

Research Article

Prevalence and risk factors of varicose veins, skin trophic changes, and venous symptoms among northern Indian population

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ABSTRACT

Background: Chronic venous disorders are an important cause of disease and disability worldwide. These disorders have substantial medical and economic consequences. The cost to society is also enormous. Despite the gravity of the problem, little effort has been made to meritoriously prevent such chronic disorders. Aim- This study was planned to analyze and ascertain prevalence and risk factors of varicose veins, skin trophic changes, and venous symptoms among northern Indian population.

Methods: The present study was undertaken among the residents of adopted population by a tertiary care center of Uttar Pradesh. Sampling frame was selected from four villages falling within a radius of two kilometers from the tertiary care health center. Inclusion criteria were a person aged 18 years or older, falling in the sampling frame and willing to participate in the study. A total of 1012 eligible study subjects were contacted and interviewed. Detailed enquiry about venous symptoms, skin trophic changes, history of thromboembolic disease, family history of varicose veins, exercise activities, occupation etc was also made. Senior resident of Surgery department clinically evaluated the presence of varicose veins, edema and skin trophic changes in the legs.

Results: 46.7% of females and 27.8% of males were found to be having varicose veins whereas 49.3% of females and 18.9% of males were having venous symptoms. Skin trophic changes were observed in 18.9% females and 5.2% of males respectively. History of varicose veins in first-degree relatives (OR 3.85, p=0.046) and age (OR 1.06, p=0.021) were significant important risk factors for varicose veins in both sexes. Age (OR 1.14, p=0.002), history of thromboembolic disease (OR 3.95, p=0.063) and pitting edema (OR 7.42, p=0.016) were three significant important risk factors for skin trophic changes among subjects with varicose veins.

Conclusions: High prevalence of chronic venous disorders of the lower limbs was observed in residents of studied region. Results of this study calls for planning and initiation of serious efforts to prevent such chronic disorders.

Keywords: Prevalence, Risk factors, Varicose veins, Skin trophic changes, Venous symptoms

INTRODUCTION

Chronic venous disorders are an important cause of disease and disability worldwide.¹ These disorders can

induce skin trophic changes, ranging from pigmented dermatitis to lipoderma to sclerosis, white atrophy, and leg ulcers; pitting ankle edema; and symptoms attributable to venous dysfunction, such as aching, pain, congestion, skin irritation, and muscle cramps, heaviness,

tension, feelings of swelling, and itching. These disorders have substantial medical and economic consequences. The cost to society is also enormous.² Despite the gravity of the problem, little effort has been made to meritoriously prevent such chronic disorders.

Pathogenesis of chronic venous disorders and natural history of the disease remain blurred, perhaps due to its multifactorial origin, which makes it difficult to determine the causative factors. Pathophysiology of the venous system from the hemodynamic point of view and the consequences of valvular dysfunction in superficial, deep, and perforating veins have confirmed in causation of varicose veins and skin trophic changes.³

Such physiopathological problems are best understood by epidemiologic approach. Community/ population based studies yield better results. To best of our knowledge no such community-based study has been undertaken in this region till date.

Thus paucity of literature also warrants this survey. Therefore this study was planned with an objective to analyze and ascertain prevalence and risk factors of varicose veins, skin trophic changes, and venous symptoms among northern Indian population.

METHODS

The present study was planned by the Department of Orthopedics and Department of Surgery and conducted among the residents of adopted population by a tertiary care center of Uttar Pradesh, India. Sampling frame was selected from four villages falling within a radius of two kilometers from the tertiary care health center. Study area has been adopted by this tertiary medical centre for rural training of under graduate students and for providing health services to the villagers. The list of all residents of those villages was obtained from the department of community medicine. Inclusion criteria were a person aged 18 years or older, falling in the sampling frame and willing to participate in the study. A total of 1012 eligible study subjects were contacted and interviewed.

For the purpose of this study, varicose veins were defined as enlarged, tortuous, sub-cutaneous veins, either visible or palpable clinically with the patient standing. Data was captured about venous symptoms, history of venous diseases and treatments.

