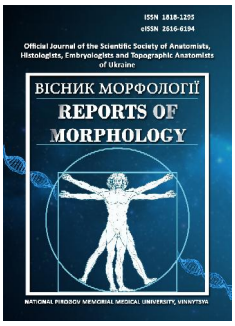
DOI: 10.31393/morphology-journal-2024-30(3)-02 Reports of Morphology, Vol. 30, №3, Pages 15-24

ISSN 1818-1295 eISSN 2616-6194

REPORTS OF MORPHOLOGY

Official Journal of the Scientific Society of Anatomists, Histologists, Embryologists and Topographic Anatomists of Ukraine

journal homepage: https://morphology-journal.com



Girth sizes of the body in Ukrainian men and women with various forms of urticaria

Aladwan A. M. A., Dmytrenko S. V., Kyrychenko V. I., Glushak A. A., Prokopenko O. S., Ocheretna O. L., Gunas I. V.

National Pirogov Memorial Medical University, Vinnytsya, Ukraine

ARTICLE INFO

Received: 12 March 2024

Accepted: 04 July 2024

UDC: 616.514-037:572.087+612-071

CORRESPONDING AUTHOR

e-mail: amjad_aladwan@yahoo.com

Aladwan A. M. A.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

FUNDING

Not applicable.

DATA SHARING

Data are available upon reasonable request to corresponding author.

The relevance of studying body girth in patients with different forms of urticaria is due to the importance of anthropometric indicators in the diagnosis and prognosis of the disease. Urticaria, as one of the most common dermatological conditions, can present in various clinical forms, each of which may differently impact the body, particularly by altering body circumferences. Examining these indicators in Ukrainian men and women allows for the identification of gender-specific and individual characteristics, which could be crucial for improving treatment and prevention methods for urticaria. The purpose of the work is to establish the peculiarities and sex differences in body girth measurements in young Ukrainian men and women with acute and chronic mild and severe urticaria. Body girth measurements were determined in 40 Ukrainian men and 40 young women (25-44 years according to the age periodization of WHO, 2015) patients with acute (AU) and chronic (CU) urticaria of a mild (MU) and severe (SU) course. Urticaria was diagnosed according to the EAACI/GA²LEN/EuroGuiDerm/ APAAACI international guidelines. Anthropometric measurements were performed on the right side of the body. The girth sizes of the upper and lower limbs, neck and trunk were determined with a centimeter tape. As a control group, the girth measurements of the body of practically healthy Ukrainian men (n=82) and women (n=101) of young age were used, which were taken from the data bank of the research center of the National Pirogov Memorial Medical University, Vinnytsya. Statistical analysis of girth body dimensions was carried out in the license package "Statistica 6.0" using non-parametric estimation methods. When comparing the body girths of men or women with urticaria with practically healthy men or women, significantly larger values or a tendency towards larger values were established: in sick men, most of the girths of the upper limb (mainly in patients with AU/SU), hips, waist, chest during inhalation and at rest (in patients with AU/MU, AU/SU, CU/MU and CU/SU), neck (in patients with AU/MU, AU/SU and CU/MU); in sick women - shoulder girths in stressed and relaxed states, hips, thighs, neck, waist, chest during inhalation, exhalation and in a calm state (in patients with AU/MU, AU/SU, CU/MU and CU/SU), forearm in the lower part (in patients with AU/MU and CU/ MU), crus in the upper and lower part (in patients with AU/MU and CU/MU). When comparing the girths of the body between men and women with urticaria, only a few significant differences or trends were established: between the men, only larger values of the girths of the neck (in patients with AU/MU compared to AU/SU) and feet (in patients with AU/SU vs. CU/SU); between sick women - greater values of shoulder girths in tense and relaxed states, forearm in the lower part, hand, crus in the upper part, foot, thorax on exhalation and in a calm state (in patients with AU/MU compared to AU/SU), crus (in patients with CU/MU compared to CU/SU). Pronounced manifestations of sexual dimorphism of body girths between Ukrainian men and women with urticaria were also established: in sick men, larger values of hand and neck girths were found (in patients with AU/MU, AU/SU, CU/MU and CU/SU), shoulder girths in tense and relaxed states, forearms in the upper and lower part, feet, waist, chest during inhalation, exhalation and in a calm state (in patients with AU/SU), shoulder in a tense state (in patients with CU/ SU), forearm in the upper part (in patients with AU/MU), forearm in the lower part (in

patients with CU/MU); in female patients - larger values of hip girth (in patients with AU/MU) and hips (in patients with CU/MU).
Keywords: *skin diseases, urticaria, men, women, girth sizes of the body, sex differences.*

Introduction

Urticaria is a common skin disease with a tendency to a chronic course, in the development of which a key role is played by the activation of mast cells and basophils, which leads to the release of histamine and other inflammatory mediators. This causes dilation of blood vessels and an increase in the permeability of capillaries, which leads to the appearance of blisters and itching on the skin [22, 23]. Chronic urticaria is a significant challenge for the health care system, as patients with this disease often require frequent medical consultations and treatment. According to German authors, about 40 % of patients have concomitant diseases, such as asthma or allergic rhinitis. In addition, about 60 % of patients indicate a significant impact of the disease on the quality of life [28].

The prevalence of chronic urticaria in South Korea, according to the Korean Health Insurance Database 2010-2014, was: 0.55 % in 2014, with an increase of 0.13 % between 2010 and 2014. The incidence rate was higher among women (57.6 %) and among persons aged 40-59 years [18]. The prevalence of urticaria among children in Germany is approximately 3.4 %. The highest rates of morbidity are observed in children aged 6 to 10 years, where this rate reaches 4.8 %. Chronic urticaria is observed in 0.1 % of children [25]. In China, the overall prevalence of urticaria is 7.1 % of the population, with the highest incidence among people aged 40 to 49 years (9.5 %). Chronic urticaria is more common among women. It was also found that the southern regions have higher incidence rates [19]. In the United States, the prevalence of chronic urticaria is approximately 0.6 % among the adult population. Women, as in the data of previous studies, have a higher probability of the disease compared to men, and there is also an increased risk in the age category of 30-50 years [29]. The overall prevalence of urticaria is 0.6 % in the Polish population, with women suffering from this disease more often than men (0.7 % vs. 0.4 %), which is consistent with data from a previous study in China. The prevalence of acute urticaria is 0.5 %, and chronic urticaria is 0.1 %. The incidence of urticaria is higher among people over 60 years old [21].

M. M. Balp and co-authors [5] investigated the impact of chronic urticaria on patients in Brazil. Chronic urticaria significantly reduces the quality of life, in particular due to a decrease in physical and mental health indicators. Patients with chronic urticaria have 5 points lower mental health scores and 2.5 points lower physical health scores. There is also a significant increase in anxiety and sleep problems among patients. The results of research by Tzur Bitan D. and co-authors [27] showed that patients with urticaria have an increased risk of developing anxiety disorders and depression. In particular, 30 % of patients had symptoms of anxiety, while 25 % were diagnosed with depression. A survey of 401 patients from the UK, Germany, France, Italy and Spain found that more than 90 % of respondents with chronic urticaria experienced anxiety or depression, more than 70 % of patients experienced a significant negative impact on sleep, and more than 60 % reported decreased physical activity [6].

