

Management of AAA and Late Type II EL in a patient with concomitant renal cell carcinoma

Report of a case and review of the literature



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Management of AAA and Late Type II in a patient with concomitant renal cell carcinoma. Report of a case and review of the literature

PURPOSE: Detection of cancer in patients with AAA complicates the treatment of both diseases. AAA associated with RN are rare, with an incidence of 0.1-3% representing a challenge in defining the surgical timing and approach. We discuss the rationale for the treatment in patients with concomitant pathologies.

CASE REPORT: A 65 years-old man was diagnosed with both AAA and Renal Cell Carcinoma. The patient underwent first EVAR followed by renal embolization and Radical Nephrectomy. Three months later a Type II Endoleak was diagnosed and treated successfully. At 1 year follow-up the patient is disease free with complete exclusion of aneurysm sac.

CONCLUSION: AAA can be successfully repaired in patients with renal neoplasm with great results, either simultaneously or in two stages. EVAR is a good alternative for such complex patients.

KEY WORDS: Aortic aneurysm, EVAR, Nephron-sparing surgery, Renal neoplasm

Introduction

Abdominal aortic aneurysm (AAA) associated with incidental Renal Cell Carcinoma (RCC) are rare, with an incidence from 0.1 to 3% and are being more detected with the increased use of more accurate non-invasive modalities such as Computerized Tomography Scan (CT-scan) ^{1,2,3,4,5}. Concomitant pathologies represent a challenge in defining the surgical timing and approach ⁶. In fact, whether to treat the lesion simultaneously or in two stages is still disputed ^{6,7}. Aortic stenting is a

good option in patients with a concomitant neoplasia ^{1,3,8}. We describe the case of a patient affected by concomitant diseases: AAA and papillary Renal Cell Carcinoma (Type I) (RCC) who underwent Endovascular Aortic Repair (EVAR) first and then Radical Nephrectomy (RN) surgery.

Case report

A 65 years-old man, with a background history of hypertension, severe dyslipidemia, chronic obstructive pulmonary disease (COPD), cardiomyopathy, smoke, and a stroke event one year before presented with abdominal and left flank pain. Ultrasound Color Doppler (USCD) showed an infrarenal AAA of 50 mm maximum diameter. The patient underwent an helical CT angiogram (CTA) that confirmed a fusiform infrarenal AAA of 50 mm with anterior mural thrombus. At CTA a 56 mm irregular, hyperdense mass on the upper part of the left

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kidney suspect to be a RCC was detected (Fig. 1). Renal biopsy was performed revealing a left papillary RCC. The patient was ASA II in accordance with the American Society of Anesthesiologist. Detailed measurements of the infrarenal neck of the AAA and the distal landing zones offered a suitable anatomy for endovascular stent graft repair. Because of his general conditions we decided to



Fig 1: CT angiogram showing a left renal 56 mm hyper-dense mass (arrow).



Fig. 2: Digital subtraction angiography performed after deployment of a bifurcated stent-graft (Excluder® - W.L.Gore & Ass.) showing correct position of the stent-graft with complete exclusion of the aneurism's sac. No endo-leak is evident.

treat the AAA first and then the RCC. After informed written consent was obtained from the patient, endovascular treatment was performed in a dedicated angiosuite with patient under local anesthesia. After surgical exposure of the right common femoral artery and percutaneous approach to the left common femoral artery a bifurcated stent-graft (23x 14x 140 mm Excluder® - W.L.Gore & Ass. ; Flagstaff-AZ USA) was deployed with the proximal end just below the origin of the renal arteries and distal extend into the common iliac artery bilaterally (Fig. 2). Left renal artery embolization was performed to minimize discomfort and post-infarction syndrome^{9,10}. The post procedure period was uneventful. After informed written consent, radical left nephrectomy was performed 2 days later with laparotomy access and transperitoneal exposure permitting to expose the great vessels. After the peritoneal cavity was entered and the intra-abdominal contents were inspected, the peritoneal reflection was incised along the line of Toldt thus mobilizing the ascending and descending colon. Renal artery was exposed and quickly clamped and ligated with 2-0 non absorbable near the origin of the aorta. Downward and lateral traction of the kidney exposed the superior vascular attachment of the tumor and the adrenal gland. After removing the specimen, the artery was tied with 1-0 synthetic absorbable suture (SAS) and reinforced with a second 1-0 SAS. The vein was then ligated with a 1-0 SAS. The Gerota fascia was afterwards dissected away from the surrounding structures using sharp and blunt dissections. The ureter and the gonadal veins were mobilized to the level of the bifurcation of the aorta and lifted into the wound. Each was clamped and ligated with 0 silk ligatures. The splenocolic and lienophrenic attachments were obviously divided to avoid injury of the spleen. The kidney was removed from the retroperitoneum and mesocolon was closed to prevent internal