Socio-demographic details were also captured. Senior resident of surgery department clinically evaluated the presence of varicose veins, edema and skin trophic changes in the legs as part of a standardized examination.

No ultrasound examination was performed. Detailed enquiry about venous symptoms, skin trophic changes, history of thromboembolic disease, family history of

varicose veins, exercise activities, occupation etc. was also made.

The study adhered to the tenets of the declaration of Helsinki for research in humans. Informed consent was obtained from patients after discussion of the advantages and risks. Permission of Institutional ethics committee (IEC) was sought before the commencement of the study. All the questionnaires were manually checked and edited for completeness and consistency and were then coded for computer entry. After compilation of collected data, analysis was done using statistical package for social sciences (SPSS), version 20 (IBM, Chicago, USA). The results were expressed using appropriate statistical methods.

RESULTS

The prevalence of varicose veins was found to be high in northern Indian population with approximately half of women and a third of men affected. 46.7% of females and 27.8% of males were found to be having varicose veins whereas 49.3% of females and 18.9% of males were having venous symptoms. Skin trophic changes were observed in 18.9% females and 5.2% of males respectively (Table 1).

History of varicose veins in first-degree relatives (OR 3.85, $p=0.046$) and age (OR 1.06, $p=0.021$) were significant important risk factors in both sexes. In females, number of pregnancies was positively associated (OR 1.90, $p=0.048$) with the presence of varicose veins. In males, unskilled work was statistically associated (OR 1.75, $p=0.047$) with higher risk for varicose veins (Table 2).

Varicose veins (OR 2.50, $p=0.027$), history of thromboembolic disease (OR 2.97, $p=0.044$) and prolonged standing (OR 1.78, $p=0.032$) were significant important risk factors for venous symptoms in both sexes. In females, age factor was found to be positively associated (OR 1.02, $p=0.043$) with the development of venous symptoms among females (Table 3).

Age (OR 1.14, $p=0.002$), history of thromboembolic disease (OR 3.95, $p=0.063$) and pitting edema (OR 7.42, $p=0.016$) were three significant important risk factors for skin trophic changes among subjects with varicose veins (Table 4).

Table 1: Prevalence of chronic venous disorders of lower limbs among study subjects.

Types of chronic venous disorders	Gender		P value
	Male	Female	
Varicose veins	128 (27.8)	258 (46.7)	
Venous symptoms	87 (18.9)	272 (49.3)	
Skin trophic changes	24 (5.2)	87 (18.9)	

Table 2: Risk factors for varicose veins among study subjects.

Risk factors	Odds ratio	C.I. (95%)	P value
Risk factors among females			
Age	1.06	1.04-1.08	0.021*
Family history of varicose veins in first-degree relatives	3.85	2.67-5.12	0.046*
History of thromboembolic disease	2.02	1.88-2.19	0.372
Equal to or more than 1 pregnancies	1.90	1.76-2.15	0.048*
Prolonged standing	1.48	1.24-1.69	0.625
Unskilled work	1.27	1.11-1.46	0.563
Exercise less than once a week	0.93	0.81-1.05	0.225
Obesity	1.12	0.77-1.42	0.053
Risk factors among males			
Age	1.08	0.79-1.36	0.027*
Family history of varicose veins in first-degree relatives	3.88	2.52-5.34	0.036*
History of thromboembolic disease	1.87	1.14-2.69	0.472
Prolonged standing	1.90	1.10-2.77	0.145
Unskilled work	1.75	1.12-2.70	0.047*
Obesity	1.21	0.68-1.59	0.364

Table 3: Risk factors for venous symptoms among study subjects.

