МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

УКРАЇНСЬКИЙ ЖУРНАЛ
МЕДИЦИНИ, БІОЛОГІЇ ТА СПОРТУ

Том 10, № 3

Заснований у 2016 р.
Видається 4 рази на рік

Миколаїв
2025

ЗМІСТ / CONTENTS

UKRAINIAN JOURNAL
OF MEDICINE, BIOLOGY AND SPORTS
Volume 10, No. 3. 2025
Journal homepage: https://uajmbs.com.ua/en
Article's History: Received: 10.05.2025; Revised: 20.07.2025; Accepted: 03.09.2025

UDC 616.147.3-007.64
DOI: 10.63341/ujmbs/3.2025.08

Assessment of prevalence and severity of lower limb varicose veins according to CEAP classification

Mykyta Druzhkin*
Postgraduate Student
Zaporizhzhia State Medical and Pharmaceutical University
69035, 26 Marii Prymachenko Blvd., Zaporizhzhia, Ukraine
https://orcid.org/0009-0009-6027-7750

Abstract. Chronic venous disease of the lower extremities (CVD) remains one of the most common vascular pathologies, significantly reducing patients' quality of life and requiring a clearly standardised approach to assessing its severity and prevalence. The implementation of the international CEAP (Clinical, Etiological, Anatomical, and Pathophysiological) classification enables systematisation of clinical manifestations and justification of treatment strategies. The aim of this study was to determine the prevalence and severity of CVD based on CEAP clinical classes in patients with chronic venous insufficiency. A total of 139 patients aged 18 to 75 years with CVD at stage C3-C6 were examined. Depending on the treatment performed, patients were divided into three clinical groups. All patients underwent clinical and ultrasound examinations followed by statistical data processing. The most common clinical class was C3, identified in 47.5% of patients, while C4a was found in 28.8%, and severe forms C5-C6 accounted for 10.8% of cases. Women more often had C3-C4a forms, while men were more likely to be diagnosed with C4b-C6. The main risk factors included positive family history (60.4%), sedentary lifestyle (59.7%), occupational exposure in the form of prolonged standing or sitting (49.6%), as well as smoking, obesity, and a history of thrombotic events. No statistically significant differences in clinical severity were observed between the treatment groups. The findings allowed for outlining the epidemiological profile of patients with CVD in the stage of chronic venous insufficiency (CVI), confirm the high prevalence of clinical class C3, and provide an empirical basis for further studies on the effectiveness of various options for combined surgical treatment considering reflux topography and anatomical features of venous pathology. The practical significance of this study lies in enhancing diagnostic and treatment planning through stratification of patients by CEAP clinical class, allowing for more personalised and evidence-based therapeutic decisions

Keywords: chronic venous insufficiency; clinical stages; combined treatment; endovenous ablation; duplex ultrasound; chronic venous disease

Introduction

Chronic venous disease (CVD) of the lower extremities is one of the most common disorders of the peripheral vascular system, characterised by a chronic course, progressive development of venous insufficiency, and a potential risk of complications, including thrombophlebitis, trophic ulcers, and thromboembolic events. According to epidemiological studies, the prevalence of CVD in the general population range between 20% and 40%, with the incidence increasing with age and demonstrating certain gender differences [1]. A. Han [2] cited data from the Framingham Study, which reported an average two-year incidence rate of varicose veins of 5.2% in women and 3.9% in men.

CVD most often begin to develop at a young age under the influence of various external factors, especially in the presence of a hereditary predisposition to this condition. At present, a positive family history of venous disorders is considered the predominant risk factor in the development of chronic venous pathology. It was reported that 90% of children developed chronic enous insufficiency (CVI) if both parents were affected, and only 20% if both parents were healthy [3].

Suggest Citation:
Druzhkin M. Assessment of prevalence and severity of lower limb varicose veins according to CEAP classification. Ukr J Med Biol Sport. 2025;10(3):8–15. DOI: 10.63341/ujmbs/3.2025.08

*Corresponding author

Other major factors contributing to the development of venous pathology included patients' lifestyle and medical history [4]. Obesity led to both pathophysiological and pathomorphological changes in the venous wall. J. Patel *et al.* [5] showed that the likelihood of developing CVD increased with rising body mass index (BMI), and patients with higher BMI values demonstrated increased diameter of the great saphenous vein. According to the World Health Organization [6], approximately 31% of the global population aged 15 and above had insufficient physical activity. In Ukrainian patients, a sedentary lifestyle was observed in nearly 45.6% of cases. S. Béliard *et al.* [7] showed that in all age groups and in both sexes (except men aged 18-34), the CEAP (Clinical, Etiological, Anatomical, and Pathophysiological) clinical class was significantly higher in individuals who did not engage in regular physical activity compared to those who did. Smoking was also recognised as a risk factor for CVD due to various interrelated pathophysiological mechanisms, including haemodynamic changes, oxidative stress, inflammation, endothelial dysfunction, and thrombosis.

