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Case Report

Postpartum inferior vena cava thrombosis: a case report

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ABSTRACT

Inferior vena cava thrombosis (IVCT) is an important cause of morbidity and is one of the direct causes of maternal death after delivery in developed countries. The risk of venous thromboembolism (VTE) is present throughout the pregnancy and is maximal during postpartum, especially after twin delivery. Most of the signs and symptoms of deep vein thrombosis (DVT) overlap those of normal pregnancy causing difficulty in diagnosis. We report a case of 32-year-old primigravida who developed IVCT in postoperative period following caesarean section for twin delivery at term gestation. This was diagnosed by ultrasound on evaluation for her leg pain. She was initiated on anticoagulation that was continued for a period of six months. She is on regular follow up. IVCT is rare but recognition of signs and symptoms is fundamental to start adequate therapy and avoid potential serious sequelae.

Keywords: Inferior vena cava thrombosis, Pregnancy, Postpartum

INTRODUCTION

Inferior vena cava thrombosis (IVCT) is a clinically rare condition.[1] Lifetime incidence of deep vein thrombosis (DVT) is 0.1% with 4- 15% incidence of IVCT in patients with confirmed DVT.[2] According to the United States National Hospital Discharge survey, Vena caval thrombosis (presumed to be IVCT) accounted for 1.3% of all hospitalized patients who were diagnosed with venous thrombosis between 1979 and 2005.[3] In Asian population a low incidence of IVCT is likely, since a lower risk and incidence of venous thromboembolism have been demonstrated.[4]

However, the true incidence of IVCT is underestimated, under recognised due to lack of standardized detection methods and insufficient clinical awareness. VTE is one of the most common causes of maternal mortality in the western population. Overall incidence varies between 0.3%-1.2%.[5] VTE is four to fivefold greater during puerperium than during pregnancy, especially after caesarean delivery. The mortality rate of IVCT has been reported to be twofold higher than DVT of lower extremities. High index of clinical suspicion is needed for diagnosis and subsequent therapy.

CASE REPORT

This involves a 32-year-old, primigravida who conceived by assisted reproduction. She had residual hemiparesis due to hypoxic ischemic encephalopathy at birth. Early pregnancy scan confirmed Dichroionic-Diamniotic twin pregnancy. Her antenatal VTE risk assessment showed score of 4. She was started on enoxaparin thromboprophylaxis from first trimester. She was incidentally diagnosed to have Hepatitis C Virus (HCV) reactive status. HCV RNA viral load not detected. Ultrasound abdomen and pelvis normal study. Nuchal translucency, Target scan normal. She was diagnosed as gestational diabetes at 24 weeks, started on oral hypoglycemic agents. Serial growth scan normal. Antepartum fetal surveillance normal. She delivered twin

babies at term with good APGAR by caesarean section. Intraoperative period uneventful.

Figure 1: IVC-infra hepatic portion showing linear thrombus.

She ambulated after 8 hours of surgery. She was initiated with mechanical and pharmacological thromboprophylaxis post-surgery. She developed severe leg pain on post operative day one. Her temperature was normal, Pulse rate 84 bpm, SpO_2 98% at room air, Blood pressure 100/60 mmHg, no lung signs noted. Dorsalis pedis artery pulsation was present. Moses and Homan's sign elicited were negative. Abdomen was soft, non-tender with involuting uterus.

Postoperative hemoglobin 11.8 g/dl, total count 11900 cells, platelet count 138 lakhs. Venous color flow Doppler of both lower limbs normal. Ultrasound abdomen and pelvis revealed a linear floating thrombus of size 26 mm in infra-hepatic portion of IVC. Cardiologist opinion sought. Echocardiogram showed good ventricular and valvular function; with thrombus noted in the hepatic and infra-hepatic portion of IVC. CT-pulmonary angiogram scan normal. Enoxaparin dose was escalated and added with oral anticoagulants. Parenteral antibiotics were added. Bridging anticoagulation was continued till target INR of 2.5 to 3.5 was achieved. She was discharged in stable condition with oral anticoagulant.

At her 6 months follow up with cardiologist, ultrasound abdomen and pelvis showed thickening of medial wall of infra-hepatic portion of IVC; without evidence of thrombus. Anticoagulant therapy was discontinued. She is on regular follow up with gastroenterologist to monitor disease progression of HCV reactive status.