A study of 7,612 patients with idiopathic/spontaneous urticaria on the cost of medical resources for the treatment of the disease showed that individuals from this cohort had an average annual total cost per patient of $9,788 [8].

44 % of patients have a recurrence of urticaria within 10 years of initial treatment. Young age and a longer initial phase of the disease are factors that increase the risk of relapse. Patients requiring systemic corticosteroid treatment also have a higher risk of relapse [15]. Thus, urticaria is a serious challenge for health care and requires the development of mechanisms capable of predicting the risks of this disease, especially if possible during preventive examinations.

The purpose of the study is to establish the peculiarities and sex differences in body girth measurements in young Ukrainian men and women with mild and severe acute and chronic urticaria.

Materials and methods

On the basis of the Department of Skin and Venereal Diseases with a postgraduate course at the National Pirogov Memorial Medical University, Vinnytsya and the Military Medical Clinical Center of the Central Region, body girths were determined (according to the scheme of V. V. Bunak [14]) of 40 Ukrainian men and 40 young women age (25-44 years according to the age periodization of WHO, 2015) of patients with acute (AU) and chronic (CU) urticaria of a mild (MU) and severe (SU) course. Committee on Bioethics of National Pirogov Memorial Medical University, Vinnytsya (protocol No. 11 from 23.12.2021) found that the studies do not contradict the basic bioethical standards of the Declaration of Helsinki, the Council of Europe Convention on Human Rights and Biomedicine (1977), the relevant WHO regulations and laws of Ukraine.

The diagnosis of urticaria was made in accordance with the EAACI/GA^{2}LEN/EuroGuiDerm/APAAACI international guidelines for the definition, classification, diagnosis and treatment of urticaria (https://pubmed.ncbi.nlm.nih.gov/29336054/).

Anthropometric measurements were performed on the right side of the body. Body girth measurements were determined with a centimeter tape, the accuracy of which

was up to 0.5 cm, and the measurement limit was up to 100 measurements.

As a control group, body girth measurements of practically healthy Ukrainian men (n=82) and women (n=101) of the same age group were used, which were taken from the data bank of the research center of the National Pirogov Memorial Medical University, Vinnytsya.

Statistical analysis of body girths was carried out in the "Statistica 6.0" license package using non-parametric estimation methods. Means and standard square deviations were determined for each characteristic under study. The significance of the difference in values between independent quantitative values was determined using the Mann-Whitney U-test.

Results

It was established that the *girth of the shoulder in the tense state* is significantly greater or tends to greater values in men with AU/SU (36.10±4.12 cm, p<0.01), CU/MU (35.20±2.96 cm, p<0.05) and CU/ SU (35.70±5.03 cm, p=0.063) compared to healthy men (33.23±2.84 cm) (Fig. 1A). The value of this indicator is significantly higher or tends to higher values in women with AU/MU (35.20±4.83 cm, p<0.001), AU/SU (29.85±2.86 cm, p=0.076), CU/MU (34.25±4.71 cm, p<0.001) and CU/SU (30.75±3.39 cm, p<0.01) compared to healthy women (27.96±2.92 cm) (see Fig. 1A). In addition, the value of shoulder girth in the tense state is significantly greater (p<0.05) in women with AU/MU compared to women with AU/SU (see Fig. 1A). When comparing shoulder girth in a tense state between the respective groups of male and female patients, significantly higher values were established in male patients with AU/SU (p<0.01) and CU/SU (p<0.05) (see Fig. 1A).

Shoulder girth in a relaxed state is significantly greater only in men with AU/SU (32.40±3.92 cm, p<0.05) compared to healthy men (30.17±2.94 cm) (Fig. 1B). The value of this indicator is significantly higher or has a pronounced tendency to higher values in women with AU/MU (33.40±4.38 cm, p<0.001), AU/SU (28.50±2.72 cm, p=0.054), CU/MU (31.50± 4.84 cm, p<0.01) and CU/SU (29.40±3.20 cm, p<0.01) compared to healthy women (26.54±2.88 cm) (see Fig. 1B). In addition, the value of shoulder girth in a relaxed state is significantly greater (p<0.05) in women with AU/MU compared to women with AU/SU (see Fig. 1B). When comparing the shoulder girth in an unstressed state between the respective groups of male and female patients, only a significantly higher value was found in male patients with AU/SU (p<0.05) (see Fig. 1B).

There are no significant or trend differences in the *upper forearm circumference* between patients and healthy men or women (see Fig. 1C). Similarly, no significant or trend differences in this measurement are found between male or female patients (see Fig. 1C). However, when comparing the upper forearm circumference between the respective groups of male and female patients, significantly larger values are found in men with AU/MU (27.35±2.57 cm, p<0.05) and AU/SU (26.40±3.13 cm, p<0.01) compared to women (24.40±2.59 cm and 22.55±2.27 cm, respectively) (see Fig. 1C).

The circumference of the lower forearm is significantly greater or has a tendency towards greater values in men with AU/SU (18.40±1.56 cm, p<0.05) and CU/MU (18.65±2.17 cm, p=0.066) compared to healthy men (17.44±1.24 cm) (see Fig. 1D). This measurement is significantly larger in women with AU/MU (16.80±0.95 cm, p<0.001) and CU/MU (16.75±1.64 cm, p<0.01) compared to healthy women (15.47±1.14 cm) (see Fig. 1D). Additionally, the circumference of the lower forearm is significantly greater (p<0.01) in women with AU/MU compared to women with AU/SU (15.35±0.88 cm) (see Fig. 1D). When comparing the anteroposterior mid-sternum diameter between the respective groups of male and female patients, significantly larger values are observed in men with AU/SU (p<0.001) and CU/MU (p<0.05) (see Fig. 1D).

No significant or trend differences in *wrist circumference* were found between patients and healthy men or women (see Fig. 1E). It was found that this measurement is significantly larger (p<0.05) in women with AU/MU (19.05±0.72 cm) compared to women with AU/SU (18.30±0.67 cm) (see Fig. 1E). When comparing wrist circumference between the respective groups of male and female patients, significantly larger values (p<0.05-0.001) are observed in men with AU/MU (21.50±1.13 cm), AU/SU (22.05±1.25 cm), CU/MU (21.70±1.03 cm; compared to women - 18.85±1.11 cm) and CU/SU (21.05±2.15 cm; compared to women - 18.55±0.64 cm) (see Fig. 1E).

Thigh circumference is significantly larger or shows a pronounced tendency towards larger values in men with AU/MU (61.10±6.21 cm, p<0.001), AU/SU (61.30±4.62 cm, p<0.001), CU/MU (58.70±5.08 cm, p<0.01) and CU/SU (59.80±9.14 cm, p=0.052) compared to healthy men (53.25±4.49 cm) (see Fig. 2A). This measurement is significantly larger in women with AU/MU (66.50±8.24 cm, p<0.001), AU/SU (59.80±4.92 cm, p<0.001), CU/MU (66.80±7.94 cm, p<0.001) and CU/SU (62.50±7.26 cm, p<0.001) compared to healthy women (53.26±4.48 cm) (see Fig. 2A). When comparing thigh circumference between the respective groups of male and female patients, a significantly larger value is found only in women with CU/MU (p<0.05) (see Fig. 2A).