M. Cui *et al.* [8], based on data from the CIRCS (Circulatory Risk in Communities Study), demonstrated that chronic and intensive smoking was associated with a high prevalence of impaired endothelial function. Musculoskeletal disorders are frequently reported in patients with chronic venous disease and may contribute to symptoms and reduced quality of life. Prolonged standing or sitting, often related to occupational factors, was also capable of provoking the development of CVD. J.H. Park *et al.* [9] showed that Americans spent 55% of their waking hours (7.7 hours per day) in a seated position, whereas Europeans spent 40% of their free time (2.7 hours per day) sitting. A history of thrombotic complications may result in post-thrombotic syndrome (PTS), which leads to venous stenosis, obstruction, or valve damage, causing sustained elevation of venous pressure. S.S. Virani *et al.* [10] reported that PTS affected between 23% and 60% of individuals with deep vein thrombosis. A prior history of thrombotic events is a recognised risk factor for the development of chronic venous insufficiency.

Modern phlebology has relied on the international CEAP classification, which enabled the standardisation of clinical assessment, identification of aetiological factors, determination of the extent of venous involvement, and clarification of the mechanisms underlying disease progression. This system facilitated not only more accurate diagnosis formulation but also the selection of optimal treatment strategies, prediction of disease course, and evaluation of therapeutic efficacy [11]. Despite significant advances in the understanding of varicose vein pathogenesis, its prevalence across different populations has remained insufficiently studied, particularly in the context of lifestyle changes, environmental influences, and socio-economic factors. The lack of generalised epidemiological data regarding the frequency and severity of CVD in different age and social groups highlighted the need for additional population-based research. Therefore, the aim of the present study was to analyse the prevalence and severity of chronic venous disease according to the CEAP classification in the study population, which allowed for the evaluation of the structural features of the disease, its aetiological and pathophysiological aspects, and contributed to the improvement of diagnostic and therapeutic approaches.

Materials and Methods

The study of patients with CVD of the lower extremities was conducted from 2023 to April 2025 at the Department of Faculty Surgery, Zaporizhzhia State Medical and Pharmaceutical University. Inclusion criteria were: patients with CVD of the lower extremities classified as CEAP clinical classes C3-C6, aged between 18 and 75 years. Exclusion criteria: patients with CVD classified as CEAP classes C0-C2; patients under 18 or over 75 years of age; patients with oncological diseases; patients with autoimmune diseases; patients with diabetes mellitus; patients with liver diseases; absence of signed informed consent for participation in the study. A total of 139 patients (100%) were examined. Among them, 47 (33.81%) were men and 92 (66.19%) were women. All patients were divided into 3 clinical groups with subgroups.

Group 1 (main group): 32 patients (23.02%) who received treatment by endovenous radiofrequency ablation (RFA) of the great and/or small saphenous veins, combined with miniphlebectomy of tributaries and perforating veins.

Group 2 (comparison group): 64 patients:

- Subgroup 2A: 31 patients (22.30%) who underwent endovenous RFA combined with miniphlebectomy of tributaries without ligation of perforating veins;
- Subgroup 2B: 33 patients (23.74%) who underwent endovenous RFA combined with ligation of perforating veins without miniphlebectomy of tributaries.

Group 3 (comparison group): 43 patients (30.94%) who received treatment exclusively by endovenous radiofrequency ablation of the great and/or small saphenous veins.

The average age range of patients was as follows: Group 1 – 47.18 ± 1.95 years; Subgroup 2A – 54.50 ± 2.19 years; Subgroup 2B – 47.18 ± 1.95 years; Group 3 – 50.32 ± 1.81 years. No statistically significant differences in patient age between groups and corresponding subgroups were observed ($p > 0.05$). The examination of patients included a structured anamnesis collection using a standardised questionnaire, clinical evaluation, laboratory testing, and instrumental investigations. Ultrasound examination of the lower limb veins was performed using ultrasound diagnostic systems: "ACUSON Redwood", "ACUSON NX3 Elite", and "ACUSON NX2" manufactured by Siemens Medical Solutions USA, Inc. (USA).