DISCUSSION

VTE is the most common cause of direct maternal deaths. Inferior vena cava thrombosis can even occur after delivery leading to very severe complications. In pregnancy there is progressive alteration in the balance between prothrombotic and anticoagulant factors, leading to increase in fibrin deposition and reduction in fibrinolysis, thereby culminating in a pro coagulant state.[6] More over the blood flow velocity in the lower limbs is reduced by approximately 50% by third trimester of pregnancy due to compression of gravid uterus.[7,8] Half of the cases of VTE in pregnancy are associated with inherited or acquired thrombophilias.[9]

Virchow classically described the triad of factors that increases the risk of thrombosis which occurs in pregnancy viz. venous stasis, blood hypercoagulability and vascular damage. Thus, in pregnancy, increased levels of factors I, II, VII, IX and X, increased thrombin generation, decreased fibrinolysis for up to 72 hours postpartum, increased platelet adhesion and decreased levels of anticoagulants Protein C and protein S.[10] These proteins inactivate factor Va and VIII a, plasminogen activator inhibitor (PAI), increases the risk of thrombosis in pregnancy.

The most important risk factors for thrombosis are pregnancy, puerperium, postoperative period, caesarean delivery, multiple pregnancy, conception by artificial reproductive technologies and other hypercoagulable states. Diagnosis of IVCT remains challenging at clinical presentation, which depends on the acuity level, extent of thrombus involvement, consequences of caval and/or splanchnic vein occlusion and other accompanying VTE if present. Typical clinical presentation of IVCT includes bilateral lower extremity DVT, unexplained back pain, buttock pain, sciatica, pelvic pain, cauda equine syndromes.[11] In reality only half of the patients presenting with bilateral leg swelling accounts for symptomatic IVCT. IVCT may present with non-tender pitting edema and bluish discoloration of lower limbs. Chest pain and shortness of breath indicative of pulmonary embolism is reported in 12% of patients with isolated IVCT.[12] Renal vein involvement may present with loin pain and hematuria, while bilateral renal vein thrombosis may present with oliguria, anuria and uremic symptoms. If IVC thrombus extends to pelvis and femoral veins there is increased risk of phlegmasia cerulae dolens, hence venous gangrene. Pyrexia can be seen in 40% of the symptomatic patients.[13]

Early diagnosis may be done with compression ultrasonography with sensitivity of 97-100% and specificity of 98-99%.[14] Duplex ultrasound provides an accurate non-invasive method of diagnosing IVCT. IVC waveform appear monophasic, with high velocities giving it a 'choppy' appearance. Contrast venography remains the historical standard for the diagnosis of IVCT, with a low false positive rate and added advantage of immediate intervention and treatment. Computerized tomography imaging is rapid, non-invasive method can accurately diagnose and assess the extent of thrombus and the associated abdominal and pelvic abnormalities.[15] The most common finding in computerised tomography (CT) imaging is true filling defect in IVC by bland thrombus.

Recent days, magnetic resonance imaging (MRI) is replacing CT imaging as non-invasive imaging tool.[16]

In postpartum period, persistent abdominal pain should be evaluated with ultrasound imaging to exclude ovarian vein thrombosis. Broad spectrum antibiotics, intravenous unfractionated heparin or Low molecular weight heparin should be initiated immediately. Once thrombolysis begun, oral anticoagulants must be started and continued for 3-6 months.[17] The optimum time length for oral anticoagulation therapy is unknown, therefore we may consider the possibility to continue for 6 months with laboratory control.

Caval filters are recommended in extensive DVT, in case of high bleeding risk, conditions precluding the use of therapeutic dose of anticoagulation.[18] Royal college of obstetricians and gynaecologists recommends graduated elastic compression stockings - knee length with compression strength 30-40 mmHg, as it reduces the risk of post thrombotic syndrome.

All pregnant women should be assessed for the risk factors of VTE in early pregnancy, during hospital admission, during inter current infections, in the intra partum and immediate postpartum.

CONCLUSION

IVCT is a life-threatening condition. High index of clinical suspicion leads to early diagnosis and more favourable clinical outcomes. Multidisciplinary input, tailormade treatment helps to avoid morbidity and mortality

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