Absent Infra-renal Inferior Vena Cava Presenting with Varicose Veins

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Abstract

Inferior vena cava (IVC) anomalies were rare and usually asymptomatic. Among these, anomalies absence of infra-renal IVC is the rarest anomaly. Absence of infra-renal IVC may present with symptoms of venous insufficiency and idiopathic deep vein thrombosis. Contrast enhanced CT and MRI abdomen play crucial role in diagnosing these anomalies. These patients can be managed conservatively or by venous bypass. Identification of these anomalies is important to avoid surgeries for varicose veins.

Introduction

Inferior vena cava (IVC) anomalies are etiologically either true embryonic anomalies or the result of perinatal thrombosis. These anomalies are left IVC, double IVC, absent infra renal IVC, circumaortic left renal vein, retro aortic left renal vein, retrocaval ureter and interruption of IVC with azygos and hemiazygos continuation. Among these, the absence of infra renal IVC is the rarest. Absent infra renal IVC usually presents with venous insufficiency and idiopathic deep vein thrombosis. Contrast enhanced CT and MRI abdomen are diagnostic tools.

Case Report

A 70 yrs old female patient presented with complaints of dull aching pain in both legs. Physical examination shows lower limb varicose veins and abdominal wall collaterals. Duplex scan of lower limbs shows superficial varicose veins in both lower limbs with dilated great saphenous vein in right lower limb secondary to incompetent saphenofemoral junction; also dilated great saphenous vein in left leg secondary to mid calf perforator incompetence, dilated left short saphenous vein with incompetent saphenopopliteal junction and no evidence of deep vein thrombosis. In order to evaluate lower limb varicosities and abdominal wall collaterals contrast enhanced CT abdomen (Figures 1 and 2) was done, and it interestingly showed the absence of infra renal IVC and both common iliac veins with multiple collaterals in lower pelvis, para pelvic gutter and along para vertebral region draining into prominent azygos and hemi azygous veins. Another interesting finding in this case was relatively prominence of right gonadal vein along with pelvic collaterals draining into the right renal vein. Thus the final diagnosis of absent infra renal IVC causing lower limb varicosities and abdominal wall collaterals was made.

Discussion

In 1793, Abernethy first reported IVC anomalies. IVC is formed from three paired veins. These are posterior cardinal veins, supra cardinal veins and sub cardinal veins. IVC has four segments: hepatic, supra renal, renal and infra renal. Hepatic segment is derived from vitelline vein, supra renal segment from right sub cardinal vein, renal from supra cardinal and post sub cardinal anastomosis and infra renal segment from right supra cardinal vein.¹

Classification of IVC anomalies is based on the embryonic vein from which it is derived. Left IVC, double IVC and absent infra renal IVC were anomalies of supra cardinal veins. Retro aortic left renal vein, circumaortic left renal vein were anomalies of aortic collar. Anomaly of posterior cardinal veins is retrocaval ureter. And the anomalies derived from sub cardinal veins is interruption of the IVC with azygos and hemiazygos continuation.²

Absence of infra renal IVC with preserved supra renal segment is a rare anomaly. And it is due to developmental failure of posterior cardinal veins and supra cardinal veins. Patient with absence of infra renal IVC may present with symptoms of lower
limbs varices, collaterals and idiopathic deep vein thrombosis. In the present case also patient presented with lower limb varicose veins and abdominal wall collaterals.

Contrast enhanced CT and MRI abdomen with 3D reconstructions like maximum intensity projection, multi planar reconstruction and volume rendering will help in the diagnosis of IVC anomalies.

These patients are usually managed conservatively. Anticoagulation is the standard treatment for patients with deep vein thrombosis. If conservative treatment fails, venous bypass graft may be considered.

**Conclusion**

Absent infra renal IVC is manifested by symptoms of venous insufficiency and idiopathic deep vein thrombosis. So, it is important to be aware of such a condition in the patients presenting with lower limb varicose veins and abdominal wall collaterals for the selection of appropriate management strategies. Contrast enhanced CT or MRI abdomen are diagnostic imaging tools. These patients are usually managed conservatively or by venous bypass graft if conservative treatment fails. Identification of these anomalies is important to avoid unnecessary surgeries in varicose veins.

**References**