Statistical processing of the obtained data was carried out using the software packages STATIS TICA 13.0, TIBCO Software Inc. (license JPZ804I382130ARCN10-J) and MICROSOFT EXCEL 2013 (license 00331-10000-00001-AA404) [12]. Quantitative indicators were presented as M ± m (arithmetic mean and standard error of the mean). The study was carried out in compliance with modern bioethical requirements [13], including the requirements of Article 8 of the Law of Ukraine No. 123/96-BP "On

Medical Products" [14], Directive of the European Parliament and of the Council 2001/20/EC [15], Convention for the protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine [16], WMA Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Participants [17], recommendations of the World Health Organisation Global Health Ethics [18], provisions of Good Clinical Practice (GCP) [19], and the Order of the Ministry of Health of Ukraine No. 690 [20]. All patients were informed about the risks of conducting the study and publishing materials and signed an informed consent to participate in the study. The authors claim to respect the confidentiality of data and prevent any pressure.

Results and Discussion

An essential part of the study involved the collection and analysis of patients' medical history and lifestyle-related factors that could influence the progression and severity of CVD. The structured anamnesis included questions about family history of venous pathology, previous thrombotic events, obesity, smoking status, occupational factors such as prolonged standing or sitting, as well as general physical activity level. These data were obtained during patient interviews conducted at the initial stage of clinical evaluation. The aim of this stage was to identify the most common risk factors in the study population and explore their distribution across treatment groups. The results of this analysis are summarised in Table 1.

Table 1. Social and medical history of patients in groups (M ± m)

Indicator	Groups			
	Group 1(n = 32)	Group 2 (n = 64)		Group 3 (n = 43)
		Subgroup 2A (n = 31)	Subgroup 2B (n = 33)	
Obesity	5 (15.62%)	3 (9.68%)	4 (12.12%)	7 (16.28%)
Smoking	4 (12.50%)	8 (25.81%)	7 (21.21%)	10 (23.26%)
Sedentary lifestyle	19 (59.38%)	21 (67.74%)	17 (51.52%)	26 (60.47%)
Professional factors (prolonged standing or sitting)	15 (46.88%)	16 (51.61%)	15 (45.45%)	23 (53.49%)
Leg trauma	1 (3.13%)	2 (6.45%)	0 (0.00%)	3 (6.98%)
Family history of CVD	16 (50.00%)	20 (64.52%)	20 (60.61%)	28 (65.12%)
Thrombotic history	6 (18.76%)	6 (19.35%)	7 (21.21%)	9 (20.93%)

Source: compiled by the author

According to the obtained results, 60.4% of patients across all groups and subgroups had a positive family history of venous pathology. These findings were consistent with the data of the nationwide Ukrainian study by L.M. Chernukha [21], in which approximately 62% of patients reported a family history of venous diseases. This further confirmed the importance of heredity in the development of CVD.

The second most prevalent risk factor was a sedentary lifestyle, identified in 59.7% of patients. Physical inactivity significantly affects overall health and is recognised as the fourth leading risk factor for global mortality. A sedentary lifestyle not only increases mortality but also substantially reduces the quality of life in patients with CVD. H. Kiloatar *et al.* [22] showed that a low level of physical activity was associated with a reduced quality of life. Moreover, the authors demonstrated that in patients with cardiovascular diseases who maintained moderate physical activity, the intensity of pain during exertion was lower. There is also evidence of the negative impact of sedentary behaviour on vascular health. C. Demiot *et al.* [23] showed that in a study of healthy women, 56 days of head-down bed rest reduced endothelium-dependent vasodilation and increased endothelial cell damage. These vascular alterations could be prevented by aerobic exercise and muscle training. Occupational factors such as prolonged standing or sitting were reported in 49.6% of patients. These findings were nearly consistent with those of a Swiss study, which showed that varicose veins were present in 56% of men and 55% of women working in the chemical industry [24]. Another 12-year prospective cohort study conducted in Denmark found that prolonged standing increased the risk of hospitalisation for varicose vein treatment [25]. Smoking was recorded in 20.9% of cases. According to the 2023 national survey conducted by the World Health Organization [26], 27.4% of the Ukrainian population were smokers, including 44.0% of men and 13.7% of women. O. Hahad *et al.* [27] reported that cigarette smoke exposure is associated with endothelial dysfunction, primarily characterised by reduced vascular nitric oxide bioavailability due to increased superoxide production in the vascular wall. Thrombotic complications in the medical history of patients with CVD were reported in 20.1% of cases. R.A. Baylis *et al.* [28] showed that post-thrombotic syndrome develops in 23-60% of individuals with deep vein thrombosis (DVT). Furthermore, an epidemiological study based on the UK Biobank cohort found that a history of DVT increased the risk of developing varicose veins, with a hazard ratio (HR) of 2.6 [29]. Following a thrombotic event, affected veins may undergo fibrosis and wall thickening, further disrupting venous flow and contributing to the development of CVI, as well as increasing the risk of recurrent thrombosis [30].

