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CASE REPORT

ACUTE RENAL INFARCTION SECONDARY TO LUNG CANCER SURGERY IN AN ELDERLY PATIENT

ABSTRACT

Acute renal infarction after lung cancer surgery is very rarely reported. A 65-year-old male patient presented with acute right-sided flank and abdominal pain 11 days after lung cancer surgery. The patient had elevated white blood cell count, serum lactate dehydrogenase and glutamate pyruvate transaminase levels. Contrast-enhanced computerized tomography showed a total perfusion defect in the right kidney, which suggested renal infarction. Conservative treatment was adopted due to the failure of local intra-arterial thrombolytic therapy. He was discharged after symptoms were alleviated. Acute renal infarction should be considered in elderly patients suffering from abrupt-onset severe flank or abdominal pain after lung cancer surgery.

Key Words: Acute Kidney Injury; Lung Neoplasms; General Surgery.



OLGU SUNUMU

YAŞLI BİR HASTADA AKCİĞER KANSERİ CERRAHİSİNE İKİNCİL AKUT RENAL ENFARKTÜS

Öz

Akciğer kanseri cerrahisi sonrası akut renal enfarktüs çok nadiren bildirilen bir durumdur. Altmış beş yaşındaki erkek hasta, akciğer kanseri cerrahisinden 11 gün sonra akut sağ taraflı böğür ve karın ağrısı ile başvurdu. Hastanın beyaz kan küresi değerleri serum laktat dehidrogenaz ve glutamat piruvat transaminaz değerleri yüksekti. Kontrastlı bilgisayarlı tomografisinde sağ böbrekte renal enfarktüs düşündüren perfüzyon defekti saptandı. Hasta için, lokal intraarteryel trombolitik tedavinin başarısızlığı nedeniyle konservatif tedavi uygulandı. Hasta, semptomlar geldikten sonra taburcu edildi.

Akciğer kanseri cerrahisi sonrası ani başlayan şiddetli göğüs ya da karın ağrısı şikayeti olan yaşlı hastalarda akut renal enfarktüsü düşünülmelidir.

Anahtar Sözcükler: Akut Renal Enfarktüs; Akciğer Kanseri; Cerrahi.

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INTRODUCTION

Acute renal infarction is often overlooked, and its diagnosis is usually delayed or missed due to lack of specific clinical signs and symptoms. The main reason of acute renal infarction is renal arterial thrombosis or thromboembolism, while acute renal infarction secondary to lung cancer surgery is rarely reported. In this paper, we describe an elderly patient with acute renal infarction after lung cancer surgery.

CASE REPORT

A 65-year-old man was admitted to our department due to severe sudden-onset right sided flank and abdominal pain for 8 hours, accompanied by ardent fever ($T 39.5^{\circ}\text{C}$), nausea and vomiting. One month ago, a nodular lesion, highly likely to be a primary tumor, was detected in the upper lobe of his left lung. Lobectomy of the left upper lobe together with ipsilateral lymph node resection was successfully performed with a posterolateral incision. A cellule anaplastic carcinoma without lymph node metastases ($T_2N_0M_0$) was found. The medical history of the patient included chronic obstructive pulmonary disease and atrial fibrillation for more than 10 years, without nephrolithiasis or hyperpiesia. No medication was used for prevention of tromboembolism before surgery.

Physical examination revealed that blood pressure was 130/80 mmHg, and severe right costovertebral angle tenderness as well as upper right-sided abdominal pain was detected. Abdominal examination found no doubtful masses in the right lower quadrant, gross hematuria or dysuria. Laboratory findings showed elevated white blood cell count of $40.5 \times 10^9/\text{L}$, elevated lactate dehydrogenase (LDH) level of 6733 U/L, elevated serum glutamate-pyruvate transaminase (GPT) level of 98 U/L and normal serum creatinine level of 1.5 mg/dl. No hematuria or proteinuria was found; meanwhile, levels of sodium, potassium, creatinine were normal. Electrocardiogram showed paroxysmal atrial fibrillation. Ultrasonography showed that the right kidney was enlarged; renal blood flow disappeared totally, without calculus or hydronephrosis. Contrast-enhanced computerized tomography (CT) showed a hypodense area in the right kidney without enhancement after contrast injection, which suggested renal infarction, but no cortical rim sign was detected (Fig. 1). Renoarteriography found that right renal artery did not develop well, within which emboli were found. Local intra-arterial (IA) thrombolytic therapy was performed by selective renal angiography immediately. Recombinant tissue plasminogen activator (rt-PA) was given twice but no improvement was obtained.



