

Prevalence of thromboembolism in pregnancy and puerperium in a tertiary care center and risk factor assessment: A cross-sectional study

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Abstract

Background: Pregnancy and puerperium increases the risk of venous thromboembolism 4- to 5-fold over that in the non-pregnant state. Compared to non-pregnant, pregnant women have a two and a half times increased risk of developing pulmonary embolism. Venous thromboembolism is often fatal. Depending on reports estimate that 10%–30% of patients had mortality within 30 days. The purpose of this study is to estimate the prevalence of thromboembolism in pregnancy and puerperium, risk factors, need for anticoagulants, maternal and fetal outcome in a Govt. Tertiary care center in Chennai.

Materials and Methods: A prospective Descriptive study was conducted in Dept of Obstetrics & Gynaecology, Govt. Kilpauk Medical college, Chennai during February 2019-September 2019 among 200 antenatal and postnatal mothers. Descriptive statistics, Chi Square test were used. A p value of <0.05 was considered statistically significant. Results: In BMI up to 23 having thromboembolism of 0%, in BMI from 24-29, incidence was thromboembolism of 9.5% and in BMI of 33-36 having thromboembolism of 0%. In patients having BMI between 24-29, risk of thromboembolism was observed high. Hence BMI was considered significant risk factor. One patient developed pulmonary embolism in postnatal period, emergency CTPA done, given LMWH for 3 months & patient revived.

Conclusions: BMI more than 26, multiparity, previous history of surgery, immovability, varicose veins, gestational hypertension, anemia, APLA positive and Eclampsia were the significant risk factors. Since pregnancy is a hyper-coagulable state, by identifying these risk factors and initiating LMWH, we can prevent the complications of DVT. Hence maternal morbidity and mortality can be reduced.

Keywords: Thromboembolism, pregnancy, puerperium, risk factors

Introduction

Pregnancy and puerperium increases the risk of venous thromboembolism 4- to 5-fold over that in the non-pregnant state ^[1]. The manifestations of venous thromboembolism are Deep venous thrombosis and Pulmonary embolism. Compared to non-pregnant, pregnant women have a two and a half times increased risk of developing thrombotic event and 20 fold risk in

puerperium. The incidence of pulmonary embolism is 7-8 times higher in puerperium ^[1]. Sequelae of DVT and PE include complications such as Pulmonary Hypertension, Post-thrombotic Syndrome and venous insufficiency. Incidence is estimated to be between 0.08 and 1.2 percent following vaginal delivery and 3.0 percent following caesarean section ^[2].

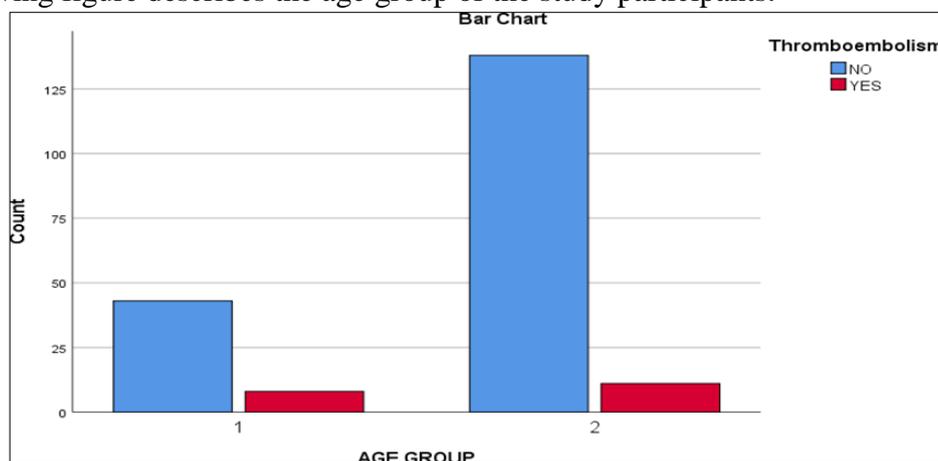
There is no surveillance for thromboembolism, so the number of people affected by it is not known. Based on analysis of clinical studies, the overall annual incidence is estimated to be between 1 and 2 per 1000 of the population ^[3]. These incidence rates differ by age, race, and gender. The incidence ranges from 1 per 100,000 in the young and increases to about 1 per 100 in people aged ≥ 80 years. The overall rate is higher among blacks and whites than among other races. Men have a slightly higher overall incidence rate than women, but women have a slight increase during the reproductive years ^[4]. Because of the difficulty in documenting DVT and PE, VTE may be under-reported. Venous thromboembolism is often fatal. Depending on reports estimate that 10%-30% of patients had mortality within 30 days; the majority of deaths occur among those with PE, as an estimated 20%-25% of all PE cases present as sudden death ^[3]. Other serious complications of DVT and PE include increased risks of recurrent thromboembolism and chronic morbidity. Even after a standard course of anticoagulant therapy, 1/3rd of previous thromboembolism patients have recurrence within 10 years of the primary event, with risk remaining in the rest of their life ^[5]. Half of DVT patients develop post-thrombotic syndrome and chronic venous insufficiency, conditions characterized by pain, swelling, skin necrosis, and ulceration. If on life-long anticoagulation, they are at increased risk of bleeding tendencies. The purpose of this study is to estimate the prevalence of thromboembolism in pregnancy and puerperium, risk factors, need for anticoagulants, maternal and fetal outcome in a Govt. Tertiary care center in Chennai.