Thigh circumference is significantly larger only in men with AU/SU (103.2±7.9 cm, p<0.01) compared to healthy men (95.04±6.39 cm) (see Fig. 2B). This measurement is significantly larger or shows a tendency towards larger values in women with AU/MU (107.6±11.7 cm, p<0.001), AU/SU (99.40±7.57 cm, p<0.05), CU/MU (108.8±14.0 cm, p<0.01) and CU/SU (102.9±12.1 cm, p=0.061) compared to healthy women (95.08±6.95 cm) (see Fig. 2B). When comparing thigh circumference between the respective groups of male and female patients, a significantly larger

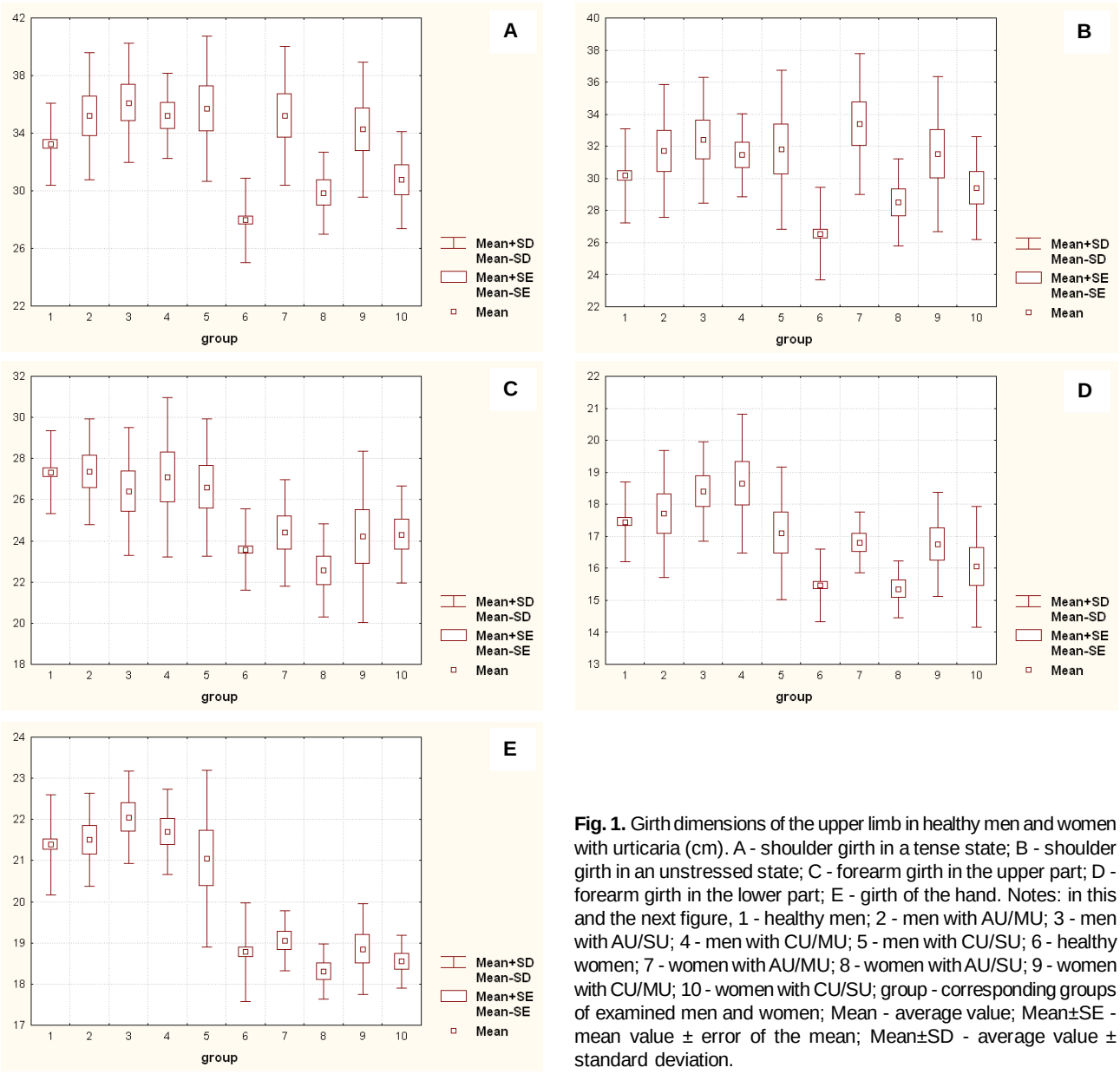


Fig. 1. Girth dimensions of the upper limb in healthy men and women with urticaria (cm). A - shoulder girth in a tense state; B - shoulder girth in an unstressed state; C - forearm girth in the upper part; D - forearm girth in the lower part; E - girth of the hand. Notes: in this and the next figure, 1 - healthy men; 2 - men with AU/MU; 3 - men with AU/SU; 4 - men with CU/MU; 5 - men with CU/SU; 6 - healthy women; 7 - women with AU/MU; 8 - women with AU/SU; 9 - women with CU/MU; 10 - women with CU/SU; group - corresponding groups of examined men and women; Mean - average value; Mean±SE - mean value ± error of the mean; Mean±SD - average value ± standard deviation.

value ($p<0.05$) is found only in women with AU/MU (compared to men with 98.60±8.07 cm) (see Fig. 2B).

Upper crus circumference is significantly larger in women with AU/MU (39.10±3.25 cm, $p<0.001$) and CU/MU (39.00±4.71 cm, $p<0.01$) compared to healthy women (34.85±2.94 cm) (see Fig. 2C). Additionally, this measurement is significantly larger ($p<0.05$) in women with AU/MU compared to women with AU/SU (36.10±2.23 cm) (see Fig. 2C). When comparing upper leg circumference between the respective groups of male and female patients, no significant or trend differences were found (see Fig. 2C).

Lower crus circumference is significantly larger only in men with AU/SU (25.50±2.47 cm, $p<0.01$) compared to healthy men (23.41±1.87 cm) (see Fig. 2D). This measurement is significantly larger in women with AU/MU (25.20±2.66 cm, $p<0.001$), AU/SU (23.70±2.00 cm, $p<0.05$) and CU/MU (25.45±3.62 cm, $p<0.01$) compared to healthy women (22.21±1.61 cm) (see Fig. 2D). Additionally, lower leg circumference at the distal part shows a tendency towards larger values ($p=0.076$) in women with CU/MU compared to women with CU/SU (23.05±1.80 cm) (see Fig. 2D). When comparing lower leg circumference at the distal part between the respective groups of male and female patients, no significant or trend differences were found (see Fig. 2D).

