Renal cell carcinoma in renal transplant recipient: rare clinical manifestation

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Title: Renal cell carcinoma in renal transplant recipient: rare clinical manifestation

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Short title: Kidney cancer in renal transplant recipient

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Kidney transplantation is considered as the best form of kidney replacement therapy [1]. Improving patients’ quality of life and mortality reduction are main benefits of this form of chronic kidney disease treatment [1]. However, an increased risk of infections [2] and malignancies [3] related to immunosuppressive treatment may worsen patients’ outcomes. Cancers are responsible for 8% to 30% of all deaths with a functioning graft in kidney transplant recipients [4].

A 55-year-old man 17 years after kidney transplantation from a deceased donor, with the history of hepatitis C, arterial hypertension and obliterative atherosclerosis was admitted to the Nephrology Clinic due to fever lasting 2 days, diarrhea and failure of transplanted kidney. For about one year cortical cysts, maximum 15 mm in diameter, were observed in the transplanted kidney in the ultrasound of the abdomen (Figure 1A, white markers). During hospitalization Clostridioides difficile infection was diagnosed, patient received targeted treatment. Moreover, urinary tract infection was confirmed (Pseudomonas aeruginosa + Klebsiella pneumoniae producing extended-spectrum beta-lactamases) and treated with appropriate antibiotics. Despite targeted treatment fever was still observed and new symptoms, like dyspnea and fatigue occurred. Patient general condition worsened, pneumonia and peripheral pulmonary embolism was diagnosed. Transplanted kidney function was significantly impaired, the dose of immunosuppressive drugs was reduced. Since fever was still observed patient received immunoglobulins intravenously, after which patient’s general condition slightly improved. Performed bronchoscopy did not show any pathologies. Because of nonspecific inflammatory radiological findings in the lungs blood tests for opportunistic infections were performed and Epstein-Barr virus (EBV) DNA with herpes simplex virus type 1 (HSV) DNA was found. In the sputum culture Morganella morgani was detected. Test results for Mycobacterium tuberculosis, Pneumocystis jiroveci and influenza virus were negative. Because the transplanted kidney function did not improve an abdominal magnetic
resonance imaging (MRI) was performed (Figure 1B and 1C). MRI revealed multiple cortical cysts in renal transplant, maximally 20 mm in diameter (Figure 1B and 1C). Moreover, between peritoneal plaques a localized fluid area 63 mm x 16 mm size near the kidney was found (Figure 1B). Despite continuous broad spectrum treatment, including blood transfusions and administration of ganciclovir intravenously patient’s condition worsened. In another abdominal ultrasound performed transplanted kidney was enlarged, with diminished corticomedullary differentiation, in one of the cysts a pathological mass 7 mm in diameter was detected (Figure 1D). A positron emission tomography (PET) was performed in which a bacterial infection of renal transplant was suspected (Figure 1E and 1F, white arrows). Due to continuous fever not responding to antipyretics, antibacterial, antifungal and antiviral drugs, enlarged transplanted kidney painful during palpation a decision of graftectomy was made. In the histopathological examination clear cell carcinoma in the renal medulla was confirmed (Figure 1G and 1H).

In the presented case a rare form of renal cancer in transplanted kidney was shown. Contrary to other organ recipients, in renal transplant patients cancer almost exclusively occur in native kidneys [5]. Our study highlights the need for special awareness in renal transplant patients with nonspecific symptoms and radiological features.

References:


Figure 1A. Ultrasound of the abdomen – cortical cysts in transplanted kidney, maximum 15 mm of diameter.
Figure 1B. Magnetic resonance imaging of the abdomen: a localized fluid area between peritoneal plaques (size 63 mm x 16 mm). Multiple cortical cysts in the transplanted kidney.

Figure 1C. Magnetic resonance imaging of the abdomen: multiple cortical cysts in the transplanted kidney, maximum size 20 mm in diameter.

Figure 1D. Ultrasound of the abdomen: enlarged transplanted kidney, with diminished corticomedullary differentiation, in one of the cysts a pathological mass 7 mm in diameter.

Figure 1E. Whole body maximum intensity projection positron emission tomography. Scan obtained 60 minutes after fluorodeoxyglucose injection (3.5 MBq per kilogram bodyweight). Abnormal uptake in the right lung (dotted arrow) and around transplanted kidney (arrows).

Figure 1F. Positron emission tomography/computed tomography fused and computed tomography alone images indicating high radiotracer activity around the graft, which corresponds to abnormal fluid collection. Physiological radioagent elimination with urine.

Figure 1G. Renal cell carcinoma in the transplanted kidney. Clear cell carcinoma Grade 2 (International Society of Urologic Pathologists/World Health Organization grading system 2017). Hematoxylin and eosin stain.

Figure 1H. Renal cell carcinoma in the transplanted kidney. Clear cell carcinoma Grade 2 (International Society of Urologic Pathologists/ World Health Organization grading system 2017). Hematoxylin and eosin stain.