Gender and Age Distribution of the Great Saphenous Vein Varicosities among Patients Attending Hilla Teaching Hospital

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Abstract

The great saphenous vein is a part of the superficial venous system of the lower limb which runs at the dorsum of the foot, anterior to the medial malleolus, at the medial side of the leg, on the anterior surface of the thigh then joins the femoral vein at the saphenous opening.

The study was done at the Surgical Outpatient clinic of Hilla Teaching hospital. It included the examination of 72 patients (11 males and 61 females) with varicose veins

The study objective was to find out the gender and age distribution of varicose veins among patients attending the Hilla Teaching Hospital

The study revealed that :-

1- varicose veins were more common in females (85%) than males (15%).

2- The majority of patients were in the young age group

3- The commonest predisposing factors were pregnancy, obesity and heredity.

4- The highest age frequency was (30-39). This could be explained by the fact that the majority of cases were females having pregnancy as a predisposing factor.

5- There was no significant difference between the right and left limbs regarding their involvement by varicose veins.

التوزيع العمري والنوعي الاجتماعي لدوالي الوريد الصافن الكبير بين مرضى مستشفى الحلة التعليمي

الخلاصة:

إن الوريد الصافن الكبير هو جزء من نظام الأوردة السطحية في الأطراف السفلى والذي يمتد على ظاهر القدم ، أمام الكعب الإنسي ، على الجانب الإنسي من الساق ، وعلى السطح الأمامي من الفخذ ثم ينضم إلى الوريد الفخذي في الفتحة الصافنية تمت الدراسة في العيادة الخارجية الجراحية لمستشفى الحلة التعليمي . وشملت دراسة ٧٢ مريضا (١١ ذكرا و ٦١ أنثى) ممن لديهم توسع الأوردة .

وكان الهدف من الدراسة معرفة توزيع النوع الاجتماعي والعمري لتوسع الأوردة بين المرضى الذين يراجعون مستشفى الحلة التعليمي .

وكشفت الدراسة عن أن:

1- توسع الأوردة كان أكثر شيوعا بين الإناث (٨٥ ٪) من الذكور (١٥ ٪).

٢- غالبية المرضى كانوا من الفئة العمرية من الشباب.

٣- أكثر العوامل المؤهبة شيوعا هي الحمل ، البدانة والوراثة

٤- أعلى تردد عمري كان هو سن (٣٠-٣٩). هذا ويمكن تفسير ذلك بأن غالبية الحالات التي تعرض لها النساء بعد الحمل باعتباره عاملا" مؤهبا"

5- لم يكن هناك فرق كبير بين الطرف الأيمن والأيسر فيما يتعلق بتوسع الأوردة.

Introduction

The venous drainage of the lower limb varies considerably in its arrangement from subject to

subject and even from limb to limb. The following descriptions are considered to be the most common [1]:

The venous drainage of the lower limb is divided into a superficial and a deep venous system. The superficial veins run in the subcutaneous tissue, between the skin and the deep fascia. The deep veins are deep to the deep fascia and company all major arteries. Superficial and deep veins have valves that are more numerous within the deep veins [2- 4].

The superficial venous system of the lower limbs is represented by the great saphenous (long saphenous), the small saphenous (lesser saphenous), and their tributaries. The superficial and deep venous systems communicated with each other by the perforating veins [5] .

The great saphenous vein is the thickest walled superficial vein of the lower limb contains many valves which diminish the pressure on the distal part of its wall [6].

In the upright position, each contraction of the muscles in a normal limb pumps blood upwards and it is prevented from returning by effective valves. The immediate reduction in the venous pressure and slackening of the deep veins in lower leg and foot caused by this gives opportunity for superficial veins to empty into the deep veins, ready to be pumped up with the next movement.

Normally the valves in the superficial veins limit this inward flow so that only a short segment between each valve can empty through the corresponding perforating veins and disorderly widespread transfer of blood from superficial to deep veins is prevented. However, if there is extensive incompetence in the superficial valves, it is possible for blood to spill over from deep veins at high level, down the superficial veins and, finally, to enter the deep veins at low level every time these veins fall slack after muscle contraction. This is the mechanism underlying the development of simple or primary varicose veins and is, by far, the most common venous disorder. A typical retrograde circuit is based on a superficial vein, often a long or short saphenous vein with defective or absent valves. The circuit has four components.

*A source of outflow from deep to superficial veins at high level.

*A pathway of incompetence running down the limb.