Foot circumference shows only a slight tendency towards smaller values in men with CU/SU (24.10±2.22 cm, $p=0.079$) compared to healthy men (24.96±1.46 cm) (see Fig. 2E). This measurement is significantly larger only

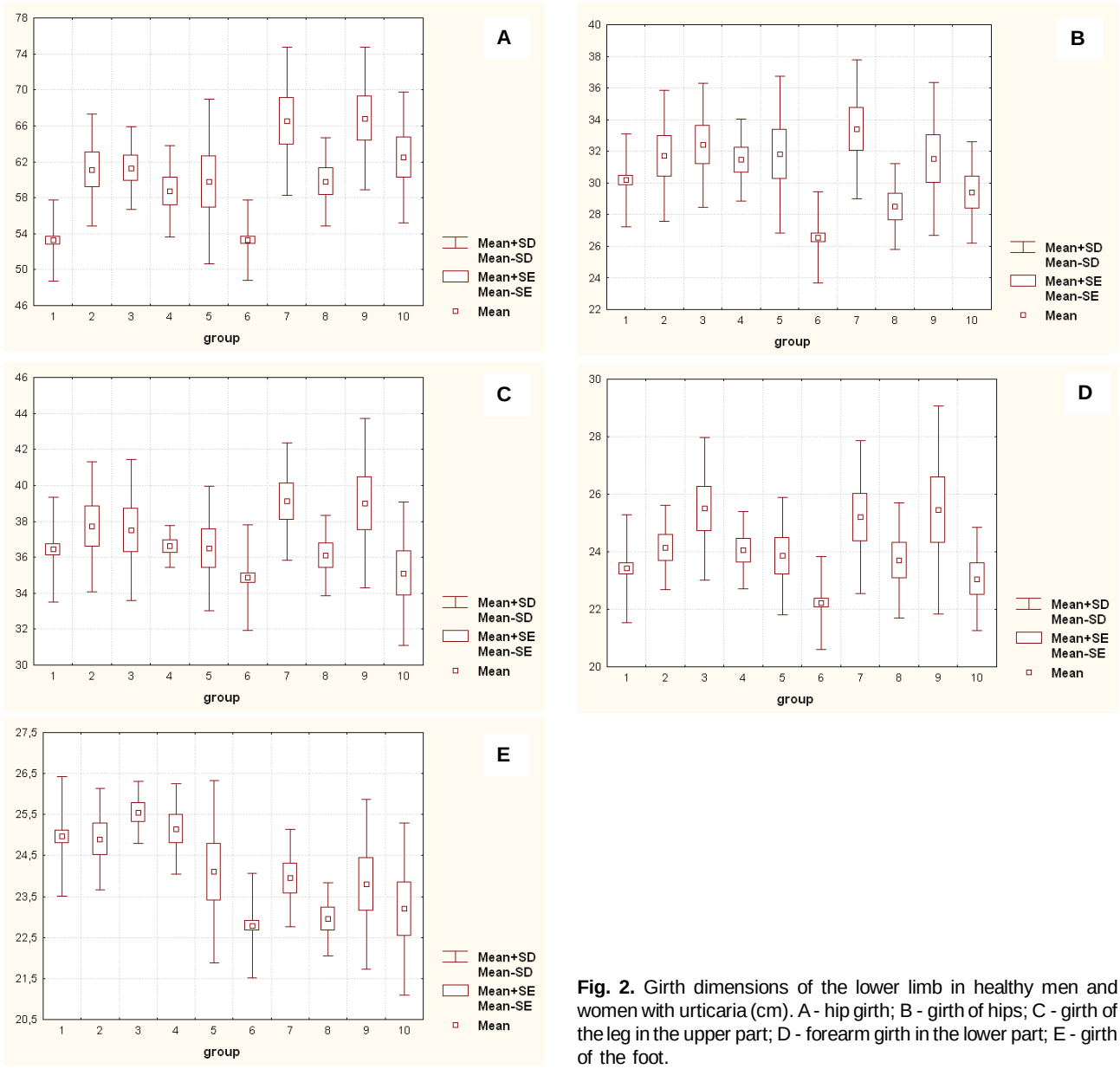


Fig. 2. Girth dimensions of the lower limb in healthy men and women with urticaria (cm). A - hip girth; B - girth of hips; C - girth of the leg in the upper part; D - forearm girth in the lower part; E - girth of the foot.

in women with AU/MU (23.95±1.19 cm, p<0.05) compared to healthy women (22.79±1.28 cm) (see Fig. 2E). Additionally, foot circumference is significantly larger (p<0.05) in men with AU/SU (25.55±0.76 cm) compared to men with CU/SU; and in women with AU/MU, there is a tendency towards larger values (p=0.076) compared to women with AU/SU (22.95±0.90 cm) (see Fig. 2E). When comparing foot circumference between the respective groups of male and female patients, only men with AU/SU show a significantly larger value (p<0.001) (see Fig. 2E).

Neck circumference is significantly larger in men with AU/MU (40.80±2.97 cm, p<0.001), AU/SU (42.30±3.27 cm, p<0.001) and CU/MU (40.20±1.99 cm, p<0.001) compared to healthy men (37.67±1.92 cm) (see Fig. 3A). This measurement is also significantly larger in women with AU/MU (35.90±3.93 cm, p<0.001), AU/SU (33.40±1.90 cm, p<0.01), CU/MU (35.20±2.90 cm, p<0.001) and CU/SU (33.90±2.38 cm, p<0.01) compared to healthy women (31.96±1.45 cm) (see Fig. 3A). Additionally, neck circumference is significantly larger (p<0.05) in men with AU/SU compared to men with AU/MU (see Fig. 3A). Among the respective groups of male and female patients, significant larger values of neck circumference were found in men with AU/MU (p<0.05), AU/SU (p<0.001), CU/MU (p<0.01) and CU/SU (40.10±4.79 cm, p<0.01) (see Fig. 3A).

Waist circumference is significantly larger in men with AU/MU (90.50±13.89 cm, p<0.01), AU/SU (97.60±13.38 cm, p<0.001), CU/MU (89.50±12.29 cm, p<0.01) and CU/SU (93.90±18.90 cm, p<0.01) compared to healthy men