Fig. 3: CTA performed at 3 months follow-up after nephrectomy showing Type II endo-leak (arrow) furnished by right lumbar artery and increased AAA sac (53mm).

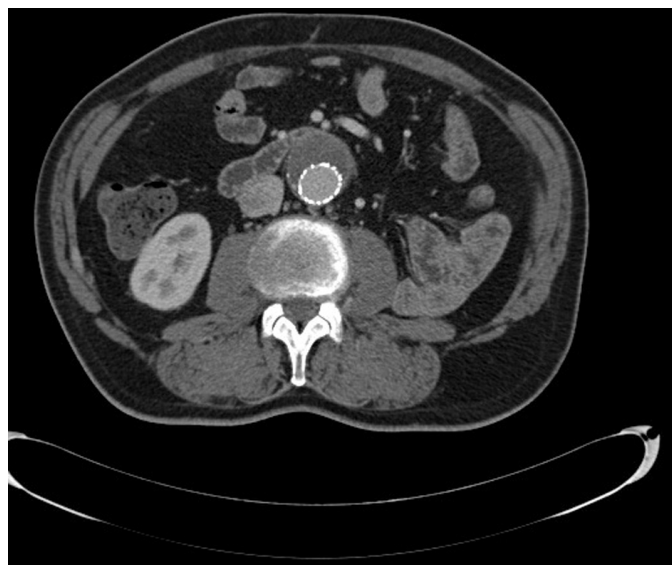


Fig. 4: CTA performed at 9 months follow-up after embolization of the endo-leak with complete exclusion of the aneurism's sac (53mm).

hernias. Drains were left to anticipate later bleeding from spasmic small vessels. The patient was moved to the intensive care unit for overnight observation.

Postoperative course was uneventful, and the patient was discharged on the 10th postoperative day with a normal serum creatinine value.

Hystological definitive result was for clear cell carcinoma type I, pT1bNxMx (UICC2002 Classification). One month after postoperative CTA proved the right positioning of the stent graft and complete exclusion of the aneurysm's sac.

However, a 3-month follow-up CTA showed a type II endo-leak from the lumbar artery (Fig. 3). Nine months later, USCD showed the persistence of endo-leak and the increased diameter (53 mm) of the aneurysm's sac (Fig. 4).

Patient underwent an angiogram that confirmed the Type II endo-leak arising from a right lumbar artery. Selective catheterization of the right internal iliac artery was done with a microcatheter (Progreat 2.7 Fr- Terumo, Tokio, Japan), and multiple microcoils were deployed with complete exclusion of the leak.

Resolution of the aneurysm and the absence of endoleak with no recurrency of the tumor were all confirmed at USCD at 6 month and 1 year follow-up.

Discussion

AAA associated with RCC is rare and this association is about 0.1-3% for kidney neoplasm^{4,5}. In the study of Veraldi et al. 913 AAA patients underwent surgical or endovascular repair and in 61 cases (6.7%) an association with a solid neoplasm was found; in 12 cases (1.3%) the neoplasm was a RCC⁵. The management of con-

comitant AAA and intra-abdominal malignancies is still disputed; whether to treat the lesions simultaneously or as staged procedures being the main controversy^{4,7}.

Surgical management of RN is based on tumor size, malignancy of the lesion, location and technical feasibility, presence or absence of renal vein involvement. Radical nephrectomy is the treatment of choice for localized renal RCC⁵. Approximately 20% of patients undergoing radical nephrectomy develop postoperative complications, and the operative mortality rate is approximately 2%^{1,5}. Intraoperative complications include injury to any gastrointestinal organs (eg, liver, spleen, pancreas) or to any major blood vessels (eg, aorta, inferior vena cava). Pleural injuries can result in pneumothorax. Postoperative complications include secondary hemorrhage from the renal pedicle or any unrecognized injury, atelectasis, ileus, both superficial and deep wound infections, temporary or permanent renal failure, and incisional hernia. Other well-recognized systemic complications include myocardial infarction, congestive heart failure, pulmonary embolism, cerebrovascular accident, pneumonia, and thrombophlebitis^{1,5,7}.

The surgical approach is controversial because of the risk of metastasis, aneurysm rupture⁷ and graft contamination in simultaneous procedures^{13,7} even if some Authors^{6,11,13} showed no significant differences in outcomes and no evidence of graft infection or recurrent disease. Hafez et al.² showed no significant differences between the two approaches although long-term survival was higher in patients undergoing simultaneous procedures. Aortic stenting is an evolving technique and even if long-term results for EV repair of AAA with concomitant neoplasia is controversial^{14,15} it remains a valid options for this kind of patients^{8,13,16}.

EVAR approach has dramatically modified AAA treatment especially for patients with poor general health conditions⁵. While combined aneurysm repair and nephrectomy appears to be the treatment of choice in selected patients avoiding a second major abdominal procedure and eliminating the risk of postoperative aortic aneurysm rupture^{4,5}, endo-grafting followed shortly thereafter by nephrectomy should be the treatment of choice in high-risk patients when feasible. In fact, the short delay due to aortic surgery does not worsen the cancer prognosis, but the risk of AAA rupture is increased when malignancy is resected first^{5,12}.

As a result, the sequence and the timing depends on surgeon's ability, clinical presentation of the patient and comorbid disease. In our case the patient underwent first EVAR and then Radical nephrectomy because of his general conditions.

Conclusion

Concomitant AAA and abdominal malignancy can be treated either simultaneously or in two stages. The lesion

that pose the greater threat to the patient, usually the AAA, should be operated first. EVAR due to its less invasiveness is an attractive strategy in these complex patients^{2,7}. RN should be the treatment of choice in patients with a normal opposite kidney and tumor size > 4cm. In patients with moderate risks factor the early postoperative outcomes after endovascular approach seems to be slightly superior as compared to open surgery¹⁷.

Riassunto

INTRODUZIONE: Gli aneurismi dell'aorta addominale (AAA) associati a Cancro del Rene sono rari, rappresentando circa il 0,1-3% di tutti i casi di AAA associati a Neoplasie addominali.

Il trattamento di tale patologie rappresenta una sfida per quanto riguarda l'approccio e il timing chirurgico.

CASE REPORT: Presentiamo il caso di un paziente di 65 anni con diagnosi di aneurisma dell'aorta addominale associato a cancro del rene. Il paziente è stato sottoposto a trattamento con EVAR e successivamente a nefrectomia radicale previa embolizzazione dell'arteria renale. Un Endoleak di Tipo II è stato diagnosticato e trattato con successo un mese dopo. A distanza di 1 anno, il paziente è in buone condizioni generali, senza recidiva di malattia, e il controllo Tac mostrava completa esclusione del sacco aneurismatico.

CONCLUSIONE: Gli AAA possono essere trattati con successo in paziente con concomitante neoplasia del rene, sia simultaneamente, sia in due fasi. Tuttavia il trattamento con EVAR rappresenta una buona alternativa in questi pazienti complessi. L'esecuzione di Angio-Tc di routine dopo interventi di EVAR è doveroso.

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