*Re-entry points where superficial down flow joins the deep veins.

*A return pathway provided by the deep veins and the musculovenous pumping mechanisms [7].

In a retrograde circuit based on an incompetent long or short saphenous vein, its upper end provides the source, its main stem and incompetent branches form the pathway of incompetence, and one or more perforating veins are the re-entry points. The deep veins receiving this down flow may be principal conduits, such as the tibial veins, or the venous sinuses (pumping chambers) within any muscle group in the leg, or the veins of the foot.

An understanding of the retrograde circuit in superficial vein incompetence is essential in the good management of varicose veins and treatment will not be successful unless these components to the circuit are accurately recognized and effectively obliterated by sclerotherapy or removed by surgery. The more completely this is done, the more effective and permanent treatment will be [8].

The venous valves play a very important role in the function of venous return, especially in the lower extremities. They are irregularly located along the veins but are always found at the junctions of tributaries with the main venous channels or where two large veins join each other (figure 3), as a result, the backflow of blood into vessels of lower pressure is prevented (figure 4).

The main feature of superficial vein incompetence is lack of effective valves in these veins. This may arise from an inborn weakness in the valve cusps or the vein wall, or there is a deficiency in the number of valves. Many patients give a family history suggesting an inherited defect and this may certainly be true, but examples are seen where virtually no valves are present or only vestigial ones, in the superficial veins concerned. It is likely that there are several different causes for valve failure, each leading to the same final result of incompetence and varicose veins [6].

Varicosities in the lower limbs are one of the most important afflictions of the venous system, as well as one of the most common of the peripheral vascular disorders [6,9]. Varicose veins are abnormally tortuous [dilated, swollen] veins, which are visible just below the skin surface, especially on the erect position. They are always caused by a fault in the one-way valves inside the veins at the point where the superficial veins communicate with the deep veins [which convey all of the blood towards the heart]. If the valve leaks, then blood will flow backwards [reflux, reverse flow] towards the area with low pressure, assisted by gravity on standing. This reverse flow increases pressure in the superficial veins, which, as blood stagnates, become swollen and varicose [10].

The great frequency of varicosity in the saphenous veins is considered to be caused by high back pressure within these vessels, and is attributed to the long maintained erect posture and the tall column of blood from the leg to the heart [11] .Varicose veins are common in the posteromedial parts of the leg [3,12] (figure 5). (figure 6).

Factors predisposing to varicose veins

Heredity - This is the most important factor, so if your parents and grandparents have the problem you are at increased risk.

*Gender - Women have a higher incidence of varicose veins due in part to the female hormones affecting the vein walls.

*Pregnancy - This causes a rise in blood pressure and volume and also adds to the hormonal effect mentioned above.

*Age - As we saw before our tissues loose elasticity and this is true of vein walls causing the valve system to work less well.

There are additional factors which do not cause varicose veins, but will speed up their development and make them worse:

*Obesity - Increases in weight often go hand in hand with increased blood pressure which will add to vein problems.

*Prolonged Standing - The volume and pressure of blood in the lower limbs is affected by gravity, so the longer you stand the greater the effect.

*Physical Trauma - Sometimes trauma to the lower limbs can damage the underlying blood vessels and add to the problem of varicose veins [13] .

Types of varicose veins

1- Thread or Spider Veins: These occur mainly in women, and are more common in the thigh. There may be no other varicose veins.

2-Primary (idiopathic) Varicose Veins: These are the most common type and they occur in the long and short saphenous veins and their branches. are those that start independently of deep venous disease or arteriovenous fistula. Usually occur in younger persons, rarely result in ulceration.

3-Secondary or compensatory to diseases:As iliofemoral thrombophlebitis, acquired or congenital arteriovenous fistula or incompetence communicating veins.

4-Vulval Varices: They occur in women as a complication of pregnancy or infection [13,14].

Movement upward is mainly brought about by the muscular action of the leg. There being little venous pressure for this purpose [6,15,16] . When the great saphenous vein is affected, the varicosities are generally located on the medial side of the thigh and the leg, extending both anteriorly and posteriorly. If varices are present on other portion of the thigh, one most considers the possibility of incompetence of the tributaries of the great saphenous vein. In this regard, environment of the lateral superficial femoral vein results in varicosities situated on the anterolateral aspect of the thigh, while incompetence of the medial superficial femoral vein produces similar type of changes on the medial and posterior surfaces [17] .

