Здоров'я дитини

Лікарю, що практикує / Practicing Physician

UDC 615.82/.83:616.5-002.4-022.7-036-053.6 DOI: https://doi.org/10.22141/2224-0551.20.2.2025.1805

I.P. Zlepko, H.P. Samoilova, O.V. Markovska, S.I. Latoguz, N.O. Buriachenko, O.S. Hurbych
Kharkiv National Medical University, Kharkiv, Ukraine

A case report: rehabilitation of a child after necrosis and amputations due to meningococcal infection

For citation: Child`s Health. 2025;20(2):144-149 doi: 10.22141/2224-0551.20.2.2025.1805

Abstract. ***Background.*** *Meningococcal infection is a severe disease that can lead to widespread necrosis of the skin and soft tissues. Such damage often results in mummification of the fingers and toes, necessitating surgical interventions, including autologous skin grafting, necrosectomy, and amputations. According to international data, the risk of limb involvement and the need for amputation in meningococcemia varies depending on the severity of the infection. The incidence of such cases ranges from 10 to 30 % among patients with severe forms of the disease. In Ukraine, similar statistical data are fragmented, but cases of sepsis with tissue necrosis have been reported. Global experience demonstrates that early diagnosis, modern treatment methods, and vaccination can reduce the frequency of severe complications. However, even with successful treatment, patients often require long-term rehabilitation, including prosthetic fitting, physical therapy, and psychosocial support.* ***Materials and methods.*** *This article presents the rehabilitation experience in a 12-year-old female patient who suffered extensive necrotic skin and soft tissue lesions caused by meningococcal infection. The rehabilitation program included medication treatment of pain syndrome, instrument-assisted soft tissue mobilization, manual therapy, kinesitherapy, and proprioceptive neuromuscular facilitation to improve functional recovery.* ***Results.*** *Through a comprehensive approach, the patient regained mobility in the affected joints, improved her gait pattern, and partially resumed gymnastics activities. Rehabilitation significantly enhanced quality of life and functional independence. Prosthetic fitting is planned to further restore physical activity. Thus, the rehabilitation process demonstrated positive dynamics in restoring body functions, activity, and social participation. Despite residual functional limitations, a multidisciplinary approach significantly improved the patient's quality of life, independence, and adaptation to new conditions.* ***Conclusions.*** *The rehabilitation process restores bodily functions, activity, and social participation. A holistic approach, including medication treatment of pain syndrome, physical therapy, specialized footwear, and vaccination, enhances recovery. Integrating these methods into national standards will ensure accessibility, financial support, and better health outcomes, reducing complications and improving patients' quality of life and independence.*

Keywords: *rehabilitation; meningococcus; amputation; necrosis*

Introduction

Meningococcal infection is a severe disease that can lead to life-threatening complications. Purpura fulminans (PF) is a serious dermatologic manifestation of acute meningococcemia, characterized by skin hemorrhages and necrosis due to vascular thrombosis in the dermis and disseminated intravascular coagulation. These lesions often result in mummification of the fingers and toes, necessitating surgical interventions, such as autologous skin grafting, necrosectomy, and amputations [1].

PF is considered a significant predictor of poor outcomes following meningococcal infection. According to international data, the risk of limb involvement and the need for amputation due to meningococcemia varies depending on the severity of the infection. The incidence of such cases ranges from 10 to 30 % among patients with severe forms of the disease [2]. In Ukraine, statistical data on this issue remain fragmented; however, cases of sepsis with tissue necrosis have been reported.

The economic costs of treatment and subsequent rehabilitation for such patients are substantial and exceed the

Для кореспонденції: Самойлова Ганна Петрівна, кандидат медичних наук, доцент кафедри спортивної, фізичної та реабілітаційної медицини, фізичної терапії, ерготерапії, Харківський національний медичний університет, просп. Науки, 4, м. Харків, 61022, Україна; e-mail: hp.samoilova@knmu.edu.ua; тел. +380 (66) 382-18-53
For correspondence: Hanna P. Samoilova, PhD in Medicine, Associate Professor, Department of Sports, Physical and Rehabilitative Medicine, Physical Therapy, Ergotherapy, Kharkiv National Medical University, Nauky ave., 4, Kharkiv, 61022, Ukraine; e-mail: hp.samoilova@knmu.edu.ua; phone: +380 (66) 382-18-53
Full list of authors' information is available at the end of the article.

expenses associated with immunoprophylaxis. Among all invasive bacterial infections, generalized forms of meningococcal infection pose the greatest threat to a child's life and health. This underscores the need to improve approaches to prevention, early diagnosis, timely and effective medical care for these patients, and the optimization of the epidemiological surveillance system in meningococcal infection.

