

# Renal cell carcinoma in a kidney transplant recipient: rare clinical manifestations

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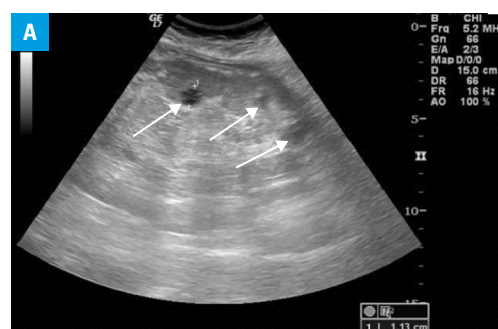
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Kidney transplant is considered the best form of kidney replacement therapy.<sup>1</sup> Improving quality of life and survival are main benefits of this treatment in patients with chronic kidney disease.<sup>1</sup> However, an increased risk of infections<sup>2</sup> and malignancies<sup>3</sup> related to immunosuppressive treatment may worsen patients' outcomes. Cancers account for 8% to 30% of all deaths in kidney transplant recipients with functioning grafts.<sup>4</sup>

A 55-year-old man, 17 years after kidney transplant from a deceased donor, with the history of hepatitis C, arterial hypertension, and peripheral arterial disease was admitted to the Department of Nephrology due to fever lasting 2 days, diarrhea, and failure of the transplanted kidney. For about 1 year, cortical cysts of a maximum of 15 mm in diameter were seen in the transplanted kidney on abdominal ultrasound (FIGURE 1A). During hospitalization, *Clostridioides difficile* infection was diagnosed and the patient received targeted treatment. Moreover, urinary tract infection was confirmed (*Pseudomonas aeruginosa* and *Klebsiella pneumoniae* producing extended-spectrum beta-lactamases) and treated with appropriate antibiotics. Despite targeted treatment, fever was still observed and new symptoms, including dyspnea and fatigue, occurred. The patient's general condition worsened. Pneumonia and peripheral pulmonary embolism were diagnosed. The function of the transplanted kidney was significantly impaired and the dose of immunosuppressive drugs was reduced. Since fever was still present, the patient received immunoglobulins intravenously. After that, the patient's general condition slightly improved. Bronchoscopy did not show any abnormal findings. Due to nonspecific inflammatory lesions found on chest X-ray, blood tests were performed to detect possible opportunistic infections. Epstein-Barr virus DNA and herpes simplex

virus type 1 DNA were found. *Morganella morganii* was detected in the sputum culture. Test results for *Mycobacterium tuberculosis*, *Pneumocystis jirovecii*, and influenza virus were negative. As the function of the transplanted kidney did not improve, abdominal magnetic resonance imaging was performed (FIGURE 1B and 1C). It revealed multiple cortical cysts in the transplanted kidney, of a maximum of 20 mm in diameter (FIGURE 1B and 1C). Moreover, a localized fluid collection of 63 mm × 16 mm in size was found between the peritoneal layers near the kidney (FIGURE 1B). Despite continuous broad-spectrum treatment, including blood transfusions and ganciclovir administered intravenously, the patient's condition worsened. On follow-up abdominal ultrasound, the transplanted kidney was enlarged and showed diminished corticomedullary differentiation. Furthermore, an abnormal mass of 7 mm in diameter was detected in one of the cysts (FIGURE 1D). Based on positron emission tomography, a bacterial infection of the transplanted kidney was suspected (FIGURE 1E and 1F). Fever did not resolve and showed no response to antipyretic, antibacterial, antifungal, and antiviral drugs. Apart from that, the enlarged transplanted kidney was



**FIGURE 1** A – abdominal ultrasound: cortical cysts of a maximum of 15 mm in diameter in the transplanted kidney (arrows)

