

CLINICAL STUDY

Chronic venous insufficiency — epidemiology

Staffa R

*2nd Department of Surgery, St. Anne's Teaching Hospital Brno, Faculty of Medicine, Masaryk University, Brno.r.staffa@email.cz***Abstract**

Chronic venous insufficiency (CVI) of lower limbs is one of the most widespread diseases occurring in developed countries worldwide.

Literature data concerning its prevalence and incidence differ depending on evaluation criteria or on the definition of CVI. By comparing the available epidemiological literature published in the last decade, the authors point out the fact that the disunity in evaluation criteria of CVI is the weakness of all comparative studies. In spite of this, it is evident that, in addition to age and sex, the main risk factors of CVI include also the influence of working environment, genetic influences and geographic factors. Solely the acceptance of a unified classification of CVI and multinational collaborative studies could bring new information on epidemiology, etiology, prevention and therapy of this chronic disease, as in the case of coronary heart diseases in the past. (Tab. 1, Fig. 2, Ref. 19.)

Key words: chronic venous insufficiency, classification, epidemiology.

Chronic venous insufficiency (CVI) of lower limbs is one of the most widespread diseases occurring in developed countries worldwide (Gloviczki, 1998). Simultaneously, varicose veins affect only people. In animals they do not occur at all (Mazuch, 1988). The development of this disease is supposed to relate to the erect posture. It is estimated that 10–20 % of the world population suffer from varicose veins of lower limbs. They are more frequent in women, and the prevalence increases with age. In addition to age and sex also, lifestyle and occupation, number of pregnancies, family history and geographic influences are considered to be main risk factors. The factors under discussion, include congestive heart disease, excess weight, hypertension, and diabetes mellitus (Komsuoglu, 1994; Scott, 1995; Callam, 1994; Kontosic, 2000). Literature data concerning the prevalence and incidence differ depending on evaluation criteria or on the definition of CVI. By comparing the available epidemiological literature published between 1985–1994 (Beaglehole, 1995), points out the fact that the disunity in evaluation criteria of CVI is the weakness of all comparative studies.

Lawrence (1998) confirms that the prevalence of varicose veins depends on the definition of this disease because dilated veins ranging from teleangiectasias to massive varicosities can come under the general category of varicose veins. In many countries and also in many of our workplaces, the Widmer classification (Widmer, 1978) widely used in the past is being replaced by the

so-called CEAP classification that was presented at the American Venous Forum in Hawaii in 1994. CEAP takes into account the clinical points of view (C), etiology (E), anatomic location (A), and pathophysiological dysfunction (P).

CEAP classification*Class 0: No visible or palpable signs of venous disease*

In early stages of the disease, CVI can manifest itself clinically only by the presence of symptoms. Sometimes the physicians do not find any signs of disease during the clinical examination. Aching legs, heaviness, burning sensations, and nocturnal cramps are among the most frequent symptoms. The intensity of the symptoms can cause only a moderate discomfort to patients, but it can also noticeably limit their common daily activities.

Class 1: Teleangiectasias or reticular varicose veins

Teleangiectasias (or phlebectasias) that are caused by intra-dermal dilatation of the subpapillary venous plexus due to local-

2nd Department of Surgery, St. Anne's Teaching Hospital Brno, Faculty of Medicine, Masaryk University, Brno

Address for correspondence: R. Staffa, MD, PhD, 2nd Department of Surgery, St. Anne's Teaching Hospital Brno, Faculty of Medicine, Masaryk University Brno, Pekarska 53, CZ-656 91 Brno, Czech Republic.
Phone: +420.5.4318 2431, Fax: +420.5.4318 2100

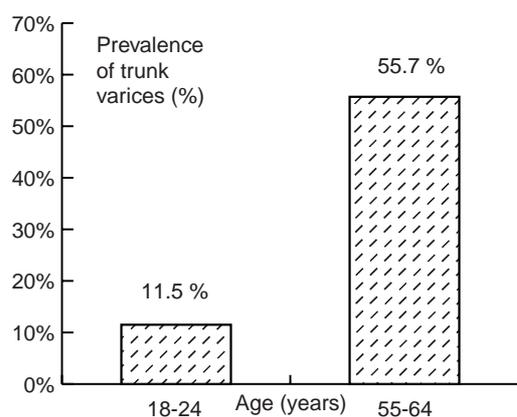


Fig. 1. Prevalence of trunk varices depending on age.

