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Bilateral Aberrant Gonadal Arterıes Supplying A Uterıne Avm With Aneurysm Formation On One Of The Feeder: Mdct Findings

Bilateral Aberran Gonadal Arterlerin Beslediği Uterin Avm İle Birlikte Besleyici Arterde Anevrizma Formasyonu: Mdbt Bulguları

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ABSTRACT

Aberrant origin and aneurysm formation of the gonadal arteries as well as the gonadal arterial supply to a uterine AVM is an extremely rare condition. We successfully demonstrated all the above mentioned vascular pathologies with multidetector-row computed tomography in a 71 years old patient who presented with suprapubic pelvic pain.
Key Words: Uterus, Arteriovenous malformation, gonadal artery, multidetector computed tomography

ÖZET

Gonadal arterlerin anormal orjini ve anevrizma oluşumu, gonadal arterlerin uterin AVM'yi beslemesi kadar nadir bir durumdur. Biz 71 yaşında suprapubik pelvik ağrılı bir hastada yukarıda adı geçen vasküler patolojileri, multidedektör bilgisayarlı tomografi ile başarılı bir şekilde gösterdik.
Anahtar Kelimeler: Uterus, Arteriovenöz malformasyon, gonadal arter, multidedektör bilgisayarlı tomografi

INTRODUCTION

Uterine arteriovenous malformation (AVM) is rarely seen but well-known disorder of pelvic vessels (1). Uterine AVMs can be classified as congenital or acquired. AVMs are composed of a tangle of vessels of different sizes with the histologic characteristics of both arteries and veins but without evidence of intervening capillary network(2). Usually the arterial supply to the uterine AVM is via the uterine artery which is the branch of the internal iliac artery. Extrauterine arterial supply to the uterine AVM has seldomly been reported (3,4).

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We report the multidetector-row computed tomography (MDCT) findings in a case with uterine AVM. The AVM had an unusual arterial supply through aberrant gonadal arteries arising from the bilateral renal arteries and an associated aneurysm formation on one of the feeder.

CASE REPORT

Seventy one years old female patient, gravida 3 para 2, presented with suprapubic dull pelvic pain. The pain was present for more than 10 years. Her medical history was unremarkable except for a hydatiform mole pregnancy which was discharged by curettage 50 years ago and an intractable vaginal bleeding 3 years ago. The intractable vaginal bleeding was controlled under general anesthesia with manual suprapubic and vaginal compression. Further investigation was not performed since the bleeding did not recur.

On her last admission a pelvic ultrasound examination was requested. The US examination revealed multiple anechoic cystic spaces almost completely invading the uterus. Color and spectral Doppler US revealed low resistant arterial flow within these cystic spaces suggesting a uterine AVM. Intravenous contrast enhanced MDCT confirmed this diagnosis, namely the uterine AVM (Figure 1). The arterial feeders of the AVM were the bilateral uterine, gonadal and the inferior epigastric arteries (Figure 2).