Obesity, as a risk factor for CVD, was reported in 13.7% of patients. According to the World Health Organization (WHO) [31], as of 2022, approximately 890 million adults were living with obesity, which accounted for about

16% of the global adult population. In obese individuals, inflammation extends beyond adipose tissue due to continuous release of pro-inflammatory molecules by adipocytes. Moreover, as adipocytes enlarge, cellular stress due to hypoxia may occur, triggering danger signals and inflammatory mediators that amplify systemic inflammatory responses. In individuals with obesity, free fatty acids and reactive oxygen species activate the inflammatory cascade involving NF-κB, accompanied by the release of pro-inflammatory cytokines [32].

The gender distribution of patients, presented in Table 2, revealed a predominance of female patients across all study groups and subgroups, with 66.1% women and 33.9% men, respectively. These data correlate with the results of a study by H. Kim *et al.* [33], which confirmed a higher susceptibility to venous disease among women (73%) compared to men (56%). Researchers suggested that this may be attributed to the specific features of the female hormonal system, as well as the number of pregnancies and deliveries in medical history. M.A. Ortega *et al.* [34] showed that the greater the number of pregnancies, the more likely the development of CVD after the age of 40: up to 40% of women with 1-4 pregnancies and up to 65% of women with 5 or more pregnancies were diagnosed with CVD.

Table 2. Gender distribution in patient groups

Group	Women	Men	Total
1	22 (15.8%)	10 (7.2%)	32 (23%)
2A	22 (15.8%)	9 (6.5%)	31 (22.3%)
2B	20 (14.4%)	13 (9.4%)	33 (23.8%)
3	28 (20.1%)	15 (10.8%)	43 (30.9%)
Total	92 (66.1%)	47 (33.9%)	139 (100%)

Notes: percentages are relative to the full sample (n = 139)
Source: compiled by the author

P. Jain *et al.* [35] reported that systemic use of progestins, both alone and in combination with estrogens, was associated with a significantly reduced frequency of venous procedures for varicose veins in women. The effect was particularly pronounced in those receiving progestin-only therapy, who demonstrated the lowest rates of endovenous ablation, phlebectomy, and sclerotherapy compared to controls. It was also observed that this reduction applied not only to asymptomatic patients but extended to those with complicated forms of the disease, which typically require more active intervention. These findings suggest that systemic hormonal influence may affect the clinical expression and progression of varicose veins, and potentially reduce the likelihood of disease recurrence after treatment. Furthermore, the influence of sex hormone-binding globulin (SHBG) levels on varicose vein development was investigated. It was shown that serum SHBG levels were positively associated with the risk of varicose veins in both sexes, particularly in women [36].

The severity of clinical manifestations of venous pathology in patients across the groups and subgroups was assessed according to the CEAP classification. The obtained data are presented in Table 3. This classification enabled a structured comparison of the distribution of clinical stages across treatment groups, highlighting both common and less frequent presentations. Such stratification is essential for understanding the burden of disease and for evaluating the appropriateness of applied therapeutic strategies.

Table 3. CEAP clinical class distribution by group

	Group 1 (n = 32)	Subgroup 2A (n = 31)	Subgroup 2B (n = 33)	Group 3 (n = 43)	Total
C3	16 (50%)	14 (45.2%)	18 (54.6%)	18 (41.9%)	66 (47.5%)
C4a	7 (21.9%)	11 (35.4%)	7 (21.1%)	15 (34.9%)	40 (28.8%)
C4b	3 (9.4%)	2 (6.5%)	2 (6.1%)	0 (0%)	7 (5%)
C4c	3 (9.4%)	0 (0%)	4 (12.1%)	4 (9.3%)	11 (7.9%)
C5	1 (3.1%)	1 (3.2%)	2 (6.1%)	2 (4.6%)	6 (4.3%)
C6	2 (6.2%)	3 (9.7%)	0 (0%)	4 (9.3%)	9 (6.5%)
Total	32 (100%)	31 (100%)	33 (100%)	43 (100%)	139 (100%)

Notes: percentages reflect group-specific CEAP class distribution
Source: compiled by the author

