

Antenatal Chronic Venous Insufficiency

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Abstract: ***Objective:** Chronic venous insufficiency (CVI) occurs in up to 80% of pregnant women, while around seven of every 1000 pregnant mothers face venous thromboembolism and pulmonary embolism. A review of the literature on CVI in pregnant women reveals considerable guidance for their treatment. Pregnancy causes significant hemodynamic changes within the circulatory system. Pregnancy has significant effects on the lower extremity venous system. Increasing venous pressure and blood volume, in combination with reduced flow rates within the deep veins, predisposes pregnant women to both primary and secondary CVI. This article highlights the specific physiologic and hemodynamic changes that occur during pregnancy and examines the nonpharmacologic, pharmacologic, and invasive interventions that are appropriate for both prophylaxis and treatment of CVI. **Methods:** This study is a review article of the key literature related to CVI in pregnancy. **Results:** Consequences of pregnancy can result in venous disease only during pregnancy or, particularly in the multiparous patient, can progress to CVI. Significant hemodynamic changes occur in the lower extremities during pregnancy. **Conclusions:** There is a paucity of data available to construct guidelines for care, particularly in pregnant patients with symptomatic superficial venous insufficiency. The physiologic changes throughout the arterial and venous systems during pregnancy are well documented.*

Keywords: Chronic venous insufficiency, pregnancy, varicose veins

1. Introduction

Chronic venous disease (CVD) refers to a group of disorders associated with the dysfunction of one or more of the lower extremity venous systems: superficial, deep, or perforating. The cardiovascular system undergoes dynamic physiologic changes throughout the course of pregnancy to meet the demands of both the mother and the developing fetus. [1] Although essential for ensuring the appropriate development of the fetus, these changes may reveal previously silent cardiac disease and are associated with several venous diseases in the mother. The burden of disease from venous diseases, in particular, can be high during pregnancy. [2, 3] Indeed, venous thromboembolism is the number one cause of maternal death in developed countries. [4]

Chronic venous insufficiency (CVI) is also common during pregnancy. Affected women experience an increased risk of varicose veins, leg pain, edema, itching, skin discoloration, night cramps, and a feeling of heaviness in the legs, [5 - 7] with symptoms most pronounced in the third trimester.

Pathophysiology

Pregnancy results in numerous adaptations to the circulatory system. CVI during pregnancy is caused by a combination of two main mechanisms, namely (i) an increase in venous pressure of the lower limbs due to compression of the inferior vena cava and iliac veins by the gravid uterus and (ii) an increase in venous distensibility due to the effect of hormonal mediators. There is a linear increase in lower limb venous pressure from the beginning to the end of pregnancy. By the end of pregnancy, the femoral venous pressure in the supine position is increased 3 folds. The increase in venous distensibility occurs from the first months of pregnancy and affects leg and arm veins in the same manner. The placenta secretes a large quantity of steroid hormones from the 6th week of pregnancy. Estradiol and progesterone may have a

vasodilating action, which would contribute to the increasing diameter of the veins observed throughout pregnancy.

Clinical Epidemiology

Primary CVI is venous insufficiency that is a result of intrinsic structural and biochemical abnormalities of the vein wall. A number of major epidemiologic studies have looked at the incidence and prevalence of CVI within the general population. According to data from the San Diego Population Study, primary CVI affects approximately 10%–35% of adults in the USA. Pregnancy, along with obesity, a history of deep - venous thrombosis (DVT), smoking, and family history, is a well - described risk factor for venous reflux and subsequent CVI. Approximately 15% of pregnant women present with varicose veins, which mostly occur at the beginning of the second trimester. The relative risk of varicose veins increases 4 folds in women over 35 years of age. The risk is also increased by 2 folds in multiparous women compared with those in their first pregnancy. [5] The prevalence of varicose veins in women over 40 years of age is as follows: 20% in nulliparous women, 40% in women who have had 1–4 pregnancies, and 65% in women who have had five or more pregnancies. [8 - 11] In addition, correlations have been found between the number of varicosities affecting the greater and smaller saphenous veins, the size of the varicosities, and the number of pregnancies. [12, 13]

