Case Report

Inferior Vena Caval Malformation with Deep Venous Thrombosis Incidentally Diagnosed as a Cystic Pelvic Mass in a Young Female Patient: A Case Report

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ABSTRACT

The most common inferior vena cava (IVC) malformation is hypoplasia of the pre-renal and renal segment followed by those in the post-renal segment and presence of double IVC. IVC malformation is reported to have equal gender predilection and occur in about 8.7% of the population. This is a case of a 25-year-old woman in her puerperal period presenting with abdominopelvic discomfort and bilateral lower limb swelling. The patient had abdominopelvic ultrasound scan and computed tomographic angiography, the ultrasound showed a cystic pelvic mass that seem continues with a dilated IVC. The angiography showed tortuous and dilated left iliac vessels with areas of filling defects; thrombi. Hypoplastic right common iliac vein with a dilated left renal vein and dilated IVC was also demonstrated. The patient has been on anticoagulation therapy with close monitoring by both cardiovascular and hematology units of the hospital. We report the radiologic findings of this case due to its unique nature and incidental presentation in the index case.

Key words: Malformation, Thrombosis, Venous, Inferior vena cava

INTRODUCTION

The complicated evolutionary process with respect to the embryologic origin of the inferior vena cava (IVC) often leads to anatomic malformation that impedes vein drainage and favors the development of thrombosis.[1,2] It is estimated that 16.2% of patients <50 years of age with iliac vein thrombosis have a coexisting IVC malformation.[1] IVC malformation is reported to have equal gender predilection.[1] The most common malformation is hypoplasia of the pre-renal and renal segment, followed by those in the post-renal segment and presence of double IVC.[1] Deep venous thrombosis is an illness of clinical interest due to the associated morbidity and mortality and its social and health-care consequences.[1] The incidence of deep venous thrombosis in Western populations is about 1 in 1000 individuals per annum.[3,4] This, however, varies with age, and in adults aged between 20 and 40 years, the incidence is 10 times lower.[3,5] The etiology of venous thromboembolism in young individuals is often associated with hereditary coagulation abnormalities, immunologic diseases, and neoplasia, however, with the emergence of radiologic facilities such as computed tomography scans and venography which have been able to identify vena cava malformations as a new etiologic factor worthy of consideration.[3,6] IVC malformation has been analyzed as having an influence as a thrombotic risk factor on causing retrograde stasis of blood flow and alone can provoke deep venous thrombosis.[1,6] Anomalies involving the IVC should be suspected in individuals presenting with chronic pain,

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pulmonary emboli, and thrombosis of the deep veins.[7] In most literatures,[8-10] IVC anomalies are currently diagnosed following computed tomography and sonography of the abdomen in most patients with features of pulmonary emboli and deep venous thrombosis.

CASE REPORT

This is a 25-year-old woman with a history of four deliveries and all alive; P 4+0 who was referred to radiology department for an abdominopelvic ultrasound scan on account of abdominopelvic discomfort with minimal leg swelling more on the left for about 2 weeks. She delivered a child about 2 weeks before onset of these symptoms. The patient appeared stable, not pale, or dehydrated and oriented in time, place, and person but had pitting pedal edema bilaterally. The patient has a normal blood pressure and normal pulse rate with a stable respiratory rate. The abdominopelvic ultrasound scan showed a dilated pelvic mass that seems continuous cranially with the IVC, the IVC appeared dilated in its entire course. The left renal vein (LRV) was also dilated [Figures 1 and 2]. Some vascular wall thickness and poor compressibility with presence of a thrombus was demonstrated in the left iliac vein following Doppler interrogation. The computed tomographic angiogram showed dilated left iliac veins with an area of filling defect, a hypoplastic right common iliac vein that abruptly terminated. The IVC appeared dilated in its entire course up to the heart. The LRV also appeared dilated [Figures 3-6]. A diagnosis of a hypoplastic right iliac vein with a dilated IVC coexisting with thrombi was made. The patient as at the time of this report is currently on anticoagulant therapy and being managed by the cardiovascular and hematology unit of the hospital.