Aim of the study

- To describe the varicosity of the great saphenous vein and its configuration and anatomical importance.
- To find out the gender and age distribution of varicose veins among people in Hilla city

Subjects and Method

Subjects

The study (descriptive observational study) made use of living subjects 72 Living subjects attending the surgical outpatient clinic at Al-Hilla Teaching Hospital. The study was performed during the period from February 2004-february 2005.

Seventy two patients were selected in the surgical outpatient clinic at AL-Hilla Teaching Hospital, (11) of them were males and (61) were females.

After taking a complete history giving , they were subjected to complete physical examination of the lower limbs. Any predisposing factor for varicosity e.g. (obesity, pregnancy and hereditary factors) was carefully looked for both in history and physical examination.

Examination

Inspection

Careful inspection to the lower limb was made by asking the patient to stand up in a good light which was fundamental to observe the pattern of prominent veins on the medial surface of the limb which suggested great saphenous vein abnormality. If these veins were dilated, patients were diagnosed to have varicose veins. Then after, skin changes belonging varicose veins were noted (tortuosity, saccules on the veins, inky blue-black veins, distended subdermal and intradermal venules, extensive patterns of radiating venules, increased warmth in veins and venous ulcers) [7,18].

Special attempts were then made to detect the site of incompetent communicating veins:

Palpation

Testing valve competency using tap test

The long saphenous vein was located and percussed above the knee, with the other hand feeling the transmitted thrill in the groin. This thrill was entirely normal but identifies the termination of the long saphenous vein. The test was then reversed, the groin was percussed and transmitted thrill was felt above the knee. This finding was abnormal and implies a single column of blood (i.e. no valves between upper and lower hands) [7,18] .

Cough thrill

This was a complementary test to the tap test, fingers were placed over the saphenofemoral junction and when the patient coughs, a thrill was palpable if there are no valves between the right atrium and the examining hands (i.e. saphenofemoral incompetence).

Results

Gender distribution

Gender - Women have a higher incidence of varicose veins.for 72 patient with varicose vein (Figure 1).

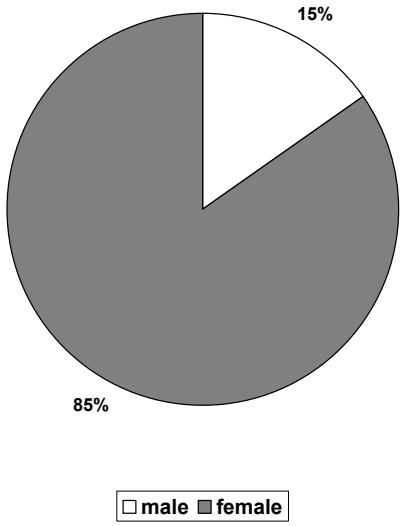

Figure 1 Gender distribution (in percentage) among patients with varicose veins examined in this study (Total no. = 72)

Age distribution

The frequency distribution of age for 72 patients presented with varicose veins is indicated in (Figure 2). The most affected age group was between (30-39) years.

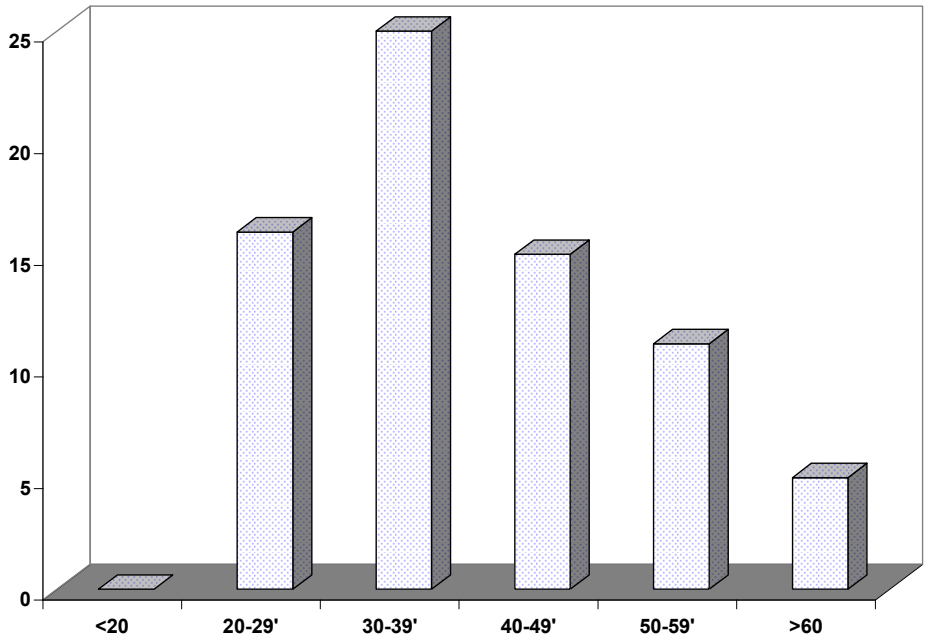

Figure 2 The frequency distribution of age (total no.= 72).
The following figures represented different cases of varicose veins (Figure 3, 4, 5 and 6).

