We present a case with congenital absence of the infrarenal portion of inferior vena cava and iliac venous system, showing unusual venous collaterals including the left ovarian venous collateral via parametrial venous complex, and a mesenteric-periureteric venous connection. The venous collateral pathways were demonstrated by computed tomography and venography.

**Index Word**: Venae cavae, abnormalities

Obstruction of the inferior vena cava (IVC) is not an uncommon condition, and major collateral pathways have been well established(1-5). The site of obstruction is usually in the infrarenal segment, and the major causes are thrombus, tumor extension, and extrinsic compression. However, congenital absence of the infrarenal segment of the IVC is extremely rare. We report a case of congenital absence of the infrarenal IVC and the iliac venous system, which has the left ovarian venous collateral pathway through the parametrial venous complex as a major collateral channel. To our knowledge this is the first report describing the features of this abnormality.

**CASE REPORT**

A 53-year-old woman complained of lower abdominal discomfort. She did not have any significant factors in her medical history, and her menstrual cycles has been regular. She had delivered three children without any obstetrical problems, such as bleeding and edema. On gynecologic examination, multilobar soft masses were palpated in both adnexal areas, and a tentative diagnosis was an ovarian tumor.

Computed tomography showed strongly enhanced, multilobar, conglomerated, tortuous masses in both parametrial spaces, suggesting vascular structures (Fig. 1a). The uterus was enlarged with strong myometrial enhancement. The infrarenal segment of the IVC and bilateral iliac veins were not traceable, while bilateral femoral veins were noted intact. Markedly dilated left ovarian vein ran from dilated pelvic venous complex to the left renal vein along the lateral border of the left psoas muscle(Fig. 1b). Bilateral periureteral veins were also dilated along the paraaortic space. Multiple collateral vessels were seen in the mesentry along the ascending colon, and drained to the right periureteric vein(Fig. 1b). The vessels of the abdominal wall and the ascending lumbar veins were not remarkable.

Following bilateral femoral venography showed complete interruption of bilateral external iliac veins at the level of the inguinal ligament. On right femoral venography, the blood from the right lower extremity was drained to the suprarenal IVC via the right periureteric vein and a mesenteric-periureteric venous connection, and the left ovarian vein via dilated parametrial venous plexus(Fig. 1c, 1d). On the left femoral venography, the blood was drained to the left ovarian vein and the left periureteric vein (Fig. 1e). Dilated left ovarian vein and periureteric vein were drained to the left renal vein side by side. Dilated right periureteric vein was drained to IVC directly at the level of the right renal vein. The left renal vein was dilated due to increased inflow from the left ovarian vein, but the right renal vein and the suprarenal portion of IVC were normal(Fig. 1f).

**DISCUSSION**

Obstruction of infrarenal segment of the IVC is not an uncommon condition, and may result from a variety of intrinsic and extrinsic factors(1-5). The most common cause of infrarenal IVC obstruction is propagated thrombus from the lower limbs, pelvic or renal vein. Other causes include direct extension of a tumor, and extrinsic compression by adjacent enlarged lymph nodes.
node or tumor(1-5). However, congenital absence of the IVC is very rare, and is usually accompanied with a cardiac anomaly(6). Our case showed neither a deep vein thrombosis nor cardiac anomaly. In general, collateral pathways in infrarenal IVC obstruction are categorized into four major channels: deep, intermediate, portal, and superficial channel(1-7). In our case, the major collateral pathway was the intermediate channel, that is, the left ovarian venous pathway through the parametral venous complex, and the periureteric pathway. Other major collateral channels were not demonstrated because the interruption extended to the both iliac venous system. The mesenteric-periureteric venous connection we observed was a very interesting additional collateral channel. It is thought that the derivatives of the subcardinal veins—the suprarenal, gonadal, ureteric, periureteric, and paraaortic veins—may communicate with veins of the distal ileum and the ascending colon. Embryologically the distal ileum and the ascending colon are in communication with the subcardinal derivatives. It is likely therefore, that the adult communications are the persistent embryonic remnants(2).

When the ovarian-parametrial veins are remarkably dilated as collaterals of infrarenal IVC obstruction, a dilated pelvic venous plexus can be misdiagnosed as a gynecologic tumor.

Fig. 1. a. Enhanced pelvic CT scan shows tortuous parametrial veous complex (arrow) and enlarged uterus (U).
b. Enhanced CT scan shows absence of infrarenal IVC. Markedly dilated left ovarian vein (black arrow) and multiple collateral vessels (white arrows) in the mesentery along the ascending colon are demonstrated.
c, d. The right femoral venography shows the right periureteric vein (black arrows), the mesenteric collateral vessels (open arrows), and dilated left ovarian vein (large arrow) through the parametral venous plexus.
e. The left femoral venography shows dilated left ovarian vein (large arrow) and the left periureteric vein (arrow).
f. Bilateral femoral venography shows that the left ovarian vein and the left periureteral vein are drained to dilated left renal vein side by side. Suprarenal IVC is normal.
REFERENCES

5. Ferris EJ, Vittimberga FJ, Byrne JJ, Nasbith DC, Shapiro JH. The inferior vena cava after ligation and plication. Radiology 1967; 89: 1-10
## BREAST IMAGING

**Chair:** Park Chang Yoon Professor

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<td>Analyzing Mammography: Image Interpretation</td>
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<td>15:45-17:00</td>
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*Date: 1994년 6월 19일 (일) 오전 9:00 - 오후 5:00
*Place: 연세대학교의과대학 대강당
*Contact: 연세대병원 의과대학 대강당
*Credit: 6점
*Program Director: 이종태교수 (연세의대)
*Program Coordinator: 오기근 교수 (연세의대)