DISCUSSION

Anomalies of the IVC with its variations were described in 1793 in a male infant with associated disorders such as polysplenia and dextrocardia,[7,11,12] the index case, however, happens to be a young female adult aged 25 years with no

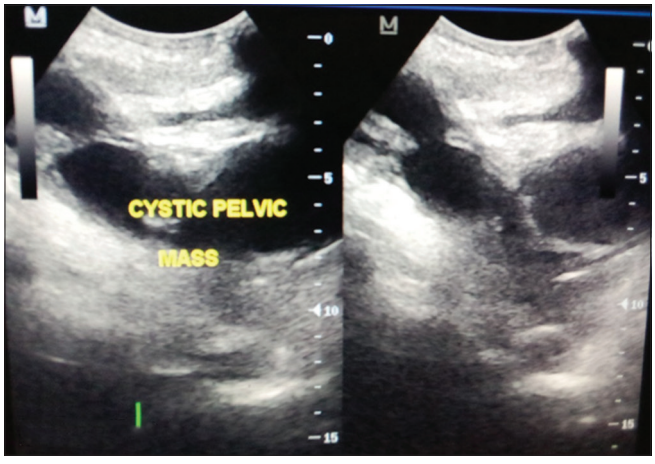

Figure 1: A pelvic sonogram showing dilated iliac veins mimicking cystic pelvic mass

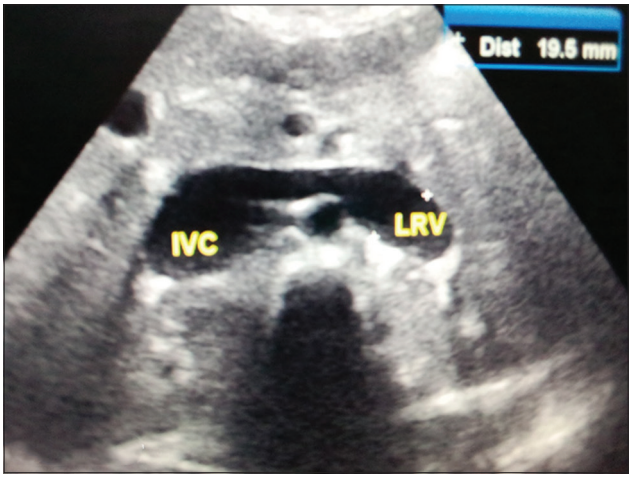

Figure 2: An abdominal ultrasonogram showing a dilated (inferior vena cava [IVC]) inferior vena cava (labeled; IVC) and left renal vein (labeled; LRV)

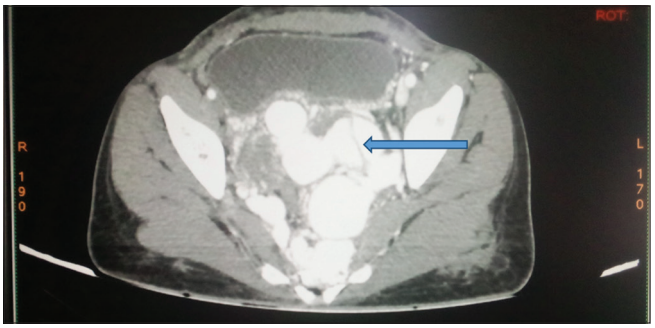

Figure 3: A computed tomographic angiogram axial view at the level of the pelvic cavity showing contrast opacified dilated and tortuous left iliac veins with a dividing linear septum appearing as a linear filling defect; left blue arrow

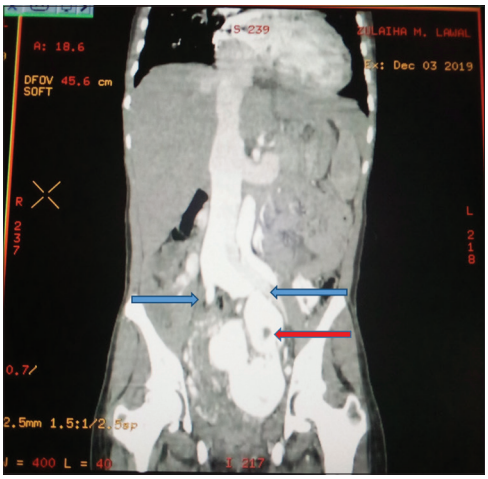

Figure 4: A computed tomographic angiogram of the abdomen and pelvis coronal plane showing a hypoplastic right common iliac vein (right blue arrow), dilated and tortuous left common (left blue arrow), internal and external iliac veins, an oval filling defect (left red arrow), areas of annular narrowing, and dilated inferior vena cava