Analysis of the data presented in Table 3 revealed that the most frequently observed clinical manifestation across all groups and subgroups was lower limb oedema, corresponding to stage C3 of the CEAP classification, identified in 47.5% of all patients. Pigmentation and eczema, consistent with stage C4a, were present in 28.8% of cases. The least frequent clinical manifestation was a healed venous ulcer (stage C5), detected in 4.3% of cases. These findings

were consistent with global epidemiological studies, which reported that stages C1-C3 were most frequently observed in clinical practice, while stages C5-C6 occurred less commonly [37]. For example, Z. Krasiński & B. Krasińska [38] showed that varicose veins classified as C2 were present in 25-40% of adults, whereas more advanced stages (C3-C6) were observed in 17-20% of the population. According to a nationwide Ukrainian epidemiological study by L.M. Chernukha [21], the prevalence of CVD by CEAP classification was as follows: C0 – 1.7%, C1-C3 – 77.1%, C5 – 4.2%, and C6 – 3.2%. Analysis using the χ^2 test demonstrated that no statistically significant differences in CEAP class distribution were observed between the groups ($p > 0.05$). The study also investigated the distribution of clinical severity according to CEAP among male and female patients. The data are presented in Table 4.

Table 4. Gender distribution by CEAP clinical class

CEAP	Women	Men	Total
C3	49 (35.3%)	17 (12.2%)	66 (47.5%)
C4a	23 (16.6%)	17 (12.2%)	40 (28.8%)
C4b	5 (3.6%)	2 (1.4%)	7 (5%)
C4c	7 (5%)	4 (2.9%)	11 (7.9%)
C5	3 (2.1%)	3 (2.2%)	6 (4.3%)
C6	5 (3.6%)	4 (2.9%)	9 (6.5%)
Total	92 (66.2%)	47 (33.8%)	139 (100%)

Notes: percentages are relative to the full sample (n = 139)
Source: compiled by the author

Table 4 presents the distribution of 139 patients with chronic venous disease of the lower limbs by sex and CEAP clinical classes. The largest proportion of both women and men fell into class C3: 49 women (35.3%) and 17 men (12.2%). Classes C4a and C4c showed a relatively even gender distribution, with a slight predominance of women. Higher classes (C5 and C6) were less frequent, although the gender distribution remained relatively proportional. Overall, the data indicate a higher prevalence of chronic venous insufficiency among women, particularly at the stage corresponding to class C3 of the CEAP classification. It was found that in both sexes, clinical signs of the disease were most commonly observed at stages C3-C4a. However, the proportion of women was higher than that of men. The fewest women sought medical help for healed venous ulcers (C5), whereas among men, the least common presentation was lipodermatosclerosis (C4b). However, the study by M. Kiguchi *et al.* [39] confirmed that female patients presented with lower CEAP clinical classes at the time of admission compared to males. Although chronic venous diseases were more prevalent among women, men were more likely to present with trophic ulcers. The obtained results confirm that the distribution of CEAP clinical classes among patients with CVD differs by sex, which is consistent with the findings of K.P. Hong [40], who reported a higher prevalence of CEAP class C4 among men. This highlights the importance of considering sex-related clinical features when assessing disease severity and planning treatment. Stratifying patients based on clinical stage and gender may improve individual risk assessment and inform the choice of optimal treatment modality, particularly when determining indications for combined surgical approaches. Moreover, understanding such patterns can enhance early diagnosis and support the development of targeted preventive strategies to limit progression to advanced stages of chronic venous insufficiency.

Conclusions

This study focused on assessing the prevalence and clinical severity of CVD of the lower extremities using the internationally adopted CEAP classification system. A total of 139 patients with CVD at stages C3-C6 were included and analysed. The most frequently observed clinical class was C3, accounting for 47.5% of patients, followed by C4a (28.8%). More advanced forms of the disease (C5-C6) were documented in 10.8% of cases. Female patients comprised the majority of the study population (66.2%) and predominantly presented with C3-C4a stages, whereas male patients were more likely to present with C4b-C6 stages of the disease.

Throughout the study, the most relevant risk factors associated with CVD progression were systematically evaluated. A positive family history was present in 60.4% of patients, confirming its role as the leading risk factor in the development of venous pathology. Other common contributors included sedentary lifestyle (59.7%), occupational exposure in the form of prolonged sitting or standing (49.6%), smoking (20.9%), prior thrombotic events (20.1%), and obesity (13.7%). These findings are consistent with global and Ukrainian epidemiological data and highlight the multifactorial nature of CVD.