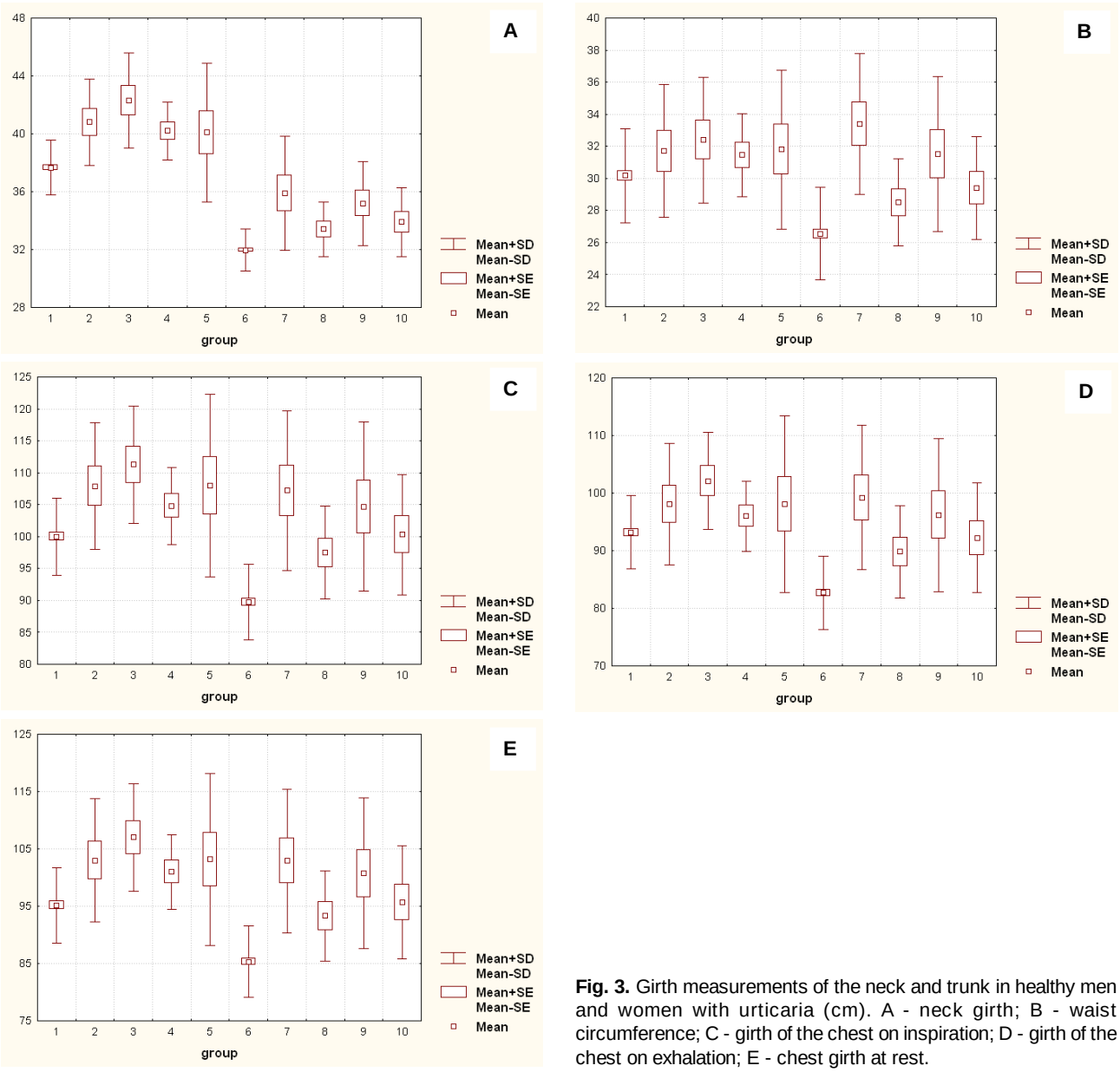


Fig. 3. Girth measurements of the neck and trunk in healthy men and women with urticaria (cm). A - neck girth; B - waist circumference; C - girth of the chest on inspiration; D - girth of the chest on exhalation; E - chest girth at rest.

(79.48±7.32 cm) (see Fig. 3B). This measurement is also significantly larger in women with AU/MU (92.40±19.81 cm, p<0.001), AU/SU (76.00±20.24 cm, p<0.05), CU/MU (88.20±20.53 cm, p<0.001) and CU/SU (83.80±12.04 cm, p<0.001) compared to healthy women (68.98±6.29 cm) (see Fig. 3B). When comparing waist circumference between corresponding groups of male and female patients, only men with AU/SU have a significantly larger value (p<0.01) (see Fig. 3B).

The chest circumference on inhalation is significantly larger in men with AU/MU (107.9±9.9 cm, p<0.01), AU/SU (111.3±9.2 cm, p<0.001), CU/MU (104.8±6.1 cm, p<0.05) and CU/SU (108.0±14.3 cm, p<0.05) compared to healthy men (100.0±6.0 cm) (see Fig. 3C). This measurement is also significantly larger in women with AU/MU (107.2±12.6 cm, p<0.001), AU/SU (97.50±7.23 cm, p<0.01), CU/MU (104.7±13.2 cm, p<0.001) and CU/SU (100.3±9.4 cm, p<0.001) compared to healthy women (89.75±5.88 cm) (see Fig. 3C). When comparing chest circumference on inhalation between corresponding groups of male and female patients, only men with AU/SU have a significantly larger value (p<0.01) (see Fig. 3C).

The chest circumference on exhalation is significantly larger only in men with AU/SU (102.1±8.5 cm, p<0.01) compared to healthy men (93.18±6.39 cm) (see Fig. 3D). This measurement is significantly larger in women with AU/MU (99.20±12.52 cm, p<0.001), AU/SU (89.80±7.98 cm, p<0.01), CU/MU (96.20±13.26 cm, p<0.001) and CU/SU (92.20±9.52 cm, p<0.01) compared to healthy women (82.68±6.33 cm) (see Fig. 3D). Additionally, chest

circumference on exhalation shows a trend towards larger values (p=0.070) in women with AU/MU compared to women with AU/SU (see Fig. 3D). When comparing chest circumference on exhalation between corresponding groups of male and female patients, only men with AU/SU have a significantly larger value (p<0.01) (see Fig. 3D).

The chest circumference at rest is significantly larger in men with AU/MU (103.0±10.8 cm, p<0.01), AU/SU (107.0±9.3 cm, p<0.001), CU/MU (101.0±6.5 cm, p<0.05) and CU/SU (103.2±15.0 cm, p<0.05) compared to healthy men (95.20±6.57 cm) (see Fig. 3E). This measurement is significantly larger in women with AU/MU (102.9±12.5 cm, p<0.001), AU/SU (93.30±7.90 cm, p<0.01), CU/MU (100.7±13.1 cm, p<0.001) and CU/SU (95.70±9.81 cm, p<0.01) compared to healthy women (85.34±6.20 cm) (see Fig. 3E). Additionally, chest circumference at rest shows a trend towards larger values (p=0.065) in women with AU/MU compared to women with AU/SU (see Fig. 3E). When comparing chest circumference at rest between corresponding groups of male and female patients, only men with AU/SU have a significantly larger value (p<0.01) (see Fig. 3E).

Discussion

Thus, *compared to healthy men*: the size of *upper arm circumferences in both tensed and relaxed states and lower forearm circumference* is significantly larger (p<0.05-0.001) in men with AU/SU (8.64 %, 7.39 % and 5.50 %, respectively); *upper arm circumference in the tensed* state is significantly larger (p<0.05) or shows a trend towards larger values (p=0.063) in men with CU/MU (5.93 %) and CU/SU (7.43 %); *upper forearm circumference* shows a trend towards larger values (p=0.066) in men with CU/MU (6.94 %); *thigh circumference* is significantly larger (p<0.01-0.001) or shows a trend towards larger values (p=0.052) in men with AU/MU (14.74 %), AU/SU (15.12 %), CU/MU (10.23 %) and CU/SU (12.30 %); *thigh and lower crus circumferences* are significantly larger (p<0.01 in both cases) in men with AU/SU (8.59 % and 8.93 %, respectively); *foot circumference* shows a trend towards smaller values (p=0.079) in men with CU/SU (3.45 %); *waist circumference*, *chest circumference on inhalation, and at rest* are significantly larger (p<0.05-0.001) in men with AU/MU (13.86 %, 7.90 % and 8.19 %, respectively), AU/SU (22.80 %, 11.30 % and 12.39 %, respectively), CU/MU (12.61 %, 4.80 % and 18.35 %, respectively) and CU/SU (18.14 %, 8.00 % and 8.40 %, respectively); *neck circumference* is significantly larger (p<0.001 in all cases) in men with AU/MU (8.31 %), AU/SU (12.29 %) and CU/MU (6.72 %); *chest circumference on exhalation* is significantly larger (p<0.01) in men with AU/SU (9.57 %).