Figure 3 Varicosity of the great saphenous vein (yellow arrows). Female , 49 years old , anterior maleolus

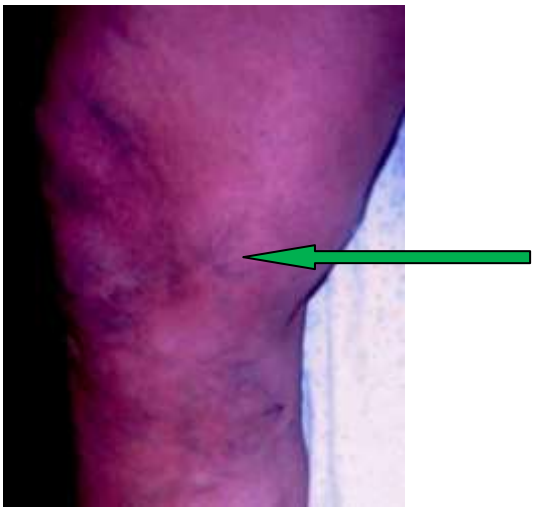

Figure 4 Medial aspect of the leg revealing varicosity of the great saphenous veins. The spider like configuration of the dilated veins is indicated by green arrow. age 49 years , female , spider vein on the medial aspect of the knee joint

Figure 5 Medial aspect of the leg revealing varicosity of the great saphenous veins. Female , 38 years old , medial collateral veins below knee joint

Figure 6 Varicosity of the great saphenous vein. Numerous tortuous dilated veins are evident on the dorsum of the foot (yellow arrow). male , superficial varicose veins on the dorsum of the foot.

Discussion

Gender distribution

During examination of 72 patients presented with varicose veins, 61 (85%) of them were females and 11 (15%) were males. It was clearly demonstrated that varicose veins were more common in females than males. Women have a higher incidence of varicose veins due in part to the female hormones affecting the vein walls. Pregnancy [(the number of pregnant women in this study was 22 (36%)] added additional risk for development of varicose veins because it causes a rise in blood pressure and volume and adds to the hormonal effect mentioned above [13].

A study done in italy showed that out of 1319 patients 560 " 42.5 %" men and 759 " 57.5% " women [20].

Another study done in turkey showed that "14.6 % male " and " 22.1% " female [21]

Age distribution

From the results obtained in this study, the highest age frequency was in the range of (30-39). This could be explained by the fact that the majority of cases were females in the fertile age group with pregnancy as a predisposing factor. Additionally, since most of the patients were categorized into the working group, they were subjected to prolonged standing during their work (The volume and pressure of blood in the lower limbs is affected by gravity, so the longer we stand the greater the effect) [13] . This disagree with the results of literatures [19] , in which the prevalence of varicose vein in adults increases with age because with aging tissues loose elasticity and this is true of vein walls causing the valve system to work less well [13] .This disagreement is possibly because of sampling procedure performed during this study.

Conclusion

1. Varicose veins were more common in females than males (table no. 1). The commonest predisposing factors were pregnancy, obesity and heredity.
2. The highest age frequency was (30-39), (table no. 2) . This could be explained by the fact that the majority of cases were females having pregnancy as a predisposing factor.
3. There was no significant difference between the right and left limbs regarding their involvement by varicose veins. (table no. 3)

Table 1 Gender distribution of patients with varicosities

	male patients	female patients	Total no. of patients
No. of Patients with varicosity	11	61	72

Table 2 Age distribution of patients with varicosities

Age group	< 20	20-29	30-39	40-49	50-59	> 60
No. of patients	0	16	25	15	12	4

Table 3 Right left limb involvement by varicose veins

sex	Right limb	Left limb	both	total
Male	3	4	4	11
female	15	15	31	61

Recommendations

Study the criteria of the great saphenous venous valves and compare this with abnormal valves along the whole length of the vein.

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