Methods

A prospective Descriptive study was conducted in Dept of Obstetrics & Gynaecology, Govt. Kilpauk Medical college, Chennai during February 2019-september 2019 among 200 antenatal and postnatal mothers. Patient who are having signs and symptoms of Venous Thromboembolism, antenatal risk factors like age > 35, Obesity, Multipara(>3), BMI more than 30, Intra Uterine Death, Abruption, Anemia, Pre-eclampsia, Gross Varicose veins, prolonged immobility, medical comorbidities, thrombophilias. Postnatal risk factors like ceasarean section, operative vaginal deliveries, prolonged surgeries were included. Patients with previous history of venous Thromboembolism Valvular heart diseases were excluded. The patients who are diagnosed as having signs and symptoms of Venous Thromboembolism, having risk factors are taken as study group. The following investigations were done in all like coagulation profile, Chest X ray in postnatal mothers, Color Doppler study of lower limb veins, CT and Pulmonary Angiography.

Results

The following figure describes the age group of the study participants.



Chi square = 3.047 p= 0.081 not significant.

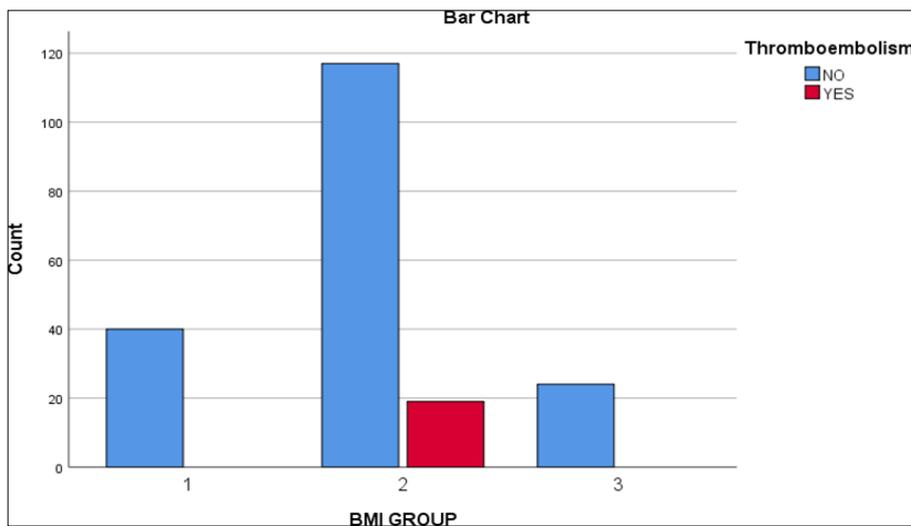
Fig 1:

In both the groups less than 10% observed in both age group, 8(4%) in 18-21 age group and 11(5.5%) in 22-25 age group. No statistically significant differences in age distribution of patients assigned to the 2 groups. The following table describes the relationship between BMI and the thromboembolism.