Risk factors	Odds ratio	C.I. (95%)	P value
Risk factors among females			
Age	1.02	0.96-1.13	0.043*
Varicose veins	2.50	1.45-3.89	0.027*
Family history of varicose veins in first-degree relatives	1.43	1.07-2.12	0.131
History of thromboembolic disease	2.97	0.98-3.19	0.044*
Equal to or more than 1 pregnancies	1.22	0.96-2.10	0.584
Prolonged standing	1.78	0.74-2.68	0.032*
Unskilled work	0.97	0.81-1.45	0.741
Exercise less than once a week	1.23	0.88-1.65	0.385
Obesity	1.14	0.97-1.43	0.126
Risk factors among males			
Age	1.16	0.84-1.55	0.163
Varicose veins	2.62	1.07-4.06	0.022*
Family history of varicose veins in first-degree relatives	1.68	1.23-2.71	0.156
History of thromboembolic disease	4.14	1.94-5.93	0.044*
Prolonged standing	2.90	1.16-3.95	0.031*
Unskilled work	1.03	0.76-1.77	0.642
Obesity	1.25	0.83-1.65	0.133

Table 4: Risk factors for skin trophic changes among subjects with varicose veins.

Risk factors for skin trophic changes	Odds Ratio	C.I. (95%)	P value
Age	1.14	0.78-1.52	0.002*
Family history of varicose veins in first-degree relatives	3.04	1.97-3.92	0.037*
History of thromboembolic disease	3.95	2.24-6.96	0.063
Pitting edema	7.42	4.22-17.34	0.016*
Prolonged standing	1.53	1.05-3.48	0.327
Unskilled work	1.46	0.96-2.75	0.521
Venous symptoms	1.87	1.23-2.92	0.368
Obesity	0.96	0.74-1.24	0.224

DISCUSSION

The prevalence of varicose veins was found to be high in northern Indian population. Approximately half of women and a third of men were found to be affected. 46.7% of females and 27.8% of males were found to be having varicose veins whereas 49.3% of females and 18.9% of males were having venous symptoms. Skin trophic changes were observed in 18.9% females and 5.2% of males respectively.

The prevalence of varicose veins appears to be high in the study area. High figures have also been reported from United States, London and Japan.⁴⁻⁶ Although there were certain variations that can be explained by the criteria used to define varicose veins, and the age limits of the investigated populations.

Regarding differences in the prevalence of varicose veins between both the sexes, sex-related differences i.e. female preponderance was found in our study, which were found statistically significant. The result of this study is in agreement with previous study from France.⁷ This is in contrast to another study from Edinburgh, which observed male preponderance.⁸ These studies were carried out several decades ago; in the mean time, changes in lifestyle may have occurred, leading to smaller differences in environmental factors that affect men and women.⁹

Age (OR 1.06, $p=0.021$) was found to be significant important risk factor for varicose veins in both sexes in this study. These results are cohort with others.¹⁰ A family history of varicose veins in first-degree relatives also demonstrated to be a strong risk factor in our study. This finding is based on information reported by the subjects but it validates previous study based on clinical examination of relatives.¹¹ Pregnancy was also a significant risk factor as observed in this study. Another studies are also in concordance with our observations.^{12,13}

Lack of exercise and unskilled work were also a significant risk factor as witnessed in this study. Regular exercise strengthens muscle pump function on the venous system thus prevents development of varicose veins. Hobson recorded similar findings in his study on working populations.¹⁴ Obesity/overweight was not found to be significant important risk factor in our study. This is in contrast to the study from Jerusalem.¹⁵

In this study we observed that age (OR 1.14, $p=0.002$), and history of thromboembolic disease (OR 3.95, $p=0.063$) were three significant important risk factors for venous symptoms skin trophic changes among subjects with varicose veins. The prevalence of skin trophic changes was found in the same range by other studies, in particular for leg ulcers and their strong relation with age.^{16,17} Not surprisingly our study shows that pitting edema (OR 7.42, $p=0.016$) was observed to be risk factors for venous symptoms skin trophic changes. Such

clinical features are due to increased interstitial fluid volume.

CONCLUSION

On the basis of empirical evidences of this study it can be concluded that high prevalence of chronic venous disorders of the lower limbs was observed in residents of studied region. It also translates to huge indirect cost borne by them for medical and economic consequences of these disorders. Results of this study calls for planning and initiation of serious efforts to prevent such chronic disorders.

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