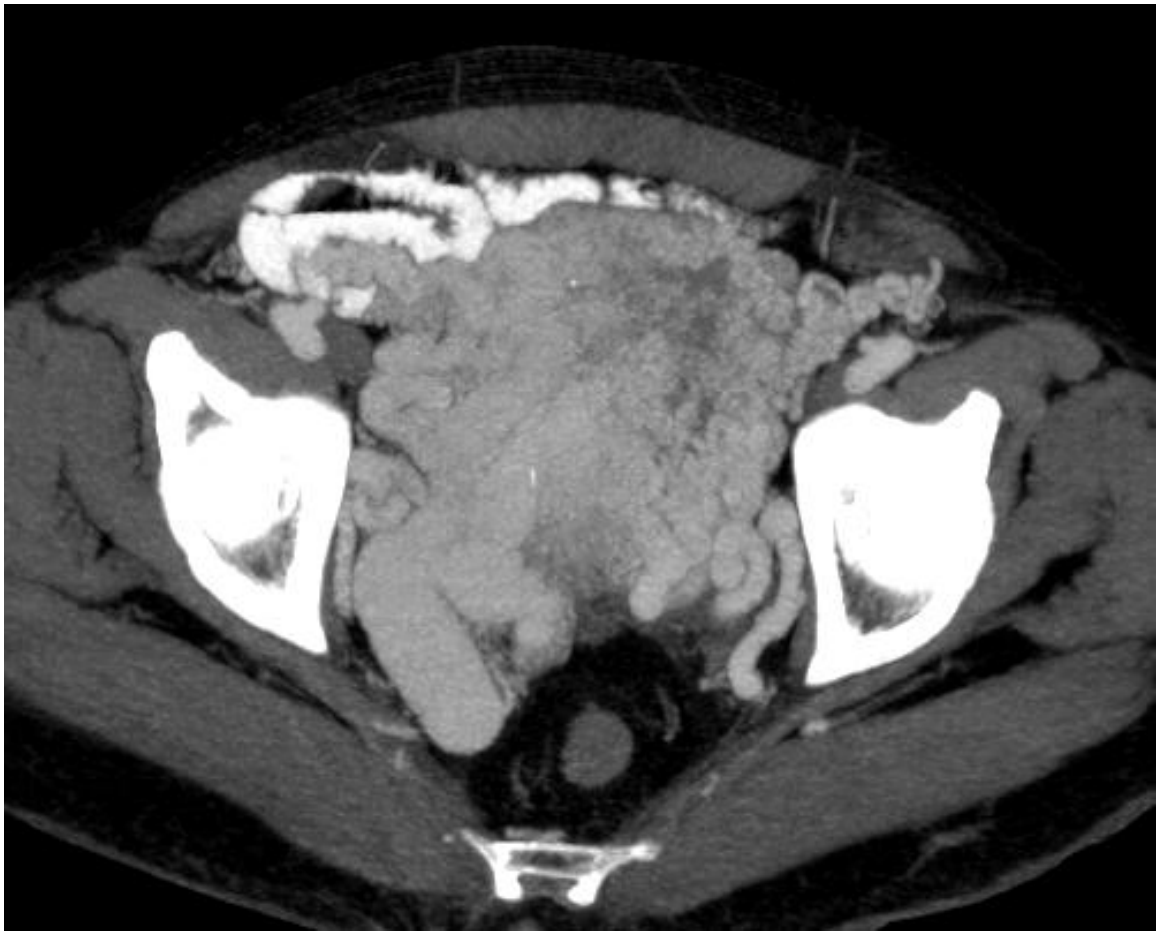

Figure 1. Intravenous contrast enhanced axial MDCT image shows an extensive uterine AVM almost completely invading the uterus.

The bilateral gonadal arteries were arising aberrantly from the proximal one third and superior part of the renal arteries. They initially possessed an ascending course and then downward to the pelvic region. The gonadal arteries were bilaterally dilated and had a tortuous course which was more obvious on the right side. The diameter of the renal artery distal to the origin of the gonadal artery was decreased on the right side. On the left side such a decrease in diameter was not observed. There was also an associated 0.5 cm in size aneurysm formation on the proximal segment of the left gonadal artery (Figure 3). The venous drainage of the AVM was to the right common iliac vein through the branches of the right internal iliac vein.