When compared to healthy women: the size of upper arm circumferences in both tensed and relaxed states is significantly larger (p<0.01-0.001) or shows a trend towards larger values (p=0.054-0.076) in women with AU/MU (25.89 % and 25.85 %, respectively), AU/SU (6.76 % and 7.39 %, respectively), CU/MU (22.50 % and 18.69 %, respectively) and CU/SU (9.98 % and 10.78 %, respectively); *forearm circumference in the lower part* is significantly larger (p<0.01-0.001) in women with AU/MU (8.60 %) and CU/MU (8.27 %); *thighs and thigh circumferences* are significantly larger (p<0.05-0.001) or show a trend towards larger values (p=0.061) in women with AU/MU (24.86 % and 13.17 %, respectively), AU/SU (12.28 % and 4.54 %, respectively), CU/MU (25.42 % and 14.43 %, respectively) and CU/SU (17.35 % and 8.22 %, respectively); *crus circumferences in the upper and lower parts and foot circumference* are significantly larger (p<0.05-0.001) in women with AU/MU (12.20 %, 13.46 % and 5.09 %, respectively); *crus circumferences in the upper and lower parts* are significantly larger (p<0.01 in both cases) in women with CU/MU (11.91 % and 14.59 %, respectively); only the *lower part of crus circumference* is significantly larger (p<0.05) in women with AU/SU (6.71 %); *neck, waist, and chest circumferences on inhalation, exhalation, and at rest* are significantly larger (p<0.05-0.001) in women with AU/MU (12.33 %, 33.95 %, 19.44 %, 19.98 % and 20.58 %, respectively), AU/SU (4.51 %, 10.18 %, 8.64 %, 8.61 % and 9.33 %, respectively), CU/MU (10.14 %, 27.86 %, 16.66 %, 16.35 % and 18.00 %, respectively) and CU/SU (6.07 %, 21.48 %, 11.75 %, 11.51 % and 12.14 %, respectively).

When comparing body circumferential dimensions among Ukrainian men with *urticaria*, only significantly larger values (p<0.05 in both cases) were found for *neck circumference* in patients with AU/MU compared to those with AU/SU (3.68 %) and *foot circumference* in patients with AU/MU compared to those with CU/SU (6.02 %). Among women with AU/MU compared to those with AU/SU, significantly larger (p<0.05-0.01) or trending larger values (p=0.065-0.076) were observed for *upper arm circumferences in both tensed* (17.92 %) and *relaxed states* (17.19 %), *forearm circumference in the lower part* (9.45 %), wrist circumference (4.10 %), *upper crus circumference* (8.31 %), *foot circumference* (4.36 %), *chest circumference on exhalation* (10.47 %) and *at rest* (10.29 %); as well as a trend towards larger values (p=0.076) for *lower crus circumference* in women with CU/MU compared to women with CU/SU (10.41 %).

Significant manifestations of *sexual dimorphism* in body circumferential dimensions were established between Ukrainian men and women with *urticaria*: significantly larger values (p<0.05-0.001) for *wrist and neck circumferences* in men with AU/MU (12.86 % and 13.65 %, respectively), AU/SU (20.49 % and 26.65 %, respectively), CU/MU (15.12 % and 14.20 %, respectively) and CU/SU (13.48 % and 18.29 %, respectively); significantly larger values (p<0.05-0.001) for *upper arm circumferences in both tensed* (20.94 %) and *relaxed states* (13.68 %), *forearm circumferences in the upper* (17.07 %) and *lower parts* (19.87 %), *foot circumference* (11.33%), *waist circumference* (28.42%), *chest circumference on inhalation* (14.15%), *exhalation* (13.70 %) and *at rest* (14.68 %) in men with AU/SU; significantly larger values (p<0.05 in both cases) for

forearm circumference in the upper part (12.09 %) in men with AU/MU and *thigh circumference* (9.13 %) in women with AU/MU; significantly larger values ($p<0.05$ in both cases) for *forearm circumference in the lower part* (11.34 %) in men with CU/MU and *thigh circumference* (13.80 %) in women with CU/MU; significantly larger value ($p<0.05$) for *upper arm circumference in the tensed state* (16.10 %) in men with CU/SU.

The connection between the risk of occurrence or features of the course of various dermatological diseases and the features of anthropometric indicators has been highlighted in various works over the last decade. Thus, it was established that patients with chronic idiopathic urticaria have a significantly higher BMI compared to control groups. In particular, in patients with chronic idiopathic urticaria, the average BMI is 28.5±3.2, which indicates a potential association between this form of urticaria and increased BMI [1]. Another study found that 42 % of patients with chronic idiopathic urticaria had a body mass index greater than 30, indicating obesity, compared to 24 % of controls [9]. Data from laboratory studies also indicate the existence of a connection with increased body weight. Patients with chronic urticaria have 25 % higher leptin levels and 15 % lower adiponectin levels compared to controls [26].

Similar trends were found for other dermatological diseases, and this applies to all age categories. A study by Darlenski R. and co-authors [10] showed that obesity is associated with various skin problems, including acne, psoriasis and eczema. Obese patients have been found to have a 30 % greater risk of developing these diseases compared to normal weight patients. 60 % of obese children have skin diseases such as acanthosis nigricans and stretch marks [11]. Elderly patients with increased BMI more often have skin lesions, such as dermatophytosis and stretch marks. In particular, 50 % of patients with a BMI over 30 had skin lesions, compared to 20 % of patients with a normal BMI [20].

In the studies of Khasawneh A. R. et al. [16] among the parameters associated with an unfavorable prognosis of the development of the generalized fatty form of seborrheic dermatitis of varying degrees of severity, the muscle component of body weight according to the methods of Matiegka and the American Institute of Nutrition, the fat component of body weight (both in men and women) and mesomorphic and ectomorphic components of the somatotype (only in women). 27 % of patients with atopic eczema suffer from obesity, compared to 18 % in the control group [3].

Men with severe psoriasis have thicker skin folds compared to those with mild psoriasis. The average thickness of skin folds in patients with severe psoriasis was 25 mm, while in patients with mild psoriasis it was 18 mm. Also, taking into account the somatotype shows that patients with the endomorphic type have a greater thickness of skin folds [2]. A high BMI and abdominal obesity are associated with an increased risk of psoriasis. It has been found that each additional unit of BMI increases the risk of psoriasis by 2 %, and people with high levels of abdominal obesity have a 25 % greater risk of developing psoriasis [4]. Severe forms of psoriasis are associated with more pronounced changes in body composition, in particular, with an increase in BMI by 2.5 units compared to mild forms of the disease [7]. In patients with psoriasis who are obese, the frequency of severe forms of the disease is 25 % higher compared to non-obese patients. It has also been established that each additional unit of BMI increases the risk of psoriasis by 5 % [12].

Acanthosis nigricans is also strongly associated with obesity and elevated insulin levels. In particular, 70 % of patients with acanthosis nigricans have a BMI greater than 25, and insulin levels were 20 % higher compared to controls [13].

A high BMI is associated with more severe forms of acne. In patients with a BMI greater than 25, the severity of acne is 40 % higher compared to patients with a normal BMI. In particular, 60 % of obese patients have severe forms of acne, compared to 30 % in the control group [17]. Obese adolescents have a 30 % higher risk of developing acne compared to normal-weight adolescents. Specifically, 25 % of obese adolescents have moderate or severe acne, compared to 18 % in the control group [24].

Atopic dermatitis is also significantly associated with obesity. The overall risk of atopic dermatitis is 40 % higher in overweight people and 60 % higher in obese people compared to controls [30].

