



Risk stratification for venous thrombosis in post-partum women in a tertiary care setup in south India

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Received August 20, 2018

Background & objectives: The Royal College of Obstetricians and Gynaecologists (RCOG) guidelines for thromboprophylaxis among post-partum women are recommended across Asia. This study was aimed to find the proportion of post-partum women eligible for thromboprophylaxis based on the RCOG guidelines and how many actually received it in a tertiary care health facility in south India.

Methods: This cross-sectional study was carried out on 1652 consecutive women who delivered in the setup of tertiary care. Risk stratification for venous thrombosis was done as per the RCOG guidelines. The number of women who received thromboprophylaxis was also noted.

Results: Among the 1652 women studied, three [0.18%; 95% confidence interval (CI): 0.06-0.53] were in the high-risk, 598 (36.2%; 95% CI: 33.9-38.6) in the intermediate and 254 (15.4%; 95% CI: 13.7-17.2) in the low-risk category for thrombosis. All the three women in the high-risk and only two women in the intermediate-risk category actually received thromboprophylaxis with heparin.

Interpretation & conclusions: It was seen that the number of women needing prophylaxis in our setup, as per the RCOG guidelines, was as high as 601 (36.4%), but only five (0.8%) received it.

Key words Post-partum thrombosis - thromboprophylaxis - thrombosis risk - venous thrombosis

The Royal College of Obstetricians and Gynaecologists (RCOG) has laid down criteria to stratify post-partum women into high, intermediate and low risks of thromboembolism¹. Thromboprophylaxis is recommended for all post-partum women falling into high- and intermediate-risk categories. The occurrence of thromboembolism is two to five times higher in the African-Americans and European countries. The risk has been considered lowest in the Asian population^{2,3}. However, in a recent study from

India, the authors observed a hospital incidence of 19/10,000 of venous thromboembolism (VTE) with maximum incidence in 40 to 60 age group and half of the cases had an underlying provocative factor⁴.

This study was undertaken to calculate the proportion of post-partum women, who would be eligible for anticoagulation, based on the RCOG guidelines, and how many were actually administered anticoagulants in a tertiary care health facility in south India.

Material & Methods

This was a cross-sectional study carried out in the population of post-partum women aged 18-45 yr who delivered in the labour wards of the department of Obstetrics and Gynaecology, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER) Puducherry, India, during April and May 2017, after obtaining written informed consent. The study was approved by the Institutional Ethics Committee. Women delivering before 28 wk were excluded from the study. With the frequency of the highest risk factor for thrombosis of acquired thrombophilia being one per cent⁵ and an alpha error of five per cent, absolute precision of 0.5 per cent and non-response rate of 10 per cent, the sample size was calculated to be 1650. With the proportion being very low (1%), we took absolute precision of 0.5 per cent.

After collection of these data about risk factors, the proportion of women falling into different risk categories (no, low, intermediate and high risk) based on the RCOG guidelines criteria¹ (Table I) was calculated. The proportion of women eligible for

thromboprophylaxis (high and intermediate risk) and those who actually received was also calculated.

All the women in the study group were followed up only till discharge from the hospital (on an average of four days) for the development of any clinical thromboembolism. Data analysis was done in EpiData analysis version V2.2.2.186 (EpiData Association, Odense, Denmark).

Results & Discussion

There were 25 (1.5%) teenage pregnancies (18-19 yr). Only 2.5 per cent (n=42) were more than 35 yr of age. Table II gives the various demographic characteristics of the study group. Nearly half of the study population (n=797; 48%) had no risk, three (0.2%) had high risk, 598 (36.2%) had intermediate and 254 (15.4%) had low risk for thrombosis based on the RCOG guidelines.

Among the 1652 women, three women (one with thrombophilia and family history of thrombosis and two who had undergone mitral valve replacement for rheumatic heart disease) had high risk of thrombosis, and no woman had previous VTE. Of

Table I. Risk stratification criteria for venous thrombosis for post-partum women

High risk	Intermediate risk	Low risk
High-risk thrombophilia ^a	Caesarean section in labour	Age >35 yr
Low-risk thrombophilia ^b +FHx	BMI ≥40 kg/m ²	Obesity (BMI ≥30 kg/m ²)
Any previous VTE	Readmission or prolonged admission	Parity ≥3
Anyone requiring antenatal LMWH	(≥3 days) in the puerperium	Smoker
	Any surgical procedure in the puerperium except immediate repair of the perineum	Elective caesarean section
	Medical comorbidities <i>e.g.</i> , cancer, heart failure, active SLE, IBD or inflammatory polyarthropathy; nephrotic syndrome,	Family history of VTE
	Type I DM with nephropathy, sickle cell disease, current IVDU	Low-risk thrombophilia
	Two or more low risk factors	Gross varicose veins
		Current systemic infection
		Immobility <i>e.g.</i> , paraplegia, PGP, long distance travel
		Current pre-eclampsia
		Multiple pregnancy
		Mid-cavity rotational or operative delivery
		Prolonged labour (>24 h)
		PPH >1 l or blood transfusion
		Pre-term birth
		Stillbirth

^aHigh-risk thrombophilia - antithrombin deficiency, antiphospholipid antibody syndrome, protein C deficiency, protein S deficiency, homozygosity for Factor V Leiden mutation, homozygosity for prothrombin gene mutation and compound heterozygosity.

^bLow-risk thrombophilia - heterozygosity for prothrombin gene mutation, heterozygosity for Factor V Leiden mutation, persistent antiphospholipid antibodies (lupus anticoagulant, anticardiolipin antibody and anti-B2GP1). FHx, family history; BMI, body mass index; SLE, systemic lupus erythematosus; IBD, inflammatory bowel disease; IVDU, intravenous drug user; PPH, post-partum haemorrhage; VTE, venous thromboembolism; LMWH, low molecular weight heparin; DM, diabetes mellitus; PGP pelvic girdle pain restricting mobility

Source: Ref. 1

Table II. Baseline characteristics of the study population (n=1652)

Variable	Number of women (%)
Age (yr)	
18-20	183 (11.1)
21-25	748 (45.3)
26-30	517 (31.3)
31-35	162 (9.8)
>36	42 (2.5)
BMI in (kg/m²)	
<19.99	143 (8.7)
20.00-24.99	822 (49.8)
25.00-29.99	479 (29)
30.00-34.99	162 (9.8)
35-39.99	34 (2.1)
≥40.00	12 (0.7)
Parity	
1	873 (52.9)
2	579 (35)
3 or more	200 (12.1)
Previous abortions	
0	1355 (82)
1	221 (13.4)
2 or more	76 (4.5)
Multiple pregnancy	66 (4)
Mode of delivery	
Spontaneous vaginal delivery	1181 (71.4)
Instrumental delivery	48 (2.9)
Elective caesarean section	62 (3.8)
Emergency caesarean section	361 (21.9)
Comorbidities	
Gestational diabetes	58 (3.5)
Gestational hypertension	64 (3.8)
Chronic hypertension	4 (0.24)
Hypertension and diabetes	6 (0.36)
Pre-eclampsia	103 (6.2)
Eclampsia	3 (0.18)
Severe anaemia	2 (10)
Heart disease	10 (0.01)
Hypothyroidism	54 (3.2)
Still births	28 (1.7)
Pre-term labour	194 (11.7)

the 598 women with intermediate risk, 361 underwent emergency caesarean section. Twenty nine women stayed beyond three days due to systemic infections (including hepatitis B antigen positivity, dengue fever, urinary tract, minor and major respiratory tract and wound infection). Only two women were readmitted for wound infection requiring antibiotics and dressings. Two hundred and one women had two or more low risk factors which were recurring [pre-term labour (n=101, 50.2%), multiparity (n=72, 35.8%) and BMI in the range of 30-40 kg/m² (n=64, 31.8%)]. Of the 601 women eligible, only five actually received anticoagulation. This included all three of the high risk and only two from the intermediate-risk group (one with SLE and one with nephrotic syndrome). None of the 1652 women developed clinically obvious venous thrombosis during their hospital stay.

Venous thrombosis has been found to complicate one or two per 1000 pregnancies. The risk is higher in post-partum period varying from 0.5 to 3 per cent⁶⁻⁸.

A Cochrane systematic review on thromboprophylaxis in pregnancy and the early post-natal period examined 16 randomized trials involving 2592 women. Nine trials were for post-partum prophylaxis. The authors concluded that the available evidence was insufficient to make firm recommendations for prophylaxis⁹. There are several guidelines available for prophylaxis for venous thrombosis in post-partum women¹⁰⁻¹⁶. The updated Asian guidelines continue to recommend the RCOG guidelines for post-partum prophylaxis¹⁷. In a recent critical appraisal of these guidelines, the authors brought about the controversy in the duration and type of anticoagulation and need after caesarean section. They recommended efforts towards population-specific high-quality evidence before formulation of guidelines¹⁸.

In a study conducted in Western India, the authors¹⁹ found the incidence of VTE in pregnancy as 0.1 per cent and thrombophilia was identified as an important underlying factor in most of these cases. The incidence of VTE was found to be 7.5/10,000 in Japan²⁰.

To conclude, it was found that by applying the RCOG guidelines, thromboprophylaxis was indicated for 36.4 per cent of post-partum women, but only 0.5 per cent of them actually received it.

Acknowledgment: This study was carried out under the GJSTRAUS scheme of JIPMER undergraduate research (GJSTRAUS_2016-17/09).

Financial support & sponsorship: None.

Conflicts of Interest: None.

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