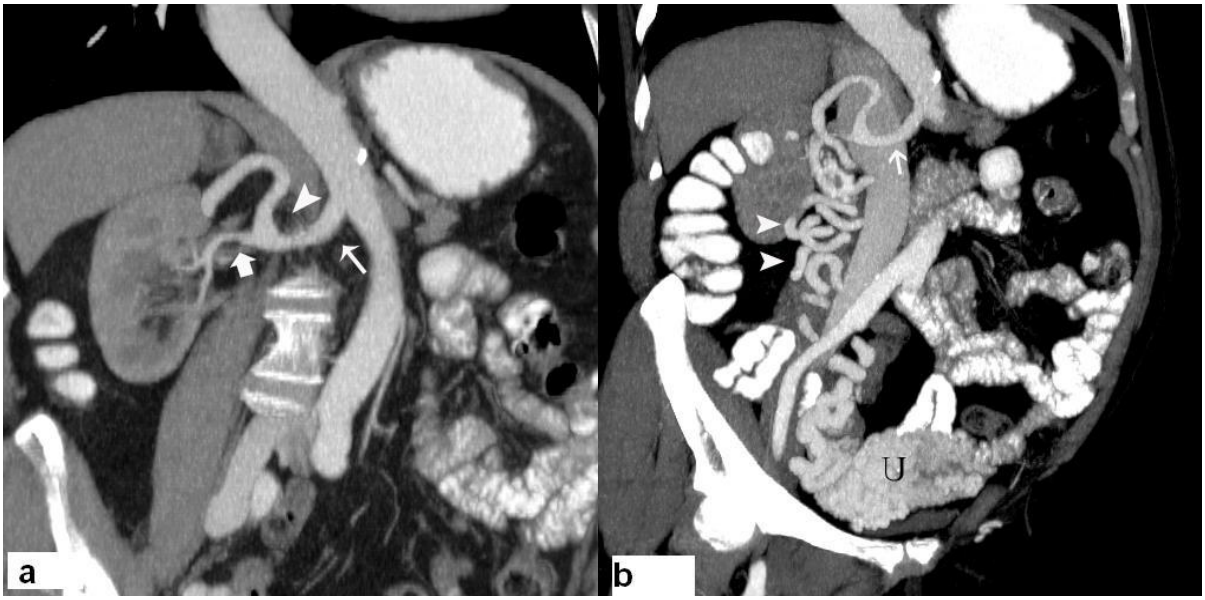

Figure 2. (a) The gonadal arteries are originating from the superior aspect of the proximal part of the renal artery on each side. On right side the diameter of the renal artery (white arrow) decreases distal to the gonadal artery (arrowhead) origin. The diameter of the proximal part of the renal artery (long white arrow) is increased. **(b)** The course of the gonadal artery (white arrowheads) from the renal artery (white arrow) to the uterine AVM (U) is clearly visualized on this image.

DISCUSSION

The gonadal arteries are simple paired structures in approximately 80%of cases. They usually arise from the ventral surface of the aorta below the origin of the renal artery. In approximately 20% of cases, one gonadal artery arises from the renal artery (5). Arterial supply to the uterus is through the uterine and the gonadal arteries. The gonadal artery especially provides 10% of the blood supply of the fundus region of the uterus (6). Given this duality of pelvic blood supply, it is not surprising that communications between uterine and ovarian arteries are present. Our case is interesting in that the arterial supply to the uterine AVM was through uterine, gonadal and epigastric arteries. When reviewing the literature we found that arterial supply to the uterine AVM was almost exclusively from the uterine arteries. Additional inferior epigastric and pudental arterial supply to the AVM was reported in a single case in one study and an additional gonadal arterial supply in another case report (3,4). In addition to the gonadal arterial supply to the AVM in our case each of the gonadal artery was arising aberrantly from the ipsilateral renal arteries.

Demonstration of the gonadal artery has gained popularity especially in patients with uterine fibroid embolization. Gonadal arterial supply has been described as a cause of clinical failure following uterine artery embolization for fibroids (6). The diameter of the gonadal artery is usually less than 1mm and rarely can be demonstrated on flush aortograms (5,6). In order to be visualized they should be dilated (at least 1.5 mm) (7). In our case we successfully demonstrated the aberrant gonadal arterial supply to the uterine AVM by MDCT.