Conclusion

1. In patients with acute and chronic urticaria of mild and severe course of Ukrainian men and women of young age, significantly higher values or tendencies towards higher values were established, compared to healthy men or women, numerous discrepancies in body girth sizes - higher values in patients (more pronounced in women). Between sick men and sick women, only isolated differences in girth of the body were established (also more pronounced in women).

2. Pronounced manifestations of sexual dimorphism of girth body sizes between sick men and women were established - in most cases, greater values in men.

References

[1] Aamir, I. S., Choudry, U. K., & Mannan, N. (2016). Association between chronic idiopathic urticaria and body mass index. *Pakistan Journal of Physiology,* 12(1), 35-37. doi: 10.69656/pjp.v12i1.424

[2] Al-Qaraleh, O. B. A. R. (2020). Skinfold thickness in men with mild and severe psoriasis without and taking into account the somatotype. *Biomedical and Biosocial Anthropology*, (40), 48-53. doi: 10.31393/bba40-2020-08

[3] Ascott, A., Mansfield, K. E., Schonmann, Y., Mulick, A., Abuabara, K., Roberts, A., ... & Langan, S. M. (2021). Atopic eczema and

obesity: a population-based study. *British Journal of Dermatology,* 184(5), 871-879. doi: 10.1111/bjd.19597

[4] Aune, D., Snekvik, I., Schlesinger, S., Norat, T., Riboli, E., & Vatten, L. J. (2018). Body mass index, abdominal fatness, weight gain and the risk of psoriasis: a systematic review and dose-response meta-analysis of prospective studies. *European journal of epidemiology,* 33, 1163-1178. doi: 10.1007/s10654-018-0366-z

[5] Balp, M. M., Lopes da Silva, N., Vietri, J., Tian, H., & Ensina, L. F. (2017). The burden of chronic urticaria from Brazilian patients' perspective. *Dermatology and therapy,* 7, 535-545. doi: 10.1007/s13555-017-0191-4

[6] Balp, M. M., Vietri, J., Tian, H., & Isherwood, G. (2015). The impact of chronic urticaria from the patient's perspective: a survey in five European countries. *The Patient-Patient-Centered Outcomes Research,* 8, 551-558. doi: 10.1007/s40271-015-0145-9

[7] Blake, T., Gullick, N. J., Hutchinson, C. E., & Barber, T. M. (2020). Psoriatic disease and body composition: A systematic review and narrative synthesis. *PloS one,* 15(8), e0237598. doi: 10.1371/journal.pone.0237598

[8] Broder, M. S., Raimundo, K., Antonova, E., & Chang, E. (2015). Resource use and costs in an insured population of patients with chronic idiopathic/spontaneous urticaria. *American journal of clinical dermatology*, 16, 313-321. doi: 10.1007/s40257-015-0134-8

[9] Choudhary, D., & Shrestha, S. Y. (2020). Association of Obesity with Chronic Idiopathic Urticaria at Birat Medical College and Teaching Hospital. *Birat Journal of Health Sciences,* 5(2), 1087-1090. doi: 10.3126/bjhs.v5i2.31411

[10] Darlenski, R., Mihaylova, V., & Handjieva-Darlenska, T. (2022). The link between obesity and the skin. *Frontiers in nutrition,* 9, 855573. doi: 10.3389/fnut.2022.855573

[11] Hasse, L., Jamiolkowski, D., Reschke, F., Kapitzke, K., Weiskorn, J., Kordonouri, O., ... & Ott, H. (2023). Pediatric obesity and skin disease: cutaneous findings and associated quality-of-life impairments in 103 children and adolescents with obesity. *Endocrine Connections,* 12(9), e230235. doi: 10.1530/EC-23-0235

[12] Jensen, P., & Skov, L. (2017). Psoriasis and obesity. *Dermatology,* 232(6), 633-639. doi: 10.1159/000455840

[13] Jorwal, P., Keshwani, P., & Verma, R. (2014). Association of acanthosis nigricans with anthropometric and biochemical parameters in young Indian males. *Ann Nigerian Med,* 8, 65-68. doi: 10.4103/0331-3131.153354

[14] Kalmin, O. V., & Galkina, T. N. (2020). *Медицинская антропология [Medical anthropology].* Высшее образование: Специалитет=Higher education: Specialist.

[15] Kim, J. K., Har, D., Brown, L. S., & Khan, D. A. (2018). Recurrence of chronic urticaria: incidence and associated factors. *The Journal of Allergy and Clinical Immunology: In Practice*, 6(2), 582-585. doi: 10.1016/j.jaip.2017.07.012

[16] Khasawneh, A. R., Serheta, I. V., Vadzyuk, S. N., Khapitska, O. P., & Bondar, S. A. (2022). Somatotypological parameters of the body in men and women with seborrheic dermatitis of varying severity. *Вісник Вінницького національного медичного університету=Reports of Vinnytsia National Medical University,* 26(2), 209-214. doi: 10.31393/reports-vnmedical-2022-26(2)-06

[17] Lajevardi, V., Ghodsi, S. Z., Daneshpazhooh, M., Kazemi, H., Aryanian, Z., & Goodarzi, A. (2014). The relationship between body mass index and the severity of acne. Iranian Journal of *Dermatology,* 17(1), 13-17.

[18] Lee, N., Lee, J. D., Lee, H. Y., Kang, D. R., & Ye, Y. M. (2017). Epidemiology of chronic urticaria in Korea using the Korean Health Insurance Database, 2010-2014. *Allergy, asthma & immunology research,* 9(5), 438-445. doi: 10.4168/aair.2017.9.5.438

[19] Li, J., Mao, D., Liu, S., Liu, P., Tian, J., Xue, C., ... & Zhang, J. (2022). Epidemiology of urticaria in China: a population-based study. *Chinese Medical Journal,* 135(11), 1369-1375. doi: 10.1097/CM9.0000000000002172

[20] Pepple, E. F., Amadi, E. S., Otike-Odibi, B., & Bell-Gam, H. I. (2022). Body Mass Index (BMI) and Cutaneous Lesions among the Elderly Patients in a Tertiary Hospital in Rivers State. *European J Nutr Food Saf,* 14(10), 15-22. doi: 10.9734/EJNFS/2022/v14i1030535

[21] Raciborski, F., Klak, A., Czarnecka-Operacz, M., Jenerowicz, D., Sybilski, A., Kuna, P., & Samoliński, B. (2018). Epidemiology of urticaria in Poland-nationally representative survey results. *Advances in Dermatology and Allergology/Postepy Dermatologii i Alergologii,* 35(1), 67-73. doi: 10.5114/ada.2018.73165

[22] Saini, S. S. (2014). Chronic spontaneous urticaria: etiology and pathogenesis. *Immunology and Allergy Clinics,* 34(1), 33-52. doi: 10.1016/j.iac.2013.09.012

[23] Sanchez-Borges, M., Ansotegui, I. J., Baiardini, I., Bernstein, J., Canonica, G. W., Ebisawa, M., ... & Martell, J. A. O. (2021). The challenges of chronic urticaria part 1: Epidemiology, immunopathogenesis, comorbidities, quality of life, and management. *World Allergy Organization Journal,* 14(6), 100533. doi: 10.1016/j.waojou.2021.100533

[24] Snast, I., Dalal, A., Twig, G., Astman, N., Kedem, R., Levin, D., ... & Levi, A. (2019). Acne and obesity: A nationwide study of 600,404 adolescents. *Journal of the American Academy of Dermatology,* 81(3), 723-729. doi: 10.1016/j.jaad.2019.04.009

