



"STATUS OF VENOUS THROMBOEMBOLISM RISK FACTORS IN PREGNANT WOMEN IN A TERTIARY CARE TEACHING HOSPITAL"

Dr Gaurav Singal

Assistant Professor, Department of Surgery, World College of Medical Sciences and Research, Jhajjar, Haryana.

Dr Dharampaul jain*

Associate professor, Department of medicine, World College of Medical Sciences and Research, Jhajjar, Haryana. *Corresponding Author

Dr Shyam Sunder Nagpal

Associate professor, Department of Surgery, World College of Medical Sciences and Research, Jhajjar, Haryana.

ABSTRACT

Background: Venous thromboembolism (VTE) is a specific reproductive health risk for women. Venous thromboembolism (VTE) includes deep vein thrombosis (DVT), pulmonary embolism (PE) and cerebral venous thrombosis (CVT). **Materials and Methods:** 165 antenatal and postnatal women attending the gynecology outpatient department in WCMSR. The women were sampled using a pragmatic approach. The risk factors in each woman were assessed using the Royal College of Obstetrics and Gynecology Green-top Guidelines. **Results:** 50 women were in the first trimester (30.3%), 42 women were in the second trimester (25.5%) and 62 women were in the third trimester of pregnancy (37.6%). Eleven women were in the Unknown trimester of pregnancy (6.7%). Overall, 99 (60%) of the VTE cases occurred during the postpartum period, whereas 66 (40%) occurred during pregnancy (antenatal period). **Conclusion:** The pregnancy was the most frequently observed provoking factor in VTE, exceeding other transient risk factors such as surgery, hospitalization, and oral contraceptive use.

KEYWORDS : Venous thromboembolism, deep vein thrombosis and pregnancy.

INTRODUCTION:

Venous thromboembolism (VTE) is defined as a condition in which a blood clot (thrombus) forms in a vein, most commonly in the deep veins of the legs or pelvis [deep vein thrombosis (DVT)] while pulmonary embolism (PE) occurs when the thrombus dislodges to the pulmonary arteries.[1] Venous thromboembolism (VTE) includes deep vein thrombosis (DVT), pulmonary embolism (PE) and cerebral venous thrombosis (CVT). Complications resulting from VTE include post-thrombotic syndrome and death. Reported incidence of VTE ranges from 51 to 123 per 100,000 among reproductive age women.[2] Well-recognized major risk factors for VTE in reproductive age women include estrogen-containing hormonal contraceptives (CHC) and pregnancy. CHC use confers a two- to four-fold increase in risk for VTE compared to nonusers[3] with the greatest increase within the first 3 months of use.[4] Pregnancy confers a five-fold increase in risk for VTE,[4] with the highest risk during the puerperium. Malignancy is a major VTE risk factor at any age, and among reproductive age women confers up to a nine-fold increase in risk of VTE compared with women without cancer.[5] Additional risk factors for VTE include personal or family history of VTE, trauma, long-haul travel, certain chronic illnesses, hospitalization with or without surgery and postoperative immobility, heritable thrombophilias and antiphospholipid antibody syndrome, ovarian stimulation, as well as increasing age and obesity.[6] Our aim was to characterize the distribution of VTE risk factors among Pregnant Women in a Tertiary Care Teaching Hospital.

MATERIALS AND METHODS:

This retrospective study was conducted in the Department of Surgery, World College of Medical Sciences and Research, Jhajjar, Haryana in collaboration with department of gynecology during the period from March, 2017 to February, 2019. Total of 657 VTE cases were identified. Out of which 165 antenatal and postnatal women attending the gynecology outpatient department in WCMSR. The women were sampled using a pragmatic approach. The risk factors in each woman were assessed using the Royal College of Obstetrics and Gynecology Green-top Guidelines. Data were entered and analyzed using the SPSS software (version 22; SPSS Inc., Chicago, IL, USA). The analysis consisted of descriptive group parameters. Continuous variables were processed as mean &

standard deviation. Categorical variables were analyzed as frequencies with corresponding percentages within the different categories.

RESULTS AND DISCUSSION:

This present study was conducted in the Department of Surgery in collaboration with department of Gynecology, World College of Medical Sciences and Research, Jhajjar. During the study period, 657 VTE cases were identified. Out of them, 165 patients were diagnosed with pregnancy induced VTE (125 (75.7%) patients developed DVT, 28 (17.0%) patients developed PE, and 12 (7.3%) developed DVT that progressed to PE). Patient demographic data revealed a mean age of 30.4 ± 6.02 years and a BMI of 32.56 ± 6.21 kg/m². Of the 165, 50 women were in the first trimester (30.3%), 42 women were in the second trimester (25.5%) and 62 women were in the third trimester of pregnancy (37.6%). Eleven women were in the Unknown trimester of pregnancy (6.7%). Overall, 99 (60%) of the VTE cases occurred during the postpartum period, whereas 66 (40%) occurred during pregnancy (antenatal period). 135 patients with DVT, the left leg was involved in 102 (75.6%) patients in whom the proximal site was the dominant site of involvement. Right leg DVT was observed in 15.6% of patients. 165 patients with VTE showed varying clinical presentations, among which the most common were lower leg pain, lower limb swelling, and entire leg swelling (56.4%, 52.1%, and 35.2% respectively), other clinical presentations observed are shown in Fig.1(a & b). 3.2. Risk Factors of Pregnancy-Associated Thrombosis Based on RCOG Risk Assessment.

Table-1 : Shows the demographic representation.