Table 1:

BMI Group * Thromboembolism					Total
			No	Yes	
BMI Group	1	Count	40	0	40
		% within Thromboembolism	22.1%	0.0%	20.0%
		% of Total	20.0%	0.0%	20.0%
	2	Count	117	19	136
		% within Thromboembolism	64.6%	100.0%	68.0%
		3	% of Total	58.5%	9.5%
Count			24	0	24
3		% within Thromboembolism	13.3%	0.0%	12.0%
		% of Total	12.0%	0.0%	12.0%
Total	Count		181	19	200
	% within Thromboembolism		100.0%	100.0%	100.0%
	% of Total		90.5%	9.5%	100.0%

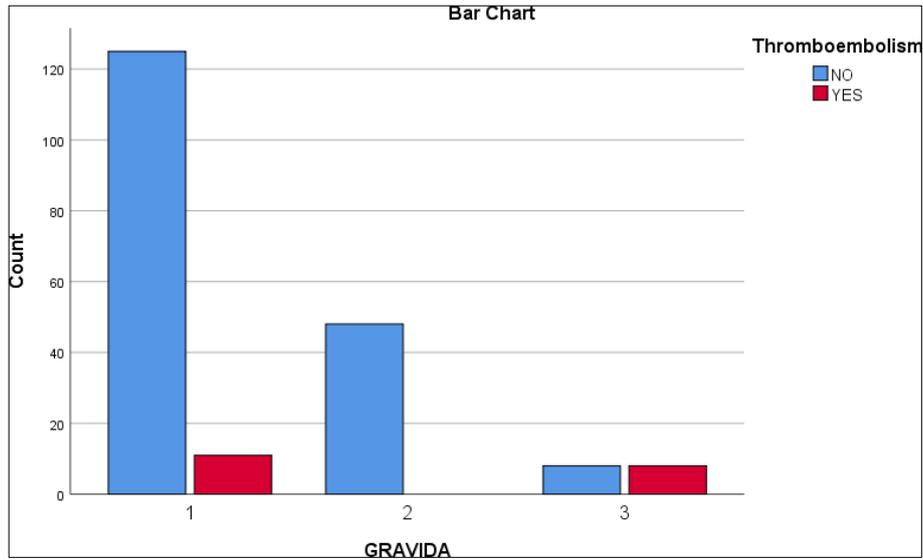
$p < 0.004$



Chi square = 9.880 $p = 0.007$ significant.

Fig 2:

In 3 groups less than 10% observed in 3 BMI groups, 0(0%) in BMI group, 19(9.5%) in BMI group2 and 0(0%) in BMI group3. Statistically significant differences in in distribution of patients assigned to 2nd group with other groups.



Chi square = 35.879 p= 0.000 significant.

Fig 3:

In 3 groups less than 10% observed in 1 and 3 GRAVIDA groups, 11(5.5%) in GRAVIDA group, 0(0%) in GRAVIDA group2 and 8(4%) in GRAVIDA group3. Statistically significant differences in distribution of patients assigned to the 1 and 3 groups

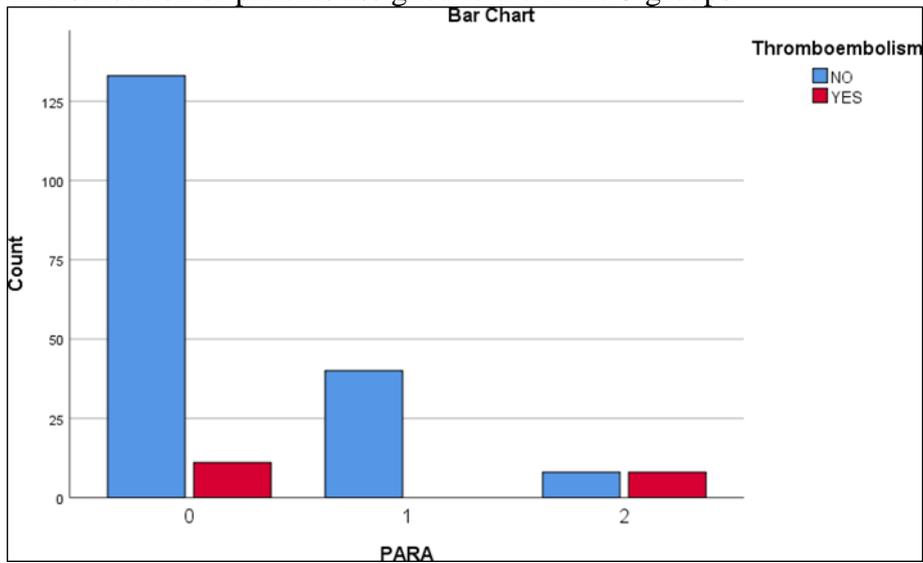


Fig 4:

In 3 groups less than 10% observed in 3 PARA groups, 11(5.5%) in GRAVIDA group, 0(0%) in PARA group2 and 8(4%) in PARA group3. Statistically significant differences in distribution of patients assigned to the 1 and 3 Para groups

Table 2:

		Thromboembolism			Total
		No	Yes		
Immovability	0	Count	178	11	189
		% within Thromboembolism	98.3%	57.9%	94.5%
		% of Total	89.0%	5.5%	94.5%
	1	Count	3	8	11
		% within Thromboembolism	1.7%	42.1%	5.5%
		% of Total	1.5%	4.0%	5.5%
Total	Count	181	19	200	
	% within Thromboembolism	100.0%	100.0%	100.0%	
	% of Total	90.5%	9.5%	100.0%	

Chi square = 54.125 p= 0.000 significant.

In 2 groups less than 10% observed in 2 Immovability groups, 11(5.5%) in group and 8(4%) in group2. Statistically significant differences in distribution of patients assigned to the two groups.

Other factors like Varicose veins, presence of Anemia, GHT were significantly associated with thromboembolism. Factors like RD, NICU, FET INFECTION, Death were not statistically associated with thromboembolism. Thrombophilia was associated with antenatal or puerperal thromboembolism like as APLA, Eclampsia, Heparin usage all had statistically significant association with Thromboembolism.

Discussion

In age group of 18-22 prevalence of Thromboembolism is 4% and in age group of 22-25 prevalence of Thromboembolism is 5.5%. It is not statistically significant. Hence age group is not considered as risk factor in AnteNatal and Puerperium. In BMI up to 23 having Thromboembolism of 0% in BMI from 24-29 having Thromboembolism of 9.5% and in BMI 33-36 having Thromboembolism of 0%. In patients having BMI between 24-29 risk of Thromboembolism present. Hence BMI considered significant Risk factor. The risk of Thromboembolism is high in multi Gravida (multiple pregnancy), hence Gravida considered significant Risk factor^[8,9].

Abortion is not considered significant risk factor^[10], since prevalence of Thromboembolism in abortion is 9.5%. Previous History of surgery is considered as a significant risk factor. History of varicose veins is considered as a significant risk factor. History of immovability for prolonged period is considered as a significant risk factor since Prevalence of Thromboembolism is 5.5%. History of Gestational Hypertension for is considered as a significant risk factor since Prevalence of Thromboembolism is 4%. There is no Significant Correlation between mild and severe GHTN^[11]. The NICU admission for babies in mothers having Thromboembolism not considered as significant risk factor. In babies having respiratory distress no statistical significant persist. Hence it is not considered as risk factor. In babies having fetal infection no statistical significant persist. Hence it is not considered as risk factor. There is no significant correlation between death and Thromboembolism.

The prevalence of Thromboembolism in Antenatal patients is 60% and in Post Natal patient is 40%. Hence there is no statistical significance between both groups. Prevalence is nearly the same in both groups. Hence it is not statistically significant. There is statistical significance between Eclampsia and Thromboembolism. Hence it is considered as Risk factor. Four cases developed cortical venous thrombosis (have not received prophylactic LMWH. Low Molecular weight Heparin is given in patients having risk factors and in patients having Thromboembolism. Duration and dose of prophylactic LMWH has to Increased. One patient developed pulmonary embolism in postnatal Period, emergency CTPA done, given LMWH for 3 months & patient revived. There is statistical significance between APLA and thromboembolism. There is statistical significance between Anemia and Thromboembolism. No correlation between mild and severe anemia.

Conclusions

Thus patients with BMI more than 26, multiparity, Previous History of surgery, Immovability, Varicose veins, Gestational Hypertension, Anemia, APLA positive and Eclampsia as significant risk factors^[12]. Since pregnancy is a hypercoagulable state, by identifying these risk factors and initiating LMWH, we can prevent the complications of DVT and hence maternal mortality and morbidity can be reduced^[13].

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Competing Interest: Nil

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