

Warfarin-induced bilateral renal hematoma causing acute renal failure

Warfarine bağlı ikitarafli hemotomun neden olduđu akut böbrek yetersizliđi

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Summary – Acute renal failure due to bilateral hematoma is a rare complication of anticoagulant warfarin therapy. A 43-year-old man presented with complaints of hematuria and abdominal pain. He had been receiving warfarin for six years, after placement of an aortic valve prosthesis. One week prior to admission, he sustained a urinary tract infection which was treated with third-generation cephalosporin and indomethacin. His serum creatinine level was 1.8 mg/dl with an INR of 15. Three days later, he developed anuria and was treated with hemodialysis. Renal ultrasonography disclosed moderate bilateral hydronephrosis. Computed tomography without contrast enhancement showed bilateral extensive hyperdense thickening of the renal and ureteral walls and high-attenuation areas. Conservative treatment was preferred and diuresis resumed spontaneously, lumbar pain disappeared, and serum creatinine level returned to normal. One month later, renal computed tomography was found normal.

Özet – Böbreklerde ikitarafli hematoma bađlı akut böbrek yetersizliđi antikoagulanlardan warfarin kullanımının nadir bir komplikasyonudur. Kırk üç yaşında erkek hasta karın ağrısı ve hematuri yakınmalarıyla başvurdu. Hasta, aort kapak deđişiminden dolayı altı yıldır warfarin kullanmaktaydı. Başvurudan bir hafta önce, idrar yolu enfeksiyonu nedeniyle üçüncü kuşak sefalosporin ve indometazin kullanmaya başlamıştı. Serum kreatinin düzeyi 1.8 mgr/dl, INR'si 15 idi. Üç gün sonra hastada anüri gelişti ve hemodiyalize başlandı. Renal ultrasonda orta derecede ikitarafli hidronefroz görüldü. Kontrastsız bilgisayarlı tomografide böbrek ve üreter duvarlarında ikitarafli, yaygın hiperdens kalınlaşma ve ileri derecede sönükleşme alanları görüldü. Konservatif tedavi tercih edildi ve hastanın idrar çıkarması kendiliğinden tekrar başladı, bel ağrısı kayboldu ve serum kreatinin düzeyi normale döndü. Bir ay sonra çekilen bilgisayarlı tomografide böbrekler normal bulundu.

Reversible acute renal failure due to obstructiveuropathy is a rare complication of oral anticoagulant therapy. Diagnosis should be made promptly by a computed tomography scan with cessation of anticoagulants. Conservative treatment is preferred.^[1,2] We present a patient who developed transient obstructive ARF due to bilateral renal and ureteral hemorrhage during oral anticoagulation.

CASE REPORT

A 43-year-old man presented with complaints of hematuria and abdominal pain. He had been on warfarin therapy for six years (7.5 mg/day for the past three months), after placement of an aortic valve prosthesis.

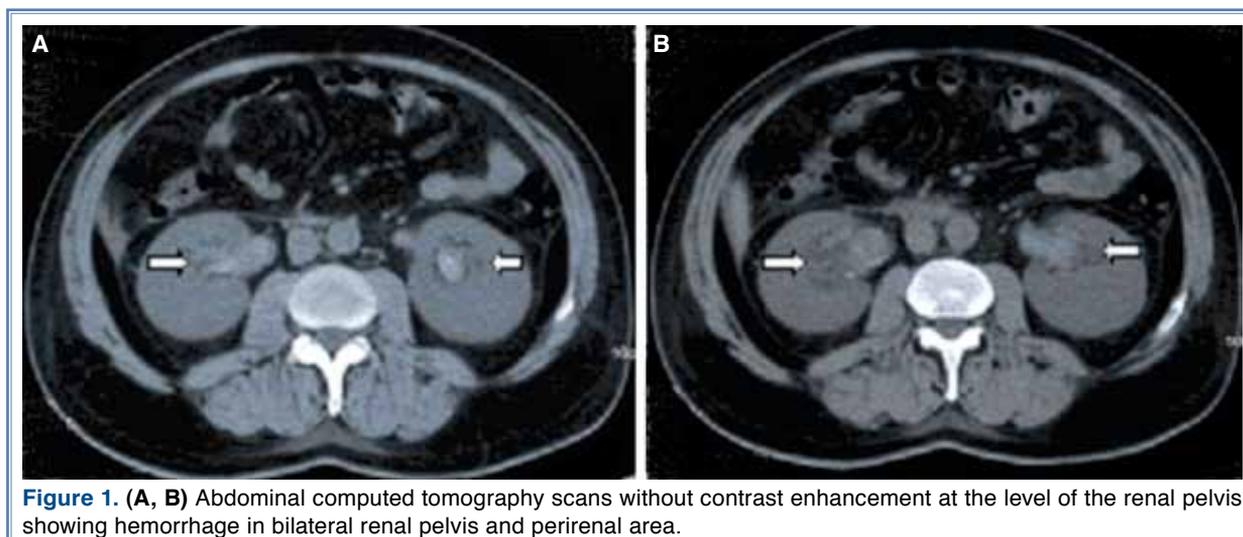
One week prior to admission, he had urinary tract infection which was treated with third-generation cephalosporin and indomethacin. Physical examination showed abdominal rebound tenderness and findings of the other systems were normal. Laboratory results were as follows: serum creatinine 1.8 mg/dl, hematocrit 31.2%, glucose 90 mg/dl, and INR 15. The patient was hematuric. Warfarin was discontinued immediately. Two units of fresh frozen plasma and vitamin K (20 mg) were given. Three days later, he developed lumbar pain and oliguria, at which time serum creatinine was 3.8 mg/dl, INR was 7, and hematocrit decreased to 28%. He had mild proteinuria and

Abbreviations:

ARF Acute renal failure
CT Computed tomography

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hematuria. In hematological analysis, concentrations of protein C, protein S, and fibrinogen were normal. The patient was taken to coronary intensive care unit. Three days later, he was anuric and was treated with hemodialysis. Initial renal ultrasonogram was normal, but renal ultrasound performed three days later showed moderate bilateral hydronephrosis. A CT scan without contrast enhancement showed enlarged kidneys, extensive hyperdense thickening of the renal and ureteral walls, and high-attenuation areas (Fig. 1a, b). Six days later, diuresis resumed and hemorrhage recovered spontaneously. The patient developed ventricular fibrillation and was defibrillated with 360 J. Potassium level was 3 mmol/l due to the polyuric phase of ARF and was replaced. Lumbar pain disappeared and serum creatinine level returned to normal (0.8 mg/dl). One month later, renal CT was normal.

DISCUSSION

Patients on anticoagulation therapy may develop urologic complications, the most common being hematuria.^[3] Other less common but more severe complications are spontaneous hemorrhages arising from urological structures such as spontaneous perirenal hematoma, or from extraurological structures such as the iliac muscle. Spontaneous hematoma around the urinary tract may occur at several locations resulting from retroperitoneal, renal subcapsular, intraparenchymal, perinephritic, or urothelial hemorrhages.^[3] Suburothelial and renal sinus hemorrhage occur most commonly in anticoagulated patients.^[2] Acute renal failure due to bilateral renal pelvis and ureteral hematoma is a rare complication of anticoagulant therapy.

Retroperitoneal hematoma responsible for ureteral compression is uncommon and exceptionally leads to bilateral ureteral obstruction and ARF. Submucosal hemorrhage of one ureter without ARF has been anecdotally reported.^[4] In our case, transient obstructive ARF developed due to submucosal hemorrhage of the ureters and bilateral renal pelvis. Hematoma may be associated with renal pathologies, most often being carcinoma or angiomyolipoma. The most common cause of spontaneous perirenal hemorrhage is a renal tumor, and approximately 50% of these tumors are malignant.^[5] The mechanism of bleeding is poorly understood. Abdominal pain is a common complaint in patients with renal hematoma due to intraluminal ureteral blood clot formation and to intrarenal or perirenal hematomas.^[6]

Ultrasonographic examination is extremely valuable for identification and demonstration of abnormal renal and perirenal fluid collection. Computed tomography should be performed to establish the diagnosis if there is any abnormal finding on ultrasonography.^[7] Unenhanced CT may show recent renal hemorrhage which is characterized by high-attenuation areas.

Conservative approach may be adopted and the patient followed-up with serial CT scans. Prognosis is usually excellent with spontaneous regression. Very rarely, surgical management may be necessary. Conservative treatment was preferred in our patient.

Many drugs may enhance oral anticoagulant activity, including cephalosporins and indomethacin. Warfarin toxicity or overanticoagulation is a common problem and is usually the result of changes in warfarin therapy or interaction with other drugs. The

anticoagulation effect of warfarin is augmented by second- and third-generation cephalosporins, through inhibition of cyclic vitamin K interconversion. Drugs such as aspirin and nonsteroidal anti-inflammatory drugs increase the risk for warfarin-associated bleeding by inhibiting platelet function. There is a strong relationship between nonsteroidal anti-inflammatory drugs and warfarin-related bleeding, with the relative risk ranging from 3 to 6.^[8]

In conclusion, patients receiving oral anticoagulant therapy may develop flank pain and gross hematuria. These symptoms usually arise from intraluminal ureteral blood clot formation, and to intrarenal and perirenal hematomas, resulting in ARF. Diagnosis should be promptly made by a CT scan. As hemorrhages due to overanticoagulation can be completely and immediately reversed by infusion of fresh frozen plasma,^[9] conservative treatment is the first choice, and prognosis is good when it is diagnosed early.

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Key words: Acute kidney injury/etiology; anticoagulants/adverse effects; hemorrhage/etiology; tomography, X-ray computed; warfarin/adverse effects.

Anahtar sözcükler: Akut böbrek hasarı/etiyoloji; antikoagülan/yan etki; kanama/etiyoloji; bilgisayarlı tomografi; warfarin/yan etki.