

Prodanchuk M. H.[A, B, F]

Hvozdetskyi V. A.[B, D, E]

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Резюме

ВТРАТА СЛУХУ, СПРИЧИНЕНА ШУМОМ, ЯК ПРОФЕСІЙНЕ ТА ЕКОЛОГІЧНО ОБУМОВЛЕНЕ ЗАХВОРЮВАННЯ: СУЧАСНІ ПІДХОДИ ДО ДІАГНОСТИКИ

Анжела В. Басанець[1],Микола Г. Проданчук[1], Віктор А. Гвоздецький[2]

[1]Державне підприємство «Науковий центр превентивної токсикології, харчової та хімічної безпеки імені академіка Л. І. Медведя Міністерства охорони здоров'я України», м. Київ, Україна
[2]Державна установа «Інститут отоларингології імені професора О. С. Коломійченка Національної академії медичних наук України», м. Київ, Україна

Вступ. За даними ВООЗ, у світі щорічно реєструється від 4 до 10 млн професійних захворювань. Питання діагностики, реєстрації та моніторингу захворювань, пов'язаних із впливом високих рівнів шуму та токсичних речовин на орган слуху є надзвичайно важливим, зважаючи на високі ризики впливу етіологічних чинників в певних професіях. Набута втрата слуху є одним з найвагоміших компонентів акубаротравми – найбільш розповсюдженого ушкодження під час бойових дій, і може діагностуватись у військових та представників певних професій на території воєнних дій.
Мета. Проаналізувати міжнародну систему визнання сенсоневральної приглухуватості професійної етіології, порівняти критерії діагностики з вітчизняними, надати рекомендації щодо адаптації вітчизняної системи до міжнародних вимог.
Матеріали та методи. Аналітичний огляд наукових публікацій виконаний з використанням реферативних баз наукових бібліотек PubMed, MEDLINE і текстових баз даних наукових видавництв PubMed Central, BMJ Group та інших авторитетних баз даних. Проведено аналіз звітних матеріалів Державної служби України з питань праці (Держпраці), методичних підходів Міжнародної організації праці (МОП). Використано методи системного, порівняльного та контент аналізу.
Результати. В Україні щорічно реєструється близько 1000 нових випадків професійної втрати слуху, спричиненої впливом шуму. Втрата слуху є одним з найважливіших компонентів акубаротравми, що становить 23,7% травм серед поранених військовослужбовців, які потребують лікування у військових госпіталях. У системі визнання професійної приглухуватості в Україні виявлено значні розбіжності з Керівництвом МОП 2022 року щодо застосування Переліку професійних захворювань (ППЗ). В документах в Україні не описані характеристики критичних рівнів шуму, не узагальнені ознаки клінічних проявів та критерії діагностики захворювання. Відсутність визначених термінів мінімальної тривалості впливу, що викликає професійне захворювання, та максимального латентного періоду ускладнює об'єктивізацію діагнозу, підтвердження етіології захворювання, призводить до викривлення статистичних показників щодо професійної захворюваності.
Висновки. Система визнання професійної СНП в Україні потребує адаптації до Європейських рекомендацій і вимог, рекомендованих МОП. Проблема є особливо актуальною з огляду на високі додаткові ризики розвитку патології у військових і цивільного населення у зв'язку з воєнними діями.

Ключові слова: **втрата слуху, спричинена шумом, професійне захворювання, виробничий шум, акубаротравма**

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