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When Renal Cell Carcinoma Strikes Twice : A Case Report of Recurrence and Resurgence

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Abstract: introduction: *Renal cell carcinoma (RCC) accounts for approximately 2% of global cancer diagnoses and remains the most common type of kidney cancer. Although surgical resection is curative in localized disease, recurrence can occur years later, posing significant diagnostic and therapeutic challenges.* ***Case Presentation:*** *We report the case of a 67-year-old female with a history of right radical nephrectomy for clear cell RCC in 2018. Eight years postoperatively, she presented with right flank pain. Imaging revealed a 48 × 39 mm polylobed mass in the right abdominal wall invading the oblique muscles and adjacent to the 11th rib. Surgical excision was performed, and histopathological examination confirmed a recurrent encapsulated clear cell RCC (Fuhrman grade 2, CD10 positive). The diagnosis of abdominal wall recurrence of RCC was established.* ***Discussion:*** *Abdominal wall recurrence of RCC is exceedingly rare, with only a few cases described in the literature. Late recurrence beyond five years is recognized as a hallmark of RCC's biological heterogeneity, potentially linked to tumor dormancy, immune senescence, and hormonal influences. This case underscores the importance of long-term surveillance, even in patients who initially achieve disease-free status, as current guidelines show variability in recommended follow-up duration and intensity.* ***Conclusion:*** *This case illustrates the unpredictable nature of RCC recurrence and highlights the need for individualized, multidisciplinary management. Enhanced understanding of tumor dormancy and standardized long-term surveillance strategies are crucial to improve patient outcomes.*

Keywords: Renal cell carcinoma, recurrence, abdominal wall metastasis, nephrectomy, tumor dormancy, long-term surveillance

1. INTRODUCTION:

Renal cell carcinoma (RCC) accounts for 2% of global cancer diagnoses and deaths. It is one of the most common types of kidney cancer, with an estimated 73,750 new cases and 14,830 deaths in the United States in 2020 alone[1]. Surgery is often the primary treatment for RCC, with the goal of completely removing the tumor. However, despite successful surgery, there is still a risk of RCC recurrence[2], which can be a major challenge for both patients and physicians.

In this case report, we present the clinical course of a patient who underwent radical nephrectomy for RCC, but subsequently presents with recurrence of the cancer 8 years later. We will discuss the patient's clinical presentation, diagnostic workup, treatment strategies, and outcomes. Our aim is to shed light on the complexities of managing RCC recurrences and to provide insights into the clinical decision-making process.

Given the increasing occurrence of RCC that has more than doubled in incidence in the developed world over the past half-century[3], and the challenges associated with managing recurrences, this case report has important implications for clinical practice and future research. We believe that sharing our experience with the medical community can contribute to a better understanding of RCC and ultimately improve patient outcomes.

2. CASE REPORT

In 2018, a 67-year-old female presented with right flank pain, weight loss, fatigue, and anorexia. She had a history of diabetes, right mastectomy with 3 cycles of chemotherapy, 3 cycles of radiotherapy and letrozole, as well as gallbladder lithiasis with an undocumented ulcer surgery 35 years ago. Investigations revealed a diagnosis of RCC, for which she underwent open radical nephrectomy via anterior subcostal approach. The patient was lost to follow-up until she presented again 8 years later in 2025 with right flank pain. On physical examination, there was diffuse sensitivity and palpation revealed an oval mass that was adherent to the deep layer and mobile to superficial layer in the right flank area.

A computed tomography (CT) scan of the abdomen and pelvis (Fig1) revealed the presence of a polylobed tissue mass with irregular contours measuring approximately 48 x 39 mm and extending over 36mm in the 11th intercostal space on the right side. The mass demonstrated homogeneous enhancement after the injection of iodinated contrast medium. Anteriorly, the tumor was in contact with the posterior arch of the 11th rib, which exhibited a blurred and irregular cortical bone at this location. Laterally, the mass displaced and appeared to invade the internal and external