[25] Staubach, P., Mann, C., Peveling-Oberhag, A., Lang, B. M., Augustin, M., Hagenström, K., ... & Petersen, J. (2021). Epidemiology of urticaria in German children. *JDDG: Journal der Deutschen Dermatologischen Gesellschaft,* 19(7), 1013-1019. doi: 10.1111/ddg.14485

[26] Trinh, H. K. T., Pham, D. L., Ban, G. Y., Lee, H. Y., Park, H. S., & Ye, Y. M. (2016). Altered systemic adipokines in patients with chronic urticaria. *International archives of allergy and immunology*, 171(2), 102-110. doi: 10.1159/000452626

[27] Tzur Bitan, D., Berzin, D., & Cohen, A. (2021). The association of chronic spontaneous urticaria (CSU) with anxiety and depression: a nationwide cohort study. *Archives of Dermatological Research,* 313(1), 33-39. doi: 10.1007/s00403-020-02064-3

[28] Weller, K., Maurer, M., Bauer, A., Wedi, B., Wagner, N., Schliemann, S., ... & Staubach, P. (2022). Epidemiology, comorbidities, and healthcare utilization of patients with chronic urticaria in Germany. *Journal of the European Academy of Dermatology and Venereology,* 36(1), 91-99. doi: 10.1111/jdv.17724

[29] Wertenteil, S., Strunk, A., & Garg, A. (2019). Prevalence estimates for chronic urticaria in the United States: A sex-and age-adjusted population analysis. *Journal of the American Academy of Dermatology,* 81(1), 152-156. doi: 10.1016/j.jaad.2019.02.064

[30] Zhang, A., & Silverberg, J. I. (2015). Association of atopic dermatitis with being overweight and obese: a systematic review and metaanalysis. *Journal of the American Academy of Dermatology,* 72(4), 606-616. doi: 10.1016/j.jaad.2014.12.013

ОСОБЛИВОСТІ ОБХВАТНИХ РОЗМІРІВ ТІЛА В УКРАЇНСЬКИХ ЧОЛОВІКІВ І ЖІНОК ХВОРИХ НА РІЗНІ ФОРМИ КРОПИВ'ЯНКИ

Аладван А. М. А., Дмитренко С. В., Кириченко В. І., Глушак А. А., Прокопенко О. С., Очеретна О. Л., Гунас І. В.

Актуальність дослідження обхватних розмірів тіла у пацієнтів з різними формами кропив'янки зумовлена значущістю антропометричних показників у діагностиці та прогнозуванні перебігу захворювання. Кропив'янка, як одна з найпоширеніших дерматологічних патологій, може мати різні клінічні форми, кожна з яких може по-різному впливати на організм, зокрема на зміну обхватних розмірів тіла. Вивчення цих показників у чоловіків та жінок українського походження дозволяє виявити статеві та індивідуальні особливості, що можуть мати важливе значення для покращення методів лікування та профілактики кропив'янки. Мета роботи - встановити особливості та статеві розбіжності обхватних розмірів тіла в українських чоловіків і жінок молодого віку хворих на гостру та хронічну кропив'янку легкого й тяжкого перебігу. Проведено визначення обхватних розмірів тіла у 40 українських чоловіків і 40 жінок молодого віку (25-44 роки згідно вікової періодизації ВООЗ, 2015) хворих на гостру (ГК) та хронічну (ХК) кропив'янку легкого (ЛП) і тяжкого (ТП) перебігу. Встановлення діагнозу кропив'янки проводили відповідно до міжнародного керівництва EAACI/GA²LEN/EuroGuiDerm/APAAACI. Антропометричні вимірювання проводили на правій частині тіла. Сантиметровою стрічкою визначали обхватні розміри верхніх і нижніх кінцівок, шиї та тулуба. В якості контрольної групи використані обхватні розміри тіла практично здорових українських чоловіків (n=82) і жінок (n=101) молодого віку, які були взяті з банку даних науково-дослідного центру Вінницького національного медичного університету ім. М. І. Пирогова. Статистичний аналіз обхватних розмірів тіла проведений у ліцензійному пакеті "Statistica 6.0" з використанням непараметричних методів оцінки. При порівнянні обхватних розмірів тіла у хворих на кропив'янку чоловіків або жінок із практично здоровими чоловіками або жінками встановлені достовірно більші або тенденція до більших значень: у хворих чоловіків - більшості обхватів верхньої кінцівки (переважно у хворих на ГК/ТП), стегна, талії, грудної клітки на вдиху та у спокійному стані (у хворих на ГК/ЛП, ГК/ТП, ХК/ЛП і ХК/ТП), шиї (у хворих на ГК/ЛП, ГК/ТП і ХК/ЛП); у хворих жінок - обхватів плеча у напруженому та ненапруженому станах, стегна, стегон, шиї, талії, грудної клітки на вдиху, на видиху та у спокійному стані (у хворих на ГК/ЛП, ГК/ТП, ХК/ЛП і ХК/ТП), передпліччя у нижній частині (у хворих на ГК/ЛП і ХК/ЛП), гомілки у верхній і нижній частині (у хворих на ГК/ЛП і ХК/ЛП). При порівнянні обхватних розмірів тіла між хворими на кропив'янку чоловіками або жінками встановлені лише поодинокі достовірні або тенденції розбіжностей: між хворими чоловіками - лише більші значення обхватів шиї (у хворих на ГК/ЛП порівняно з ГК/ТП) та стопи (у хворих на ГК/ТП порівняно з ХК/ТП); між хворими жінками - більші значення обхватів плеча у напруженому та ненапруженому станах, передпліччя у нижній частині, кисті, гомілки у верхній частині, стопи, грудної клітки на видиху та у спокійному стані (у хворих на ГК/ЛП порівняно з ГК/ТП), гомілки у нижній частині (у хворих на ХК/ЛП порівняно з ХК/ТП). Також встановлені виражені прояви статевого диморфізму обхватних розмірів тіла між хворими на кропив'янку українськими чоловіками та жінками: у хворих чоловіків - більші значення обхватів кисті та шиї (у хворих на ГК/ЛП, ГК/ТП, ХК/ЛП і ХК/ТП), обхватів плеча у напруженому та ненапруженому станах, передпліччя у верхній та нижній частині, стопи, талії, грудної клітки на вдиху, на видиху та у спокійному стані (у хворих на ГК/ТП), плеча у напруженому стані (у хворих на ХК/ТП), передпліччя у верхній частині (у хворих на ГК/ЛП), передпліччя у нижній частині (у хворих на ХК/ЛП); у хворих жінок - більші значення обхвату стегон (у хворих на ГК/ЛП) та стегна (у хворих на ХК/ЛП).

Ключові слова: *шкірні захворювання, кропив'янка, чоловіки, жінки, обхватні розміри тіла, статеві розбіжності.*

Author's contribution

Aladwan A. M. A. - research, review writing and editing, methodology and writing of the original draft.
Dmytrenko S. V. - conceptualization, supervision.
Kyrychenko V. I. - software, resources.
Glushak A. A. - data visualization, resources.
Prokopenko O. S. - data visualization, resources.
Ocheretna O. L. - software, resources.
Gunas I. V. - formal analysis and validation.