However, even with successful treatment, patients often require long-term rehabilitation, including prosthetic fitting, physical therapy, and psychosocial support [3].

Analyzing the available literature, we encountered a lack of sufficient coverage on the rehabilitation of patients who have survived acute meningococcemia.

H. Rode et al. in their study analyzed a 22-year experience in managing 68 children with severe meningococcal septicemia. They emphasize that surgical intervention, particularly necrosectomy and amputations, plays a crucial role in treatment, preventing further necrosis and improving survival outcomes. The authors highlight that advancements in intensive care have contributed to a decline in mortality rates. However, a considerable proportion of patient's experience life-altering disabilities requiring prolonged medical, physical, and psychological rehabilitation [4].

K. Lowe and J. Boyce in their case report focus on the rehabilitation process of a child with meningococcal septicemia and quadrilateral limb loss. They underscore the importance of a multidisciplinary rehabilitation approach, which involves the following key stages:

1. Early physical rehabilitation — initiated even in the intensive care unit to prevent contractures, pressure sores, and muscle atrophy.

2. Prosthetic adaptation — modern prosthetic devices can partially restore lost limb function, and early training significantly enhances the child's adaptation.

3. Psychological support — essential for both the child and their family, as limb loss presents a profound psychological challenge.

4. Social reintegration — encompassing self-care training, school reintegration, and broader social adaptation. Both studies emphasize that successful management of such patients requires close collaboration between specialists, including intensivists, surgeons, rehabilitation physicians, and psychologists. While surgical treatment is life-saving, the long-term quality of life for these patients largely depends on comprehensive rehabilitation efforts [5].

Our article presents the rehabilitation experience in a 12-year-old female patient who suffered extensive necrotic skin and soft tissue lesions caused by meningococcal infection. The rehabilitation program included instrument-assisted soft tissue mobilization, manual therapy, kinesitherapy, and proprioceptive neuromuscular facilitation to improve functional recovery.

Case report

Information about the patient

Patient A., a 12-year-old girl, was diagnosed with extensive necrosis of the skin and soft tissues of the upper and lower limbs, trunk, and buttocks, affecting 30 % of the body surface; mummification of the toes on the right foot and fingers on the left hand as a consequence of meningococcal infection; status post-autologous skin grafting (performed on May 16, 23, 28, June 4, 11, 16, 2024); status post-necrosectomy of the right foot (June 20, 2024) at the level of the tarsometatarsal joint; amputation of digits I–V of the left hand; necrosectomy of the calcaneus and medial cuneiform bones (April 26, 2024) (Fig. 1).

The patient was referred for rehabilitative treatment.

Clinical data and diagnostic assessment

At the time of admission to the rehabilitation department, the patient was assessed according to the International Classification of Functioning, Disability and Health (ICF) [6]. The data are presented in Table 1.

The rehabilitation priorities were defined as the restoration of musculoskeletal function, improvement of self-care abilities through adaptive devices, reduction of asthenia, and stabilization of the patient's psycho-emotional state. The overall rehabilitation goals included:

1. Medical: pain management, prevention of complications (contractures, infections, trophic disorders), and maintenance of overall physiological health.

2. Functional: restoration of mobility and adaptation to new physical capabilities.

3. Psychological: improvement of psycho-emotional well-being and adaptation to physical changes.

4. Social: facilitating the patient's return to maximum possible independence and reintegration into social life.

Therapeutic intervention

Acute phase (first 4 weeks). For pain management, gabapentin was prescribed at a dosage of 300 mg per day, following international guidelines [7]. As part of the rehabilitation strategy, breathing exercises were introduced, including deep inhalations and exhalations (10 repetitions, 3–5 times a day) and diaphragmatic breathing. To promote joint mobility recovery, passive joint movements were combined with gentle stretching and isometric exercises (muscle contraction without movement for 5 seconds, repeated 10 times).