Parameters	N=165	No. of Patients (%)
Age in years	(Mean \pm S.D)	30.4 ± 6.02
BMI kg/m ²	(Mean \pm S.D)	32.56 ± 6.21
Pregnancy status	Antenatal	66 (40%)
	Postpartum	99 (60%)
Pregnancy trimester	1 st trimester	50 (30.3%)
	2 nd trimester	42 (25.5%)
	3 rd trimester	62 (37.6%)
	Unknown trimester	11 (6.7%)
Family history	Yes	23 (13.9%)
	No	142 (86.1%)

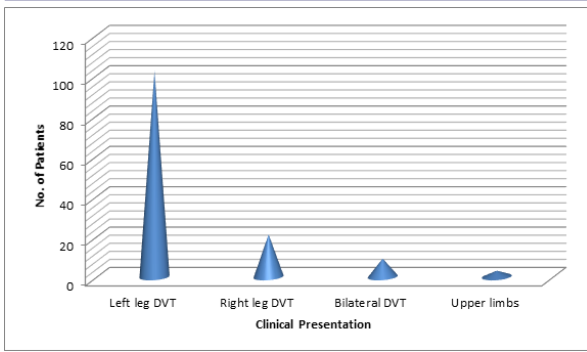


Fig.1(a)

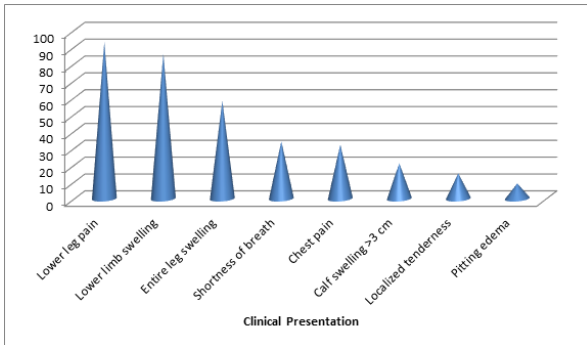


Fig.1(b)

Fig.1(a & b): Shows the Clinical presentations of VTE (DVT and PE) and distribution of DVT site involvement in patients.

Cesarean section was the topmost prevalent risk factor among study participants, which was observed in 76 (46.1%) patients, followed by obesity (68 (41.2%) patients), multiparity (>3 children; 52 (31.5%) patients), the presence of medical comorbidities (such as T2DM, gestational DM, and hypertension; 49 (29.7%) patients), age >33 years (47 (28.5%) patients), and family history 23 (13.9% of patients). Risk factors that were less frequent include surgical procedures (2 (1.2%) patients), dehydration or ovarian hyperstimulation syndrome (OHSS; 2 (1.2%) patients), systemic infection (4 (2.4%) patients), preeclampsia (7 (4.2%) patients), and postpartum hemorrhage (PPH) or blood transfusion (7 (4.2%) patients). Ovarian hyperstimulation syndrome; PPH: postpartum hemorrhage; VTE: venous thromboembolism; APLS: antiphospholipid syndrome; ART: assisted reproductive technologies; BMI: body mass index; C/S: cesarean section. The classic Virchow theory states that the hypercoagulable state of blood, venous blood flow, and venous wall damage are the three major pathological causes of VTE.[7] These three points are reflected in pregnancy. The blood is hypercoagulable during pregnancy. During late pregnancy, the enlarged uterus compresses the inferior vena cava, affecting venous return and causing blood flow to stagnate. During the delivery process, caesarean section and vaginal midwifery techniques cause venous vascular injury. Furthermore, different degrees of dehydration and activity reduction during the puerperium period also increase the risk of VTE. These are also the causes of maternal VTE. The clinical symptoms of VTE during pregnancy lack specificity, and some patients with VTE may have no clinical symptoms. However, because it can be complicated by PE, VTE is strongly lethal. Treatment after a clear diagnosis is often unsatisfactory. Therefore, for VTE, prevention should be more important than treatment. At present, a number of studies have confirmed that prophylactic anticoagulant therapy can effectively reduce the incidence of VTE in high-risk populations.[8,9] Therefore, according to the risk factors for VTE in the early identification of high-risk groups, early drug

prophylaxis is particularly important to reduce the incidence of VTE and maternal mortality. Our results can be a guide to policymakers to include VTE prevention among pregnant women in maternal and child healthcare programs, which can lead to the averting the morbidity associated with this disease on women's health and pregnancy outcomes as well as its associated mortality. Moreover, there is a need to develop educational programs to enhance the knowledge of the healthcare providers in handling VTE in pregnant women. Our results will be a base for future research and contribute to developing and optimizing strategies to prevent and treat VTE in pregnant women. However, larger studies with randomized design and control groups are required to confirm and expand the results of our study and to understand risk factors for VTE and their possible countermeasures. This is one of few studies conducted in the World College of Medical Sciences and Research and is significant as it represents a database to determine the risk factors, laboratory profile, radiological imaging, and outcomes of management of pregnancy related VTE at one of the most reputable tertiary healthcare institutions in Jhajjar, Haryana. A critical limitation of our study was the absence of a control group to compare and contrast the risk factors found in VTE patients. Moreover, the lack of prepregnancy BMI data was another limitation. It might have been more accurate to estimate the true effect of obesity from patients' baseline weight before pregnancy. Further, the study was conducted at a signal tertiary care hospital, which hinders the generalizability of the findings.

CONCLUSION:

These findings suggest that the pregnancy was the most frequently observed provoking factor in VTE, exceeding other transient risk factors such as surgery, hospitalization, and oral contraceptive use. Also, an increased risk of VTE occurred in the postpartum period relative to that during pregnancy.

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