Complications are mainly cutaneous (skin changes or subcutaneous tissue), but these are rare given the young age of these women, the short period of progression of the condition, and improved treatment options in recent years. Any trauma to an edematous leg may, however, lead to a chronic wound. Such ulcers (C6) are more likely to occur if there is a precursor: corona phlebectatica. After childbirth, C1 and C2 diminish rapidly, but often incompletely. C3–C6, if present, improves gradually, and pelvic compressions are

no longer an issue. A final assessment of the regression is only made 3 months after childbirth or after stopping breastfeeding. [7, 14]

Venous Doppler Examination

This initial assessment of the lesions may be supplemented by a more detailed patient history including details of CVD events, namely pelvic veins (ovarian and uterine veins), abdominal veins, and laboratory tests. [15, 16] After the clinical examination, a venous Doppler examination of the lower limbs records all findings on an initial illustration so that changes can be followed with each advancing stage of pregnancy, which is recommended for large varicosities, preexisting varicosities, or any strong prediction for DVT.

Treatment

The treatment should, in order of priority: (i) reassure the patient, (ii) relieve symptoms, (iii) reduce or stop the progression of the disease, and (iv) prevent complications. Worried patients should be reassured, explaining that most varices will diminish after childbirth and that complications are rare if treatment is followed. Rest is advised. During the day, extended rest periods are beneficial. We suggest 15 min of rest for every hour a patient spends on her feet. At night, the foot of the bed should be raised 1 cm for each hour a patient spends on her feet during the day (e. g., 10 h standing = 10 cm elevation). [17] There should be no cushion under the heels and nothing at the end of the mattress.

Compression therapy

The following are some simple rules to follow:

- 1) Compression therapy should be prescribed at the appearance of the first venous disorder or at the start of pregnancy in case of preexisting CVI [18]
- 2) It must be continued throughout pregnancy and the physician's role should be to convince their patients of this, "to convince, we must be convincing, therefore convinced!" Continuing compression therapy for 9 months to 1 year is acceptable given the benefits that can be achieved [19]
- 3) Regardless of the material used, multilayer bandages are a very good therapeutic solution: two bandages (or three), one over the other forms a very good bandage. The same effect is achieved with two (or three) medical compression stockings
- 4) In general, the pressure used will be higher with more pronounced signs and symptoms and with more advanced stages of pregnancy.

Treatment strategies for primary CVI in pregnancy, which occurs in up to 80% of women, were reviewed, which include indications for nonpharmacologic therapies (compression, reflexology, and water emersion) and pharmacologic treatments. [20]

2. Conclusions

Pregnancy has significant effects on the lower extremity venous system. Increasing venous diameters and blood volume, in combination with a reduced flow rate within the deep veins, predisposes pregnant women to both primary and secondary CVI.

The following four points should be remembered: (1) always consider the complaints of a woman at the beginning of a pregnancy: preventative action is likely to slow down or even stop the progression of venous disease! (2) the presence of varicose veins early in pregnancy, even of small diameter, must lead to implementation of the two fundamental treatments; (3) without exception, no sclerotherapy during pregnancy; (4) do not let a pregnant woman believe that nothing can be done for her legs: the combination of compression and elevation is a simple and very effective therapy. The presence of even moderate symptoms or signs of CVI in early pregnancy should lead to implementation of the following two fundamental treatments: daytime medical compression therapy and nighttime elevation of the lower limbs. Venoactive agents should be offered if patients are symptomatic. The combination of "daytime compression and nighttime elevation" of the lower limbs is a simple, "ecologic" and particularly effective treatment.

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4. Conflicts of interest

There are no conflicts of interest

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