

Review Article**Venous Thrombo-embolism: Obstetricians Nightmare****Bangal V B.^{1*}, Fernandes Denita², Chalasani Shravani³, Kanika⁴, Singh Pushpanjali⁵**

Professor and Head, Department of Obstetrics and Gynaecology, Rural Medical College of Pravara Institute of Medical Sciences (Deemed University) Loni, Maharashtra, India

²⁻⁵Postgraduate Student, Department of Obstetrics and Gynecology, Rural Medical College of Pravara Institute of Medical Sciences (Deemed University) Loni, Maharashtra, India***Corresponding author**

Dr. Vidyadhar B. Bangal

Email: ybb217@rediffmail.com

Abstract: Venous thrombo-embolism (VTE) is an infrequent, yet serious cause of maternal death during pregnancy and the puerperium. There is 4-6 fold increased relative risk of VTE in pregnancy. Estimated prevalence in pregnancy and puerperium is 1-2 /1000. Pregnant women have 5 times increased risk of venous thrombo-embolism (VTE) than non gravid women. Most of the times, it occurs suddenly and unexpectedly during pregnancy, delivery or following caesarean section. It results into prolonged hospital stay, increased cost of treatment and long term morbidity. In view of these problems, obstetrician must take preventive measures to avoid occurrence of this complication. Obstetrician should be vigilant so as to diagnose the condition early so that necessary investigations and treatment can be started early to prevent life threatening complications.**Keywords:** Anti phospho-lipid antibody syndrome, Deep vein thrombosis, Low molecular weight heparin, Thrombophilia, Recurrent pregnancy loss, Thrombo-embolism in pregnancy

INTRODUCTION

Venous thrombo-embolism (VTE) is an infrequent, yet serious cause of maternal death during pregnancy and the puerperium [1, 2]. There is 4-6 fold increased relative risk of VTE in pregnancy. Estimated prevalence in pregnancy and puerperium is 1-2 /1000. Pregnant women have 5 times increased risk of venous thrombo-embolism (VTE) than non gravid women [3, 4]. The increased risk is due to physiologic, mechanical and, sometimes, iatrogenic factors. Gravidas have greater concentrations of factors I, VII, VIII, IX, and X; decreased fibrinolytic activity; and increased platelet activation. These changes in the coagulation system predispose the gravida to clot formation. The enlarging uterus can compress venous drainage from the lower extremities, resulting in stasis. Further, prolonged immobilization in the form of bed rest is often prescribed for obstetric complications such as hypertension, preterm labour, haemorrhage, and preterm premature rupture of membranes. Both abdominal and vaginal operative delivery can predispose to vascular endothelial injury [5-8].5

PREGNANCY- ASSOCIATED RISK FACTORS FOR VENOUS THROMBO-EMBOLISM [11]**Changes in the coagulation system**

- Increased factors I, VII, VIII, IX,
- Decreased fibrinolytic activity,

- Increased platelet activation

Venous stasis

- Enlarging uterus compresses venous return coming from lower extremities

Endothelial injury

- Vacuum delivery
- Forceps delivery
- Caesarean delivery

Prolonged immobilization

- Preterm labour
- Preterm premature rupture of membranes
- Obstetric haemorrhage
- Hypertensive disorders of pregnancy.

ACQUIRED RISK FACTORS FOR THROMBOSIS

- Advanced age and Parity
- Operative delivery (ten times more risk)
- Obesity
- Anaemia
- Heart disease
- Infection-pelvic cellulitis
- Trauma to the venous wall
- Smoking

- Immobility
- Prior DVT or Pulmonary Embolism

VARIOUS THROMBO-EMBOLIC EVENTS DURING PREGNANCY AND PUERPERIUM

Deep Vein Thrombosis- (DVT)

Symptoms: Pain in calf muscles, oedema over legs and rise in skin temperature [12].

Signs: Asymmetric leg oedema, Positive Homan's sign.

Investigations: Doppler Ultrasound, Venous Ultrasonography, Doppler, USG, MRI. Sensitivity and specificity of MRI is 100 percent and accuracy is 90 percent)

Postpartum Pelvic Thrombo –phlebitis

Originates in thrombosed veins at the placental site by organisms like Streptococci, Bacteroides fragilis [13]. It should be suspected, when pyrexia continues for more than a week in spite of antibiotic therapy [14]. Extra-pelvic spread- through ovarian veins to inferior vena cava to lungs or kidneys or retrograde spread to ilio-femoral veins to produce Phlegmasia alba dolens or White leg [15].

