Acta Clin Croat 2014; 53:3-6 Original Scientific Paper

ORTHOSTATICS AND CHRONIC VENOUS INSUFFICIENCY IN CROATIAN DOCTORS OF DENTAL MEDICINE

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SUMMARY – The purpose of the study was to point to occupational exposure of dental medicine doctors in Croatia and to the effect of static performance on developing venous disease. The study included 120 subjects, 60 of them doctors of dental medicine and 60 from other professions. The study was focused on finding a way to upgrade preventive measures against developing chronic venous insufficiency and the quality of life of dental medicine doctors. Study subjects underwent verbal testing (questionnaire), clinical examination and ultrasonography (color Doppler).

Key words*: Venous insufficiency – prevention and control; Occupational diseases; Chronic diseases; Dentists; Croatia*

Introduction

Orthostatic disorders are caused by unnatural or prolonged static body position and they include diseases of the veins, spine, feet and the entire locomotor system. Standing for a long time in the same position leads to venous distension, which causes temporary insufficiency of venous valve. For example, venous reflux caused by distension of superficial veins can be found already after five hours of standing[1]. The basic hemodynamic disorders of venous disease are venous valve insufficiency and vein obstruction, and both pathologic conditions are usually found simultaneously. Chronic venous insufficiency is a permanent and irreversible local disorder of venous circulation characterized by swelling, skin changes and superficial varicose vein. Incompetence of valvular system underlies the pathogenetic and pathophysiological mechanisms. Functionally damaged valves in deep, later perforating veins allow for retrograde flow of venous blood when walking and standing, along with abnormally high blood pressure in the peripheral venous pool. The blood returning under high pressure by perforating veins causes dilatation and valve insufficiency. Clinical findings include swelling, locally thin, shiny, hyperpigmented and cyanotic skin, and indurated subcutaneous tissue. Dermatitis or eczema is often present[2,3].

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Received May 22, 2013, accepted December 13, 2013

Subjects and Methods

The study included 120 subjects, 60 of them doctors of dental medicine and 60 from other professions. Study subjects underwent verbal testing (questionnaire), clinical examination and ultrasonography (color Doppler). History data and risk factors were questioned on verbal testing. Inspection and palpation were included in clinical examination and medical findings were recorded in the second part of the questionnaire. Ultrasonography has a very important role in contemporary phlebology[4,5]. So, most of the venous system pathology, e.g., deep vein thrombosis, degree of valve incompetency and reflux in superficial and deep veins, post-thrombotic changes, etc., can be diagnosed reliably by use of ultrasonography[6,7].

Results

Using nonparametric Mann-Whitney U test for describing age parameter, we found no statistically significant between-group difference according to developing changes in leg veins (p=0.399), with median age 42 in doctors of dental medicine and median age 38 in control group.

Fisher exact test showed no statistically significant between-group difference according to the presence of chronic disease (p=1.000). Study subjects were questioned about high blood pressure, diabetes, hernia, chronic kidney disease, colon cancer and breast cancer[8,9]. There was no statistically significant between-group difference according to the presence of varicose leg veins either (p=0.835).

Table 1. Prevalence of bilateral leg edema in study groups

Fisher exact test p=0.153			Edema		Total
			No	Yes	
Group	Dentists	n	50	10	60
		% Group	83.3%	16.7%	100.0%
	Other	n	56	4	60
		% Group	93.3%	6.7%	100.0%
Total		n	106	14	120
		% Group	88.3%	11.7%	100.0%

Study results revealed edema, hyperpigmentation and lipodermatosclerosis as the most common complications of chronic venous insufficiency[10,11]. The prevalence of edema in the two study groups is illustrated in Table 1. Fisher exact test yielded no statistically significant between-group difference (p=0.153). However, analysis of the occurrence of edema in both legs and in both groups pointed to an interesting difference. There was no statistically significant between-group difference in the occurrence of right leg edema (p=0.239), while a statistically significant difference was found in the occurrence of left leg edema (p=0.029). Table 2 shows the prevalence of hyperpigmentation on the left and right legs in the two study groups, where a statistically significant difference was also recorded (p=0.119). Table 3 shows the prevalence of lipodermatosclerosis in the two study groups. Fisher exact test yielded no statistically significant between-group difference (p=0.244).