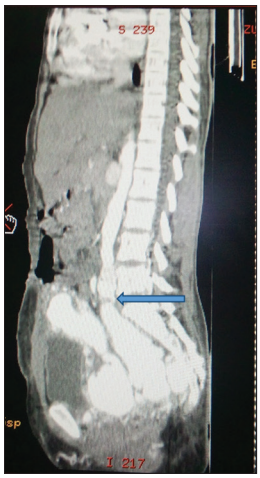

Figure 5: A sagittal computed tomographic angiogram showing dilated inferior vena cava, dilated pelvic veins with areas of narrowing, and filling defect (left blue arrow)

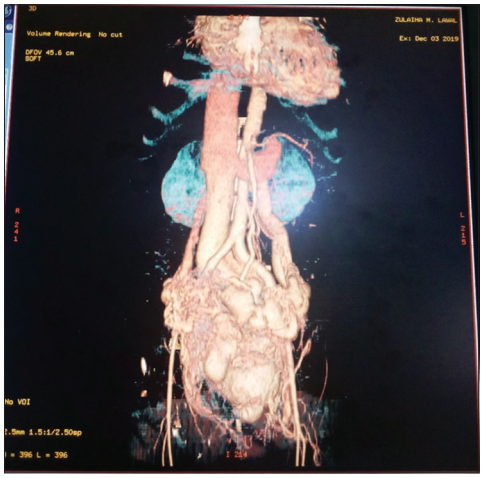

Figure 6: An maximum intensity projection image of a computed tomographic angiogram showing dilated inferior vena cava and its left tributaries

associated congenital polysplenia and dextrocardia invariant to these literatures. There is an estimation that about 16.2% of patients <50 years of age with iliac vein thrombosis have a coexisting IVC malformation,[1] the index case happens to be <50 years of age and has a coexisting thrombus in the region of the left iliac vein that appeared tortuous on both ultrasound and computed angiogram, thereby conforming to this literature. The most common malformations are hypoplasia of the pre-renal and renal segment, followed by those in the post-renal segment and presence of double IVC.[1] The index case had hypoplasia of the right common iliac vein, marked dilatation, and tortuosity of the left iliac vein and its tributaries; these are regarded as the infrarenal segments of the IVC; thereby conforming to this literature. Anomalies of the IVC are usually diagnosed mainly by imaging, especially the non-invasive forms such as ultrasonography, angiography, computed tomographic, and magnetic resonance angiography.[7,11,13] The case under review was diagnosed following an abdominopelvic ultrasonography and computed tomographic angiography, thereby conforming to these literatures. IVC malformations are also considered as possible risk factors for deep venous thrombosis, especially in the young adults,[6,14-17] the index case is not an exception, the patient is young with IVC malformations and areas of filling defects; thrombi, especially in the tortuous left iliac venous region, thereby conforming to these literatures. Anatomically, the IVC is normally composed of four segments which include the hepatic, suprarenal, renal, and infrarenal segments (in a caudad direction).[14] The index case had affectation of all the segments of the IVC; there is dilatation of the hepatic and suprarenal segments of the IVC, dilatation of the renal segment, tortuosity, dilatation with areas of narrowing affecting the left common iliac, and the external iliac veins which are the infrarenal segments and hypoplastic right common iliac vein which also is in the infrarenal segment of the IVC. The management of IVC malformation is often multidisciplinary as documented in most literatures,[1-17] the index case is been managed with a multidisciplinary approach comprising a team of physicians, surgeons, hematologist, and radiologist.

CONCLUSION

Cystic pelvic masses should further be imaged by basic non-invasive radiologic modalities such as ultrasonography and computed tomography to rule out vascular malformation like IVC malformation with subsequent institution of management to avoid thromboembolism which is often life threatening.

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