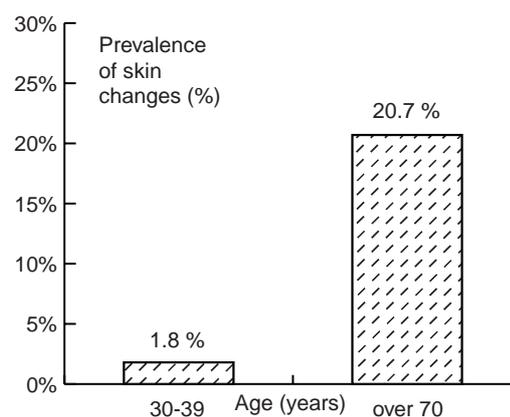


Fig. 2. Prevalence of skin changes depending on age.

ly increased venous pressure and constitutional capillary fragility belong to the signs accompanying CVI.

Class 2: Varicose veins

There are several definitions of varicose veins. Varicose veins can be defined as dilated and simultaneously elongated veins. From the etiological point of view, varicose veins are divided into a) primary (idiopathic) varicose veins, b) secondary varicose veins caused by the postthrombotic syndrome, and c) other secondary varicose veins of unclear etiology.

Varicose veins are also divided into reticular varicose veins, trunk varices, accessory trunk varices, incompetent perforators, and others.

Class 3: Swellings

Swellings caused by CVI are one of the most frequent signs of this disease. The swelling develops due to the accumulation of water and proteins in subcutaneous tissues. This particular symptom limits highly the patient's common activities.

The swellings are accentuated in standing position and in the evening hours. On the contrary, in lying position, the swellings tend to disappear.

Class 4: Skin changes caused by the venous disease, e.g. pigmentation, eczema and lipodermatosclerosis

This is a group of signs involving skin changes accompanying CVI.

Class 5: Skin changes (described above) with healed varicose ulcer

Ulceration is defined as a loss of skin tissue. Its depth and extent can vary; its most frequent location is in the distal third of the shank. Only healed varicose ulcers are included within this class.

Class 6: Skin changes (described above) with active varicose ulcer

This class is defined by the presence of an active varicose ulcer.

Chronic venous insufficiency — dependence on age

All epidemiological studies confirm the relation between age and increased prevalence of CVI identically in both genders without dependence on other risk factors (Preziosi, 1999; Canonico, 1998; Scott, 1995; Sisto, 1995).

The prevalence of varicose veins in men aged 30 to 40 years is about 3 % and in the age over 70 years it increases up to about 40 %. Similar results were found also in women: prevalence of 20 % at the age of 30 to 40 years increases gradually with age and at 70 years of age it exceeds 50 %.

In the Edinburgh Vein Study (Evans, 1999), the prevalence of trunk varices rose from 11.5 % in persons aged 18 to 24 years to 55.7 % in the population between 55–64 years of age (Fig. 1).

The occurrence of skin changes in CVI depends on the patients age as well. In the Tecumseh Health Study, prevalence of skin changes in women aged 30 to 39 years was 1.8 %, whereas in patients at the age over 70 years the prevalence of 20.7 % was reported (Fig. 2).

Similarly the prevalence of varicose ulcers increases with age. In the general population it is about 1 %, at the age over 80 years it increases up to 4–5 % (Carpentier, 1994).

Influence of sex

The majority of published epidemiological studies agree that the female gender is one of the main risk factors. The male to female prevalence ratio is about 1.5 to 3.5 according to these studies. For comparison, we present the results of some studies that evaluated approximately identical age groups (50 to 60 years) (Tab. 1).

The results of the study published by Evans (1999), in which, on the contrary, a higher occurrence was found in men represent the

Tab. 1. The results of some studies that evaluated an approximately identical age group (50 to 60 years).

Author	Year	Country	Prevalence (%)	
			men	women
Canonico	1998	Italy	17	35.2
Capitao	1995	Portugal	17.8	34
Laurikka	1995	Finland	19	43
Komsuoglu	1994	Turkey	14.6	22.1

only exception. In a group of 1566 persons (aged 18 to 64 years) the author presents the prevalence of CVI of 40 % in men and 32 % in women. However, we should mention that the other authors studied groups involving greater numbers of subjects (in thousands).

Pregnancy and chronic venous insufficiency

Pregnancy and puerperium are critical periods for the venous system of the lower limbs (Zicot, 1999). According to some statistics, up to 30 % of varicose veins develop just in this period. Štvrtinová (1991) or Preziosi in the Suvimax Cohort Study (Preziosi, 1999) also confirm the positive correlation between pregnancy and varicose veins. The increase in venous pressure due to increased blood volume is considered to be the cause; the compression of the iliac veins in later stages of pregnancy is an important factor. However, nowadays the main influence on the development of varicose veins in pregnancy is thought to be hormonal influence – estrogens cause a decrease in the smooth muscle tone of the venous wall (Mazuch, 1988).