Table 2. Prevalence of bilateral hyperpigmentation in study groups

Fisher exact test p=0.119			Hyper-pigmentation		Total
			No	Yes	
Group	Dentists	n	56	4	60
		% Group	93.3%	6.7%	100.0%
	Other	n	60	0	60
		% Group	100.0%	0.0%	100.0%
Total		n	116	4	120
		% Group	96.7%	3.3%	100.0%

Furthermore, the prevalence of insufficiency of superficial leg veins, perforated veins and deep leg veins was assessed in both groups of subjects[12]. The χ^2-test was used to assess the prevalence of great saphenous vein and small saphenous vein insufficiency in the study groups (Table 4). There was no statistically significant between-group difference in the prevalence of superficial leg vein insufficiency. The χ^2-test was also used on statistical analysis of perforated vein insufficiency. There was no statistically significant between-group difference either (χ^2=1.905; df=1; p=0.168). Fisher exact test yielded no statistically significant between-group difference according to the prevalence of

Table 3. Prevalence of bilateral lipodermatosclerosis in study groups

Fisher exact test p=0.244			Lipodermato-sclerosis		Total
			No	Yes	
Group	Dentists	n	60	0	60
		% Group	100.0%	0.0%	100.0%
	Other	n	57	3	60
		% Group	95.0%	5.0%	100.0%
Total		n	117	3	120
		% Group	97.5%	2.5%	100.0%

Table 4. Prevalence of superficial venous insufficiency in study groups

Superficial venous insufficiency	χ^2-test	p test
Great saphenous vein	0.063	0.803
Small saphenous vein	0.202	0.653

deep leg vein insufficiency (p=0.496), suggesting that doctors of dental medicine are not at a higher risk of developing problems with deep vein pool than other professions.

The prevalence of post-thrombotic changes in the groups of dental medicine doctors and other professions was also assessed. There was no statistically significant between-group difference according to either left leg or right leg involvement.

Discussion

The collected and statistically processed data on pathologic leg changes in dental medicine doctors and in the control group of subjects (other occupations) are useful for providing an insight into the leg venous pool changes, as well as for identifying appropriate preventive measures. Chronic venous insufficiency is a clinical, functional term, which includes different symptoms and turns to a chronic venous disorder in blood flow accompanied by chronic vein hypertension[13]. Data were analyzed with Fisher exact test and χ^2-test. Most parameters yielded no statistically significant between-group difference, while a statistically significant difference was found for left leg edema and hyperpigmentation in both study groups. The incidence of varicose leg veins and chronic venous insufficiency is mostly influenced by the way of work, i.e. standing and seating.

Based on the study results, static work performance can be identified as the most important cause of venous disease of lower extremities, pointing to a conclusion that it is very important to work on preventive measures for venous system disease in doctors of dental medicine. These preventive measures should include reduction of risk factors, wearing compression stockings, using day breaks and vacations, as well as better ergonomic adjustment in dental offices[14,15].

Conclusion

This study has clearly shown that doctors of dental medicine are significantly more likely to suffer from orthostatic disease because of work conditions. Study results pointed to an association between the risk factors, occupational exposure, and ergonomic and other work conditions. This survey has not only demonstrated the prevalence of valvular insufficiency, but also the incidence of edema and skin changes in terms of hyperpigmentation. In other words, clinical image of chronic venous insufficiency is fully expressed. Therefore, it is concluded that it is very important to improve ergonomic work conditions in dental offices, but also to promote preventive measures to reduce the disease of the leg venous system and other diseases related to occupational exposure.

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Sažetak

ORTOSTATIKA I KRONIČNA VENSKA INSUFICIJENCIJA U HRVATSKIH STOMATOLOGA

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U radu se ukazuje na utjecaj profesionalne izloženosti doktora dentalne medicine u Hrvatskoj te na statičko opterećenje u odnosu na razvoj bolesti venskog sustava. Istraživanje je obuhvatilo 120 ispitanika, od toga 60 doktora dentalne medicine i 60 ispitanika drugih struka. Cilj istraživanja ponajprije je unaprjeđenje preventivnih mjera kojima bi se spriječio razvoj kronične venske insuficijencije, ali i poboljšanje kvalitete života naših ispitanika. Ispitanici su podvrgnuti usmenom anketiranju (anketni upitnik), kliničkom pregledu te ultrazvučnoj dijagnostici (obojeni Doppler).

Ključne riječi: *Venska insuficijencija – prevencija i kontrola; Profesionalne bolesti; Kronične bolesti; Stomatolozi; Hrvatska*