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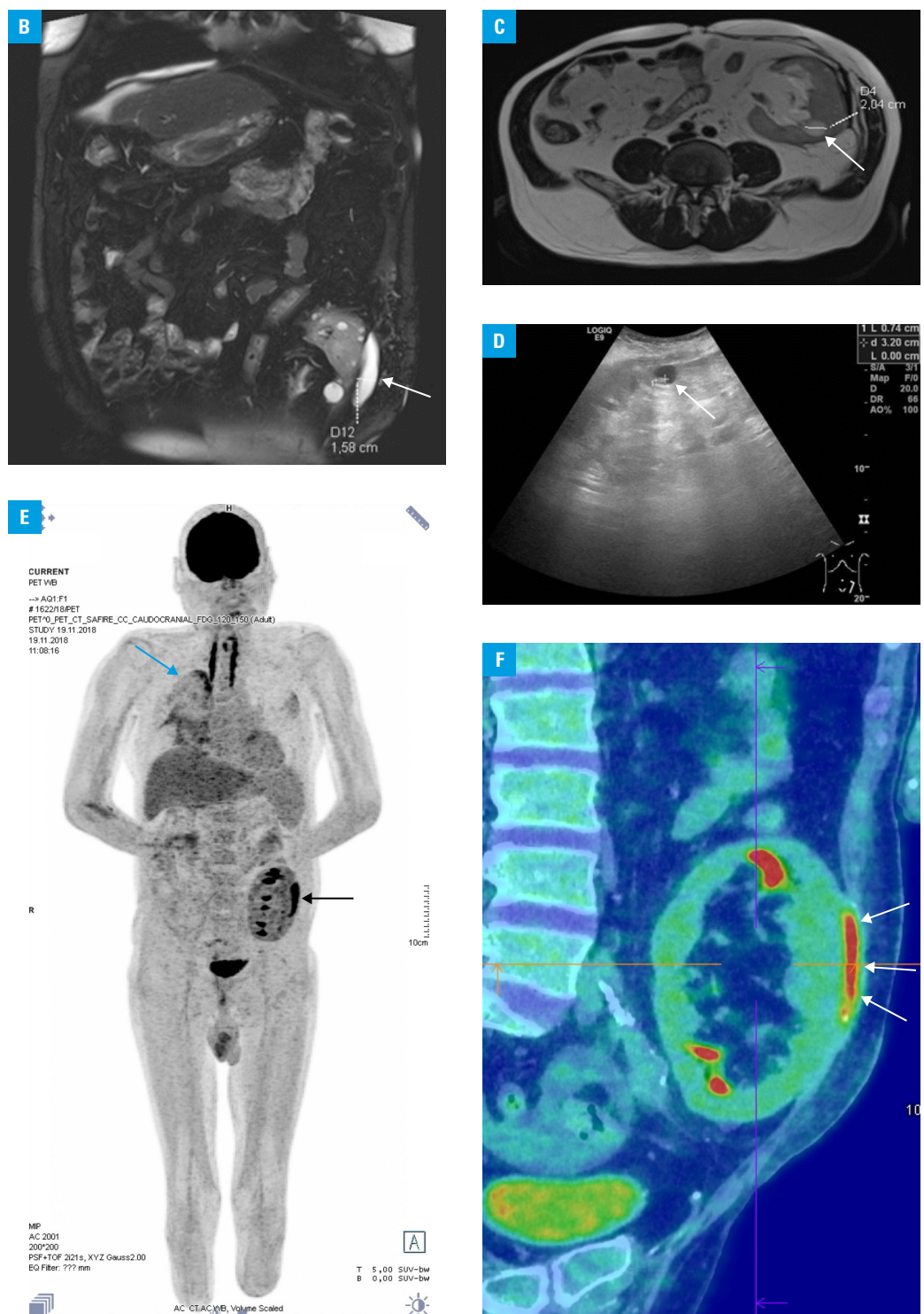
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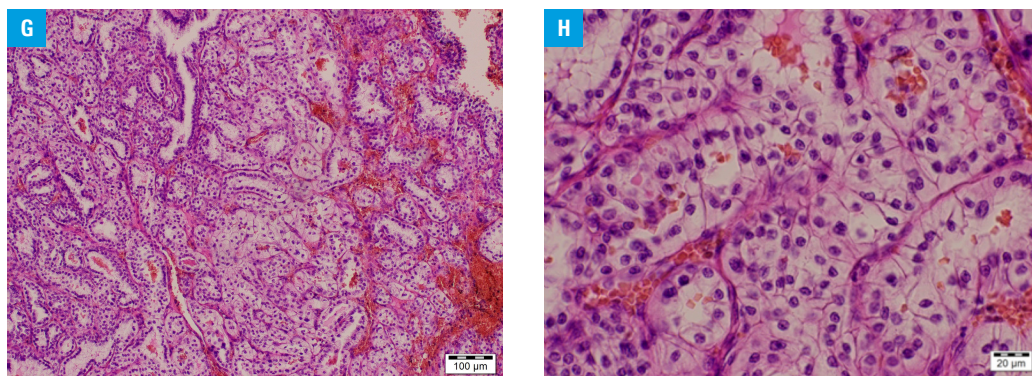
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**FIGURE 1** **B** – abdominal magnetic resonance imaging: a localized fluid collection between peritoneal layers (of 63 mm × 16 mm in size) and multiple cortical cysts in the transplanted kidney (arrow); **C** – abdominal magnetic resonance imaging: multiple cortical cysts of a maximum of 20 mm in diameter in the transplanted kidney (arrow); **D** – abdominal ultrasound: the enlarged transplanted kidney with diminished corticomedullary differentiation; in one of the cysts, an abnormal mass of 7 mm in diameter is seen (arrow); **E** – a whole-body maximum-intensity projection positron emission tomography scan obtained 1 hour after fluorodeoxyglucose injection (3.5 MBq per 1 kg of body weight): abnormal uptake in the right lung (blue arrow) and around the transplanted kidney (black arrow); **F** – positron emission tomography/computed tomography fused and computed tomography alone images: high radiotracer activity around the graft, which corresponds to abnormal fluid collection (arrows).



**FIGURE 1** **G** – renal cell carcinoma in the transplanted kidney (grade 2 clear cell carcinoma according to the 2017 International Society of Urologic Pathologists/World Health Organization grading system); hematoxylin and eosin staining; **H** – renal cell carcinoma in the transplanted kidney (grade 2 clear cell carcinoma according to the 2017 International Society of Urologic Pathologists/World Health Organization grading system); hematoxylin and eosin staining

tender to palpation and the team decided to perform graftectomy. Histopathological examination confirmed clear cell carcinoma in the renal medulla (**FIGURE 1G** and **1H**).

In the presented case, a rare form of renal cancer in the transplanted kidney was shown. Contrary to other organ recipients, cancer in patients after kidney transplant occur almost exclusively in native kidneys.<sup>5</sup> Our report highlights the need for paying special attention to kidney transplant recipients with nonspecific symptoms and radiological abnormalities.

## ARTICLE INFORMATION

**CONFLICT OF INTEREST** None declared.

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