The CEAP classification proved to be an effective instrument for the clinical stratification of patients, offering a practical and evidence-based approach to assessing disease severity and guiding the selection of optimal treatment modalities. Its value is particularly evident when determining indications for combined surgical treatment strategies, where clinical stage, anatomical distribution of reflux, and underlying risk factors must be considered together. The study also contributes to a more detailed understanding of the epidemiological profile of patients with CVD in the stage of CVI. These data provide a foundation for structured decision-making and support the

implementation of standardised diagnostic and therapeutic protocols in daily phlebological practice. The empirical findings reinforce the importance of addressing modifiable risk factors, such as lifestyle and occupational habits, alongside timely diagnosis and intervention.

Looking forward, future research should be directed toward a deeper understanding of the pathophysiological mechanisms involved in venous wall remodelling. In particular, the role of matrix metalloproteinases (MMPs) and their tissue inhibitors (TIMPs) in relation to disease progression across different CEAP stages warrants further investigation. Additionally, the effectiveness and justification of multimodal combined surgical treatment approaches in patients with advanced CVI remains a promising field for continued clinical and translational research.

Acknowledgements

None.

Funding

The study was not funded.

Conflict of Interest

None.

References

[1] Elamrawy S, Darwish I, Moustafa S, Elshaer N, Ahmed N. Epidemiological, lifestyle, and occupational factors associated with lower limb varicose veins: A case-control study. J Egypt Public Health Assoc. 2021;96:19. DOI: 10.1186/s42506-021-00075-0

[2] Han A. Sex/gender differences in chronic venous disease. In: Kim N, editor. Sex/gender-specific medicine in clinical areas. Singapore: Springer; 2024. P. 355–65. DOI: 10.1007/978-981-97-0130-8_20

[3] Aslam MR, Muhammad Asif H, Ahmad K, Jabbar S, Hayee A, Sagheer MS, et al. Global impact and contributing factors in varicose vein disease development. SAGE Open Med. 2022;10:20503121221118992. DOI: 10.1177/20503121221118992

[4] Babaei M, Afrooghe A, Rafati A, Mohebbi B, Moosavi J, Ghadri N, et al. Prevalence and associated factors of chronic venous disease among a modern non-western population. Eur Heart J. 2023;44(Suppl 2):ehad655.2082. DOI: 10.1093/eurheartj/ehad655.2082

[5] Patel J, Shah P, Gandhi F. A study of chronic venous insufficiency in relation with body mass index and diameter of saphenofemoral junction and great saphenous vein. Indian J Vasc Endovasc Surg. 2021;8(1):58–62. DOI: 10.4103/ijves.ijves_50_20

[6] Nearly 1.8 billion adults at risk of disease from not doing enough physical activity [Internet]. 2024 June 26 [cited 2025 June 18]. Available from: https://surl.li/nvrrsb

[7] Béliard S, Ferreira D, Thomas H, Mourot L, Tordi N. High physical activity volume is associated with increased calibre of lower limb veins: The VARISPORT Study. Eur J Vasc Endovasc Surg. 2023;66(6):856–63. DOI: 10.1016/j.ejvs.2023.08.003

[8] Cui M, Cui R, Liu K, Dong JY, Imano H, Hayama-Terada M, et al. Associations of tobacco smoking with impaired endothelial function: The circulatory risk in communities study (CIRCS). J Atheroscler Thromb. 2018;25(9):836–45. DOI: 10.5551/jat.42150

[9] Park JH, Moon JH, Kim HJ, Kong MH, Oh YH. Sedentary lifestyle: Overview of updated evidence of potential health risks. Korean J Fam Med. 2020;41(6):365–73. DOI: 10.4082/kjfm.20.0165

[10] Virani SS, Alonso A, Benjamin EJ, Bittencourt MS, Callaway CW, Carson AP, et al. Heart disease and stroke statistics-2020 update: A report from the American Heart Association. Circulation. 2020;141:e139–596. DOI: 10.1161/CIR.0000000000000757

[11] Waheed SM, Kudaravalli P, Hotwagner DT. Deep venous thrombosis. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2025.

[12] Fetisov VS. Statistical data analysis package STATISTICA. Nizhyn: M. Gogol NDU; 2018. 114 P.

[13] Tereshkevych GT. Fundamentals of bioethics and biosafety. Ternopil: TSMU; 2018. 400 P.

[14] Law of Ukraine No. 123/96-BP. On Medicinal Products [Internet]. 1996 April 4 [cited 2025 June 18]. Available from: https://zakon.rada.gov.ua/laws/show/123/96-вр#Text

[15] Directive of the European Parliament and of the Council 2001/20/EC. On the Approximation of the Laws, Regulations and Administrative Provisions of the Member States Relating to the Implementation of Good Clinical Practice in the Conduct of Clinical Trials on Medicinal Products for Human Use [Internet]. 2001 April 4 [cited 2025 June 18]. Available from: http://data.europa.eu/eli/dir/2001/20/oj

[16] Convention for the protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine (ETS No. 164) [Internet]. 1999 December 1 [cited 2025 June 18]. Available from: https://www.coe.int/en/web/conventions/full-list?module=treatydetail&treatynum=164

[17] WMA Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Participants [Internet]. [cited 2025 June 18]. Available from: https://www.wma.net/policies-post/wma-declaration-of-helsinki

[18] Global Health Ethics [Internet]. [cited 2025 June 18]. Available from: https://www.who.int/health-topics/ethics-andhealth
[19] Good Clinical Practice [Internet]. [cited 2025 June 18]. Available from: https://surl.li/jugejy
[20] Order of the Ministry of Health of Ukraine No. 690. On Approval of the Procedure for Conducting Clinical Trials of Medicinal Products and the Expert Evaluation of Clinical Trial Materials, and of the Model Regulations on Ethics Committees [Internet]. 2009 September 23 [cited 2025 June 18]. Available from: https://zakon.rada.gov.ua/laws/show/z1010-09#Text
[21] Chernukha LM. Chronic venous diseases of the lower limbs and pelvis. Surg Orthop Traumatol Intensive Care. 2020;3(41).
[22] Kiloatar H, Aras O, Korkmaz M, Vural AH. An evaluation of quality of life, physical activity level and symptoms in patients with early stages of chronic venous disease. J Vasc Nurs. 2021;39(4):108–13. DOI: 10.1016/j.jvn.2021.07.007
[23] Demiot C, Dignat-George F, Fortrat JO, Sabatier F, Gharib C, Larina I, et al. WISE 2005: Chronic bed rest impairs microcirculatory endothelium in women. Am J Physiol Heart Circ Physiol. 2007;293:H3159–64. DOI: 10.1152/ajpheart.00591.2007
[24] Fowkes FG, Evans CJ, Lee AJ. Prevalence and risk factors of chronic venous insufficiency. Angiol. 2001;52(1):S5–15. DOI: 10.1177/000331970105200 1S02
[25] Łastowiecka-Moras E. Standing and sitting postures at work and symptoms of venous insufficiency – results from questionnaires and a Doppler ultrasound study. Int J Occup Saf Ergon. 2020;27(4):963–9. DOI: 10.1080/10803548.2020.1834232
[26] Tobacco use is declining worldwide – WHO [Internet]. [cited 2025 June 18]. Available from: https://phc.org.ua/news/u-sviti-skorochuetsya-vzhivannya-tyutyunu-vooz
[27] Hahad O, Kuntic M, Kuntic I, Daiber A, Münzel T. Tobacco smoking and vascular biology and function: Evidence from human studies. Pflugers Arch. 2023;475(7):797–805. DOI: 10.1007/s00424-023-02805-z
[28] Baylis RA, Smith NL, Klarin D, Fukaya E. Epidemiology and genetics of venous thromboembolism and chronic venous disease. Circ Res. 2021;128(12):1988–2002. DOI: 10.1161/CIRCRESAHA.121.318322
[29] Fukaya E, Flores AM, Lindholm D, Gustafsson S, Zanetti D, Ingelsson E, et al. Clinical and genetic determinants of varicose veins. Circulation. 2018;138:2869–80. DOI: 10.1161/CIRCULATIONAHA.118.035584
[30] Emmanuel OE, Behera C. Complications of thrombosis: Post-thrombotic syndrome. Long-term effects on vascular health [Internet]. 2025 March [cite 2025 June 18]. Available from: https://surl.li/lrbjoz
[31] Obesity and Overweight [Internet]. 2025 June 15 [cited 2025 June 18]. Available from: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
[32] Heindel JJ, Lustig RH, Howard S, Corkey BE. Obesogens: A unifying theory for the global rise in obesity. Int J Obes. 2024;48:449–60. DOI: 10.1038/s41366-024-01460-3
[33] Kim H, Lee SH, Park JK, Kang JM, Hong KP, Yu YS, et al. Public awareness of chronic venous disease in Korea. J Vasc Surg Venous Lymphat Disord. 2023;11(3):477–82. DOI: 10.1016/j.jvsv.2022.12.005
[34] Ortega MA, Fraile-Martínez O, García-Montero C, Álvarez-Mon MA, Chaowen C, Ruiz-Grande F, et al. Understanding chronic venous disease: Overview of pathophysiology and management. J Clin Med. 2021;10(15):3239. DOI: 10.3390/jcm10153239
[35] Jain P, Ostrovsky A, DiMuzio P, Eraso L, Nooromid M, Salvatore D, et al. Systemic exogenous progestins with or without estrogens are associated with decreased rates of venous procedures for varicose veins. J Vasc Surg Venous Lymphat Disord. 2025;13:102235. DOI: 10.1016/j.jvsv.2025.102235.
[36] Fan Q, Meng Y, Nie Z, Xie S, Chen C. Sex hormone-binding globulin exerts sex-related causal effects on lower extremity varicose veins: Evidence from gender-stratified Mendelian randomization. Front Endocrinol. 2023;14:1230955. DOI: 10.3389/fendo.2023.1230955
[37] Salim S, Machin M, Patterson BO, Onida S, Davies AH. Global epidemiology of chronic venous disease: A systematic review. Ann Surg. 2021;274(6):971–6. DOI: 10.1097/SLA.0000000000004631
[38] Krasiński Z, Krasińska B. Treatment of early-stage chronic venous disease: Management standards for 2023. Pol Przegl Chir. 2023;95(1):64–9. DOI: 10.5604/01.3001.0016.2971
[39] Kiguchi MM, Fallentine J, Oh JH, Cutler B, Yan Y, Patel HR, et al. Race, sex, and socioeconomic disparities affect the clinical stage of patients presenting for treatment of superficial venous disease. J Vasc Surg Venous Lymphat Disord. 2023;11(5):897–903. DOI: 10.1016/j.jvsv.2023.06.001
[40] Hong KP. Correlation of CEAP clinical class, sex, age, body mass index, and reflux patterns in patients with chronic venous disease based on the 2020 update of the CEAP classification system. Ann Phlebology. 2025;23:25–8. DOI: 10.37923/phle.2025.23.1.25

Оцінка поширеності та тяжкості варикозної хвороби нижніх кінцівок за CEAP

Микита Дружкін
Аспірант
Запорізький державний медико-фармацевтичний університет
69035, бульв. Марії Примаченко, 26, м. Запоріжжя, Україна
https://orcid.org/0009-0009-6027-7750

Анотація. Варикозна хвороба нижніх кінцівок (ВХНК) залишається однією з найпоширеніших патологій судинної системи, що суттєво знижує якість життя пацієнтів і потребує чіткого стандартизованого підходу до оцінки її тяжкості та поширеності. Впровадження міжнародної класифікації CEAP (Clinical, Etiological, Anatomical, and Pathophysiological) дозволяє систематизувати клінічні прояви хвороби та обґрунтувати вибір лікувальної тактики. Метою дослідження було визначення поширеності та ступеня тяжкості ВХНК за клінічними класами CEAP у пацієнтів із хронічною венозною недостатністю. Було обстежено 139 пацієнтів віком від 18 до 75 років із ВХНК у стадії C3-C6. Залежно від проведеного лікування пацієнтів розподілено на три клінічні групи. Усі хворі пройшли клінічне та ультразвукове обстеження з подальшою статистичною обробкою результатів. Найчастішим клінічним класом був C3, який виявлено у 47,5 % обстежених, клас C4a встановлено у 28,8 %, а тяжкі форми C5-C6 становили лише 10,8 % випадків. У жінок переважали форми C3-C4a, тоді як у чоловіків частіше діагностували C4b-C6. Серед основних факторів ризику визначено обтяжений сімейний анамнез (60,4 %), малорухливий спосіб життя (59,7 %), професійне навантаження у вигляді тривалого стояння або сидіння (49,6 %), а також куріння, ожиріння й тромботичні ускладнення в анамнезі. Статистично достовірної різниці у ступені клінічної тяжкості захворювання між групами лікування не виявлено. Отримані результати дозволяють окреслити епідеміологічний профіль пацієнтів із ВХНК у стадії хронічної венозної недостатності (ХВН), підтверджують високу поширеність клінічного класу C3 та надають емпіричну основу для подальших досліджень ефективності різних варіантів комбінованого хірургічного лікування з урахуванням топографії рефлюксу та анатомічних особливостей венозної патології. Практичне значення цього дослідження полягає в покращенні діагностичного та лікувального планування шляхом стратифікації пацієнтів за клінічним класом CEAP, що дозволяє приймати більш персоналізовані та науково обґрунтовані терапевтичні рішення

Ключові слова: хронічна венозна недостатність; клінічні стадії; комбіноване лікування; ендовенозна абляція; дуплексне ультразвукове дослідження; хронічне захворювання вен