Influence of occupation/working conditions

In his study, Kontosic (2000) evaluates a study group of 1324 persons according to their occupation that he divides into 5 representative groups (waiters, salespersons, light industry, heavy industry, office work). A statistically significant difference was found in the prevalence of varicose veins in waiters and salespersons as compared to office workers. Another study evaluated a group of 696 women employed in department stores. Varicose veins were found in 421 of them (60.5 %). Women who were standing during work had a statistically higher prevalence of trunk varices in the study group (Štvrtinová, 1991).

Genetic influences

Horáková-Nedvídková (1977) reports the maximum incidence between 21–30 years both in women and men. Varicose veins however can occur also in child age (inferiority of connective tissue), especially in the case of positive family history. Although heredity is an important risk factor, the familial incidence is reported only in about 50 % of patients (Lawrence, 1998). Carpentier (1994), on the other hand, confirms a statistically significant difference in the probability of development of the disease in the case of CVI in one or both of the parents.

Geographic influences

Varicosis comes with modern civilization. Its prevalence is very low in African and Asian or Australian aboriginal populations although immigrant subjects from these regions have the same risk as the population of their host country. The change in lifestyle and eating habits in industrialized countries, especially a low fibre diet, which induces constipation and increased intra-abdominal pressure, are considered to be one of the main causes of this phenomenon (Carpentier, 1994; Captao, 1995).

From the available literature dealing with the epidemiology of CVI published in the last decade we can see that in addition to age and female gender, the main risk factors of CVI include also lifestyle and occupation, number of pregnancies, genetic influences and geographic factors. The authors point out the fact that the discontinuity in evaluation criteria of CVI is the weak point of all comparative epidemiological studies and they recommend the acceptance of the so-called CEAP classification of chronic venous insufficiency.

References

- Beaglehole R.** The epidemiology of venous disease. *Phlebology* 1995; Suppl 1: 25–28.
- Callam MJ.** Epidemiology of varicose veins. *Brit J Surg* 1994; 81: 167–173.
- Canonica S et al.** Prevalence of varicose veins in an Italian elderly population. *Angiology* 1998; 49: 129–135.
- Captao LM et al.** The epidemiology of chronic venous insufficiency in Portugal. *Acta Med Port* 1995; 8: 485–491.
- Carpentier P, Priollet P.** Epidemiology of chronic venous insufficiency. *La Presse med* 1994; 23: 197–201.
- Evans CJ et al.** Prevalence of varicose veins and chronic venous insufficiency in men and women in the general population: Edinburgh Vein Study. *J Epidemiol Community Health* 1999; 53: 149–153.
- Horáková-Nedvídková M.** Křečové žíly. Praha, Avicenum 1977, 81 s.
- Komsuoglu B et al.** Prevalence and risk factors of varicose veins in an elderly population. *Gerontology* 1994; 40: 25–31.
- Kontosic I et al.** Work conditions as risk factors for varicose veins of the lower extremities in certain professions of the working population of Rijeka. *Acta Med Okayama* 2000; 54: 33–38.
- Laurikka J et al.** Misclassification in a questionnaire survey of varicose veins. *J Clin Epidemiol* 1995; 48: 1175–1178.
- Lawrence PF, Gazak CHE.** Epidemiology of chronic venous insufficiency. In: Gloviczki P, Bergan JJ (Eds). *Atlas of Endoscopic Perforator Vein Surgery*. 1st ed. London, Springer Verlag 1998, p. 31–41.
- Mazuch J.** Varixy dolných končatín v klinickej praxi. Martin, Osveta 1988, 151 s.
- Preziosi P et al.** Prevalence of venous insufficiency in French adults of the SUVIMAX cohort. *Int Angiol* 1999; 18: 171–175.
- Scott TE et al.** Risk factors for chronic venous insufficiency: a dual case-control study. *J Vasc Surg* 1995; 22: 622–628.
- Sisto T et al.** Prevalence and risk factors of varicose veins in lower extremities: mini-Finland health survey. *Eur J Surg* 1995; 161: 405–414.
- Štvrtinová V, Kolesár J.** Prevalence of varicose veins of the lower limbs in the women working at a department store. *Int Angiol* 1991; 10: 2–5.
- Way LW et al.** *Současná chirurgická diagnostika a léčba*. Praha, Grada Publishing 1998, 1659 s.
- Widmer LK.** *Peripheral venous disorders Basell III*. Bern, Hans Huber 1978, 30 p.
- Zicot M.** Venous diseases and pregnancy. *Rev med de Liege* 1999; 54: 424–428.

Received March 2, 2002.

Accepted April 15, 2002.