Early recovery phase (weeks 4–12). Passive exercises were replaced with active movements, including flexion and

Figure 1. The condition of the right lower limb after amputation before the beginning of rehabilitation

extension of the limbs in a seated position and leg lifts while lying down (3 sets of 10 repetitions). Balance exercises were introduced, such as sitting on a chair without support (30–60 seconds) and standing up from a seated position with support. Additionally, resistance training using elastic bands was incorporated (stretching the band with hands and feet, 3 sets of 10 repetitions). The patient was trained in walking with axillary crutches, progressing to forearm crutches, and eventually transitioning to a single crutch. Breathing exercises were continued throughout this phase.

Late recovery phase (6–12 months). A comprehensive stretching program was implemented, targeting the back, legs, and arms (holding each stretch for 30 seconds). Resistance training was intensified with an expander (3 sets of 15 repetitions), swimming and water exercises (30 minutes, 2–3 times per week) were introduced. The patient also participated in social integration activities, such as group therapeutic exercise sessions and outdoor walking (20–30 minutes).

Further crutch training included walking on stairs, inclines, uneven surfaces, and transitioning from two crutches to one or other mobility aids. Additionally, the program focused on daily life adaptation, including carrying objects and navigating crowded places (Fig. 2).

During the early and late recovery phases, Instrument-Assisted Soft Tissue Mobilization (IASTM) was applied to target soft tissues, including fascia, muscles, and tendons. This technique is based on mechanical stimulation of tissues, which helps reduce pain, restore mobility, and improve functional capacity [8]. Studies indicate that IASTM can stimulate tissue regeneration and reduce inflammation, which are crucial factors in recovery from peripheral nerve

Table 1. Patient assessment according to the ICF before the start of rehabilitation

Category	ICF code	Impairment
Functional impairments (body functions)	b28015	Pain in the skin (consequences of necrosis)
	b820	Impaired skin functions (damage to 30 % of the skin surface)
	b730	Decreased muscle strength (atrophy, weakness due to immobilization)
	b710	Joint function impairment (limited mobility due to amputations, scarring)
	b1302	Increased neuromuscular excitability
	b455	Impaired lung ventilation function
	b280	Persistent pain in affected areas, phantom pain
	b235	Impaired balance and coordination (shifted center of gravity, toe amputation)
	b130	Asthenic syndrome, reduced endurance
	b755	Increased nervous system sensitivity due to pain and stress
Structural impairments	s8102	Impaired skin structure
	s7501	Amputation of toes on the right foot
	s7301	Amputation of fingers on the left hand
Activity limitations (activities and participation)	d450	Restricted mobility (difficulty walking, need for assistive devices)
	d445	Difficulty maintaining body position
	d640	Difficulties with self-care (personal hygiene, cooking)
	d530	Impaired ability to care for the skin (inability to perform self-care)
	d540	Limited fine motor skills (inability to button clothes, impaired dexterity)
	d850	Work limitations (inability to perform precise movements)
	d910	Social integration issues (emotional exhaustion, adaptation to new capabilities)
Environmental factors	e115	Presence of assistive devices (prostheses, orthoses, crutches)
	e355	Social support (family, medical personnel)
	e150	Physical barriers (non-adapted environment, stairs, curbs)
	e310	Need for care (support from family and medical staff)
Personal factors	–	Post-traumatic stress, need for psychological support
	–	High motivation for rehabilitation (provided proper support)
	–	Reduced ability to perform physical tasks

Figure 2. Rehabilitation of the patient in the late recovery period

injuries. Moreover, this method offers advantages over traditional approaches, providing faster results and minimizing relapses of pathological conditions [9]. Throughout the rehabilitation period, the patient also attended psychotherapy sessions to address post-traumatic stress.

As part of the rehabilitation process, a customized footwear platform was developed to simulate proper weight-bearing and improve gait patterns (Fig. 3). This experimental approach proved to be highly effective, significantly accelerating progress in gait training.

Further observations and results

After a long course of rehabilitation, the patient was re-evaluated according to the ICF [6]. The data are presented in Table 2.

The patient's rehabilitation process demonstrates a gradual improvement in physical abilities, indicating the effectiveness of the applied recovery measures. At the initial stage, the patient exhibited significant joint mobility impairments (b710) due to tissue scarring and contractures following surgical interventions. Muscle strength reduction (b730) was pronounced due to prolonged immobilization and atrophy. Difficulties in maintaining balance (b235) were observed, especially due to toe amputation, which affected stability while walking. There was also a significant decrease in energy levels (b130), accompanied by rapid fatigue and general weakness.

During rehabilitation, joint mobility gradually improved. The range of motion in the preserved joints significantly increased, contributing to the restoration of limb functionality. Regular training helped enhance muscle tone and regain the ability to perform basic physical tasks. Balance improvement was achieved through training with assistive devices, while learning new walking techniques compensated for stability impairments. Increased endurance and reduced asthenic manifestations indicate positive dynamics in the overall energy state recovery.

Figure 3. Using a specially designed footwear platform to simulate proper weight-bearing and improve gait patterns

At the beginning of rehabilitation, there were significant limitations in self-care (d540): the patient was unable to perform most daily tasks due to impaired fine motor skills, limited mobility, and general weakness. Mobility (d450) was difficult, as the girl required assistance when walking due to muscle weakness and the loss of part of the foot. The inability to perform household tasks (d640) and social isolation (d910) also negatively impacted the quality of life.

Through rehabilitation, the patient gradually regained the ability to manage self-care tasks, particularly with the aid of adaptive devices. She learned to complete basic daily activities, such as washing and dressing. Mobility improved with the use of crutches, allowing for increased walking distances and greater independence in daily life. The ability to perform light household chores, such as cooking, partially returned, contributing to increased autonomy. An important result of rehabilitation was improved social integration: the patient gradually restored social connections and began participating in community life, positively affecting emotional well-being.

Subsequently, the girl achieved significant progress in restoring motor activity. She partially resumed gymnastics, which positively impacted physical condition and psychological comfort. The quality of daily life improved, and the duration of walks increased. The patient continues rehabilitation in preparation for prosthetic adaptation.

Upon completion of the rehabilitation course, it was recommended to continue regular exercises to maintain muscle tone and prevent atrophy. The exercise program should focus on flexibility, strength, and coordination.

For prosthetic adaptation, we recommended consistent use of prostheses with regular monitoring of their condition

Table 2. Patient assessment according to the ICF after completion of a long-term rehabilitation course

Category	ICF code	Improvements
Functional body improvements		
Joint mobility	b710	Improved range of motion in preserved joints, partial restoration of limb functionality
Muscle strength	b730	Increased muscle tone, restored ability to perform basic physical tasks
Balance and coordination	b235	Improved stability, learning new balance techniques
Energy level	b130	Increased endurance, reduced asthenic symptoms
Improving activity and participation		
Self-care	d540	Partial or complete recovery of everyday skills, use of adaptive devices
Mobility	d450	Improving walking with crutches, overcoming short distances
Household activities	d640	Performing light household tasks, cooking
Social participation	d910	Restoring social contacts, improving emotional state

to ensure maximum integration into daily life. For skin and graft care, a 5% bepanthen cream was advised for moisturizing and healing.

Additionally, it was recommended to continue regular consultations with a psychologist to maintain motivation and emotional balance, as well as to participate in support groups to share experiences with patients in similar conditions. Ongoing supervision by a family doctor, along with check-ups by a physical therapist and a physician specializing in physical and rehabilitation medicine every 3–6 months, was deemed essential.

Discussion

An analysis of literature sources and our clinical experience highlights the key aspects of treatment and rehabilitation for patients with severe meningococcal sepsis and its consequences. The study by H. Rode et al. emphasizes the importance of surgical intervention, particularly necrosectomy and amputation as crucial life-saving procedures. The authors highlight a significant reduction in mortality rates due to advancements in intensive care [4]. However, the prolonged rehabilitation period and the necessity of a comprehensive approach remain major challenges.

The study by K. Lowe and J. Boyce focuses on a multidisciplinary approach to rehabilitation of patients who have undergone amputations due to meningococcal sepsis. They identify several key stages: early physical rehabilitation, prosthetic adaptation, psychological support, and social reintegration. The authors stress that successful recovery largely depends on interdisciplinary collaboration among specialists [4].

Our study expands upon the existing research by providing a detailed analysis of the rehabilitation process in a specific clinical case. It neither emphasizes surgical treatment nor general rehabilitation approaches alone but rather presents a structured recovery program incorporating IASTM, gradual gait adaptation, a specially designed weight-bearing simulation platform, and individually tailored physical exercises. Additionally, the study underscores the importance of psychological support and social adaptation in improving the patient's quality of life.

Conclusions

Thus, the rehabilitation process demonstrates a positive dynamic in restoring bodily functions, activity, and social participation. Despite residual functional limitations, a comprehensive approach to recovery has significantly improved the patient's quality of life, enhancing her independence and adaptation to new conditions.

Given the increased susceptibility of individuals with reduced mobility to infectious diseases, preventive measures, such as vaccination, play a crucial role in maintaining overall health during rehabilitation. Immunization against meningococcal (serogroups A, C, W, Y, and B) and pneumococcal infections, as well as seasonal vaccinations against influenza and COVID-19, can help reduce the risk of severe complications that may hinder the recovery process. Moreover, timely vaccination can prevent the onset of infectious diseases, reducing the burden on both patients and the healthcare system.

The use of a specialized footwear platform in rehabilitation, which simulates support and improves gait patterns, can greatly accelerate progress in gait training.

We believe that a holistic rehabilitation approach incorporating instrumental, manual, and kinesiological techniques, along with proprioceptive neuromuscular facilitation, will play a crucial role in enhancing the patient's functional state. The combination of physical therapy, preventive healthcare strategies, including vaccination, and an individualized approach will contribute to an improved quality of life and a return to an active lifestyle.

Considering the importance of both rehabilitation and preventive healthcare, it will be essential to integrate these methods into national treatment, prevention, and rehabilitation standards. Incorporating vaccination and comprehensive rehabilitation strategies into these protocols will allow for their coverage by the National Health Service of Ukraine, ensuring broader accessibility and financial support for patients in need.

Ethical declaration. This study was conducted in accordance with the ethical standards set forth in the Declaration of Helsinki and with adherence to ethical principles.

Informed consent. We obtained written and oral informed consent of the patient for this case.

References

1. *Pitukweerakul S, Sinyagovskiy P, Aung PP. Purpura Fulminans in Acute Meningococcemia. J Gen Intern Med. 2017 Jul;32(7):848-849. doi: 10.1007/s11606-017-4017-y.*
2. *Mohanty S, Johansson Kostenniemi U, Silfverdal SA, et al. Increased Risk of Long-Term Disabilities Following Childhood Bacterial Meningitis in Sweden. JAMA Netw Open. 2024 Jan 2;7(1):e2352402. doi: 10.1001/jamanetworkopen.2023.52402.*
3. *Mohd-Razali S, Ahmad-Affandi K, Ibrahim S, Abdul-Rashid AH, Abdul-Shukor N. The Osseous Pathology of Purpura Fulminans in a Two-Year-Old Child: A Case Report. Malays Orthop J. 2023 Mar;17(1):180-183. doi: 10.5704/MOJ.2303.021.*
4. *Rode H, Millar AJW, Argent A, Hudson D, Davies J. Meningococcal septicaemia and purpura fulminans in children - surgical management and outcome: a 22-year review of 68 patients. Prim Intent. 2001 Nov;9(4):150-157.*
5. *Lowe KG, Boyce JM. Rehabilitation of a child with meningococcal septicemia and quadrilateral limb loss: a case report. Arch Phys Med Rehabil. 2004 Aug;85(8):1354-1357. doi: 10.1016/j.apmr.2003.09.030.*
6. *World Health Organization (WHO). International classification of functioning, disability and health: ICF. Geneva: WHO; 2001. 311 pp.*
7. *Banerjee S, Butcher R. Pharmacological Interventions for Chronic Pain in Pediatric Patients: A Review of Guidelines. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health; 2020 May 5.*
8. *Shewail F, Abdelmajeed S, Farouk M, Abdelmegeed M. Instrument-assisted soft tissue mobilization versus myofascial release therapy in treatment of chronic neck pain: a randomized clinical trial. BMC Musculoskelet Disord. 2023 Jun 3;24(1):457. doi: 10.1186/s12891-023-06540-5.*
9. *Mahmood T, Hafeez M, Ghauri MW, Salam A. Instrument assisted soft tissue mobilization- an emerging trend for soft tissue dysfunction. J Pak Med Assoc. 2021 Mar;71(3):977-981. doi: 10.47391/JPMA.1168.*

Received 01.02.2025
Revised 03.03.2025
Accepted 05.03.2025

Information about authors

I.P. Zlepko, Lecturer, Department of Sports, Physical and Rehabilitative Medicine, Physical Therapy, Ergotherapy, Kharkiv National Medical University, Kharkiv, Ukraine; e-mail: ip.zlepko@knmu.edu.ua; https://orcid.org/0009-0004-9513-7794

H.P. Samoilova, PhD in Medicine, Associate Professor, Department of Sports, Physical and Rehabilitative Medicine, Physical Therapy, Ergotherapy, Kharkiv National Medical University, Kharkiv, Ukraine; e-mail: hp.samoilova@knmu.edu.ua; https://orcid.org/0000-0003-3119-5480

O.V. Markovska, PhD in Medicine, Associate Professor, Head of the Department of Sports, Physical and Rehabilitative Medicine, Physical Therapy, Ergotherapy, Kharkiv National Medical University, Kharkiv, Ukraine; e-mail: ov.markovska@knmu.edu.ua; https://orcid.org/0000-0002-8759-4272

S.I. Latoguz, PhD in Medicine, Associate Professor, Department of Sports, Physical and Rehabilitative Medicine, Physical Therapy, Ergotherapy, Kharkiv National Medical University, Kharkiv, Ukraine; e-mail: si.latohuz@knmu.edu.ua; https://orcid.org/0000-0002-2222-932X

N.O. Buriachenko, Lecturer, Department of Sports, Physical and Rehabilitative Medicine, Physical Therapy, Ergotherapy, Kharkiv National Medical University, Kharkiv, Ukraine; e-mail: no.buriachenko@knmu.edu.ua; https://orcid.org/0009-0005-0862-7451

O.S. Hurbych, Lecturer, Department of Sports, Physical and Rehabilitative Medicine, Physical Therapy, Ergotherapy, Kharkiv National Medical University, Kharkiv, Ukraine; e-mail: os.hurbych@knmu.edu.ua; https://orcid.org/0009-0009-8122-8827

Conflicts of interests. Authors declare the absence of any conflicts of interests and own financial interest that might be construed to influence the results or interpretation of the manuscript.
Information about funding. This research did not receive any specific grant from funding agencies in the public, commercial, or non-for-profit sectors.

Злепко І.П., Самойлова Г.П., Марковська О.В., Латогуз С.І., Буряченко Н.О., Гурбич О.С.
Харківський національний медичний університет, м. Харків, Україна

Клінічний випадок: реабілітація дитини після некрозу та ампутації внаслідок менінгококової інфекції

Резюме. Актуальність. Менінгококова інфекція є серйозним захворюванням, яке може призводити до виникнення поширених некрозів шкіри та м'яких тканин. Наслідком таких уражень нерідко стають муміфікація пальців кистей і стоп, а також необхідність хірургічних втручань, включно з автодермопластикою, некректоміями та ампутаціями. Згідно з міжнародними даними, ризик ураження кінцівок і необхідність ампутації внаслідок менінгококцемії варіюють залежно від тяжкості перебігу інфекції. Частота таких випадків становить від 10 до 30 % серед пацієнтів із тяжкими формами хвороби. В Україні подібна статистика є фрагментарною, але випадки сепсису з некрозом тканин також зустрічаються. Світовий досвід показує, що завдяки ранній діагностиці, сучасним методам лікування й вакцинації можна зменшити частоту тяжких ускладнень. Однак навіть за успішного лікування пацієнти часто потребують тривалої реабілітації, включно з протезуванням, фізичною терапією та психосоціальною підтримкою. **Матеріали та методи.** У статті представлено досвід реабілітації 12-річної пацієнтки після тяжких некротичних уражень шкіри і м'яких тканин, спричинених менінгококовою інфекцією. Описано застосування медикаментозного лікування больового синдрому, інструментальної мобілізації м'яких тканин, мануальної терапії, кінезіотерапії, пропріоцептивного нервово-м'язового розтягування для поліпшення функціонального стану. **Результати.** Завдяки комплексному підходу пацієнтка відновила рухливість уражених суглобів, покращила патерн ходьби й частково повернулася до занять гімнастикою. Реабілітація сприяла підвищенню якості життя та функціональної незалежності. Заплановано протезування для подальшого відновлення активності. **Висновки.** Таким чином, у процесі реабілітації спостерігається позитивна динаміка відновлення функцій організму, активності та соціалізації. Незважаючи на залишкові функціональні обмеження, комплексний підхід до відновлення дозволив суттєво поліпшити якість життя пацієнтки, підвищити рівень її самостійності та адаптації до нових умов. Комплексний підхід, що включає фізичну терапію, спеціалізоване взуття і вакцинацію, покращує одужання. Інтеграція цих методів у національні стандарти забезпечить доступність, фінансову підтримку, зменшить ускладнення та підвищить якість життя й незалежність пацієнтів.

Ключові слова: реабілітація; менінгокок; ампутація; некроз