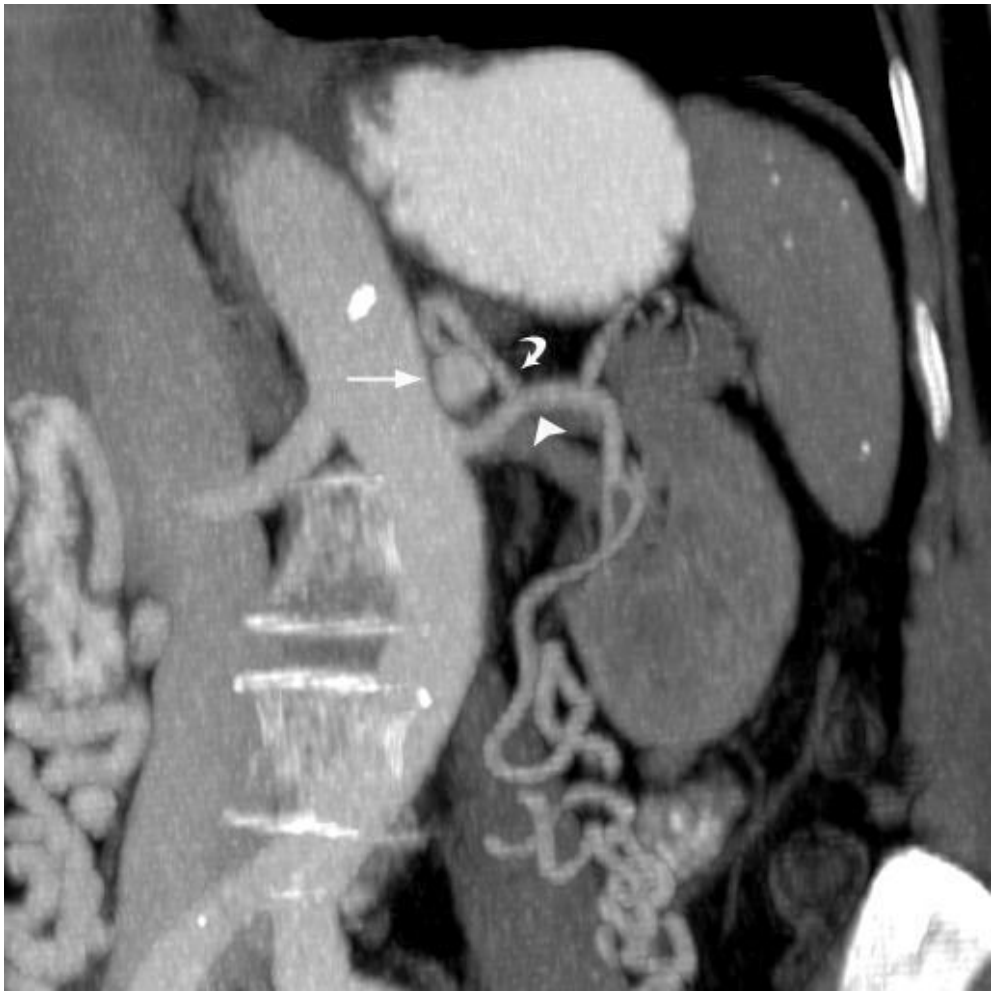

Figure 3. Oblique coronal reformatted image depicts the origin of the left gonadal artery (curved white arrow) from superior aspect of the renal artery (white arrowhead). Note the aneurysm (long white arrow) on the left gonadal artery.

Ruptured gonadal artery aneurysm is a rare cause of spontaneous retroperitoneal hematoma. In the literature gonadal artery aneurysms were presented as case reports in which all the aneurysms were ruptured and related to pregnancy (8-16). To the best of our knowledge, no case of unruptured gonadal artery aneurysm has been reported. We incidentally detected an unruptured aneurysm formation on the dilated gonadal artery in our case unrelated to pregnancy. Several mechanisms have been implicated in the formation of gonadal artery aneurysm during pregnancy. One mechanism involves hemodynamic changes associated with an increase in cardiac output and circulatory volume (15). The other mechanism involves pregnancy-related changes in the vascular wall. The first mechanism could also be applied to our case with increased vascular demand and flow due to the presence of AVM. However, the aneurysm was present on the left gonadal artery where the dilatation was less evident. In the right gonadal artery in which the dilatation was more obvious such an aneurysm formation was not present.

In conclusion, the presence of aberrant gonadal artery arising from the renal artery, gonadal arterial supply to uterine AVM, and gonadal artery aneurysm is an extremely rare condition. MDCT angiography can accurately delineate such vascular pathologies.

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