Cerebral Venous Sinus Thrombosis

Cerebral venous sinus thrombosis (CVST) is the presence of thrombosis in the dural venous sinuses. Symptoms of CVST may include headache, abnormal vision, any of the symptoms of stroke such as weakness of the face and limbs on one side of the body, and seizures. The diagnosis is generally done by computed tomography (CT/CAT scan) or magnetic resonance imaging (MRI) employing radio contrast in order to demonstrate obstruction of the venous sinuses by thrombus. Treatment is with anticoagulants and rarely thrombolysis [16].

Phlegmasia alba dolens

Features develop in second week of puerperium. Symptoms include fever with chills, constitutional symptoms, swollen, painful cold leg [15]. Blood count shows polymorpho-nuclear leucocytosis. Diagnosis is done by venous ultrasound, CT scan or MRI [17]. Low molecular weight heparin therapy is recommended [18].

WHEN IS ANTICOAGULATION WARRANTED IN PREGNANCY? [11]

- Experience a thrombo -embolic event
- Become pregnant while being treated for VTE
- Have a previous history of unprovoked VTE
- Have a known hereditary thrombophilia such as anti-thrombin III deficiency, factor V Leiden mutation
- Have a connective tissue disorder such as anti-phospholipid antibody syndrome.

TYPE OF ANTICOAGULANTS IN USE DURING PREGNANCY

Unfractionated heparin (UFH) is considered the reference product for use during pregnancy. Use of oral anticoagulation is (warfarin) contraindicated during pregnancy because of its teratogenic risk in first trimester, as well as the risk of maternal and fetal hemorrhage at the end of pregnancy. Increasingly, low molecular weight heparin (LMWH) is proposed to replace unfractionated heparin (UFH) during pregnancy. It does not cross the placenta and has better bioavailability, with half life two to four times longer than UFH. It is less likely to induce thrombocytopenia and osteoporosis. These advantages are accompanied by simplicity of use and reduced biological monitoring, which is particularly important to the patients. Its safety seems to be proved for use during second and third trimester of pregnancy [6-8].

Low Molecular Weight Heparin

It is safe for both mother and fetus, as effective in pregnancy as in the non-gravid population, and side effects are minimal. It also has a favourable dosing route and interval, with less need for monitoring than with un-fractionated heparin (UH). Low molecular weight heparin appears to be as safe as un-fractionated heparin in pregnancy, with longer-lasting effects and reduced need for monitoring. Both the American College of Obstetricians and Gynaecologists and the Society for Maternal-Fetal Medicine endorse its use in pregnancy with appropriate counselling. This agent is produced by the controlled enzymatic degradation of un-fractionated heparin (molecular weight of approximately 10,000 to 15,000 daltons) into approximately 5,000-dalton molecules. Although they are much smaller than the parent molecule, these polymers still carry a strong positive charge. According to the manufacturer, the LMWH enoxaparin falls into pregnancy category B. Another LMWH, dalteparin, also falls into pregnancy category B. Both the American College of Obstetricians and Gynaecologists and the Society for Maternal-Fetal Medicine endorse the use of LMWH in pregnancy with appropriate counselling [8-10].

MANAGEMENT OF ACUTE DVT

Bed rest, raising of affected limb, analgesics, appropriate antibiotics, anticoagulants- heparin, Low molecular heparin, warfarin. There is no contraindication for breast feeding during heparin therapy. Elastic stockings, gentle immobilization, vena cava filters, fibrinolytic agents, venous thrombectomy are some of the mechanical and surgical measures used in the treatment of deep vein thrombosis.

CONCLUSION

Venous thrombo-embolism is one of the under rated cause of maternal morbidity and mortality. Although the incidence of this complication is not very high, it is a cause of concern due to associated serious

implications. Most of the times, it occurs suddenly and unexpectedly during pregnancy, delivery or following caesarean section. It results into prolonged hospital stay, increased cost of treatment and long term morbidity. In view of these problems, obstetrician must take preventive measures to avoid occurrence of this complication. He should be vigilant so as to diagnose the condition early so that necessary investigations and treatment can be started early to prevent life threatening complications.

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