Figure 1— Contrast-enhanced CT showed a hypodense area in the right kidney without enhancement after contrast injection, which suggested renal infarction. **A**, cross plane; **B**, sagittal plane

Conservative therapy with spasmolysis, anti-inflammatory drugs and analgesia was administered due to the bad physical status of the patient. Five days later, his symptoms were alleviated and serum creatinine level became normal. The patient was then discharged and warfarin 2.5 mg/day was prescribed for 6 months. During a follow-up of about 36 months after the event, serum creatinine level was normal. The patient died of the complications of lung cancer 4 years after the surgery.

DISCUSSION

Acute renal infarction is often overlooked due to its unspecific clinical presentation, so the actual incidence remains still unknown. It has been reported that the estimated incidence of acute renal infarction was no more than 0.01% both in Europe (1) and in Asia (2). Risk factors for acute renal in-



farction include atrial fibrillation, heart valve disease, mitral stenosis, injury of renal artery, heavy smoking, etc. Idiopathic renal infarction was also reported (3). Acute renal infarction after lung cancer surgery is very rarely reported.

Patients with acute renal infarction commonly present with severe sudden-onset flank or abdominal pain, fever, nausea, and vomiting (4). The diagnosis of acute renal infarction is often delayed or missed because its unspecific clinical presentations usually suggest other common diseases including nephric colic, nephropylitis, renal carcinoma, gastritis, myocardial infarction. etc. Laboratory findings may show elevated serum LDH, elevated white blood cell count, and hematuria, but there is lack of laboratory examinations that have a clinically acceptable specificity for diagnosis of acute renal infarction. Serum LDH may be sensitive but non-specific for acute renal infarction (2). It may step up after 24h, but it is unspecific for tissue necrosis, acute myocardial infarction, tumor, and hemolysis. Elevated white blood cell count and hematuria may be observed in more than half of patients (5), but these are also no specific markers for acute renal infarction. Especially for patients with complete renal infarction, it may take a long time from renal parenchymal damage to the occurrence of hematuria. Acute renal infarction cannot be completely ruled out even if no hematuria was found. In our case, the perfusion of the right kidney was fully blocked, and serum LDH level was higher than 6000 U/L, but routine urinalysis was normal during hospitalization. The diagnosis must depend on some auxiliary examinations. Renoarteriography is the gold standard in diagnosing acute renal infarction, while contrast-enhanced CT may be a useful noninvasive choice. A wedge-shaped or total perfusion defect in the kidney indicates acute renal infarction, and the cortical rim sign may exist in some patients with total renal infraction (6).

Management of acute renal infarction includes local intra-arterial thrombolysis, systemic anticoagulation, and occasional surgery, but a therapeutic guideline for the management of acute renal infarction has not been established yet (7). In a patient with bad physical status, local intra-arterial thrombolytic therapy may have less risk and better curative effect in minimizing the loss of renal function (8). Local intra-arterial thrombolytic therapy with rt-PA failed in our patient as the right renal artery had been obliterated completely, so conser-

vative treatment was adopted. Due to rapid progression to renal ischemia, timely diagnosis and treatment is very important for renal function recovery. If there is acute severe flank or abdominal pain in a geriatric patient with risk factors for thromboembolism after lung cancer surgery, acute renal infarction should be highly suspected until another diagnosis is established. Early contrast-enhanced CT and serum LDH test should be considered for patients with or without hematuria. There is an increased risk for acute renal infarction or infarction in another location in elderly patients who undergo surgery, so long-term oral anticoagulation therapy and close follow-up may be required.

Conflict of Interest

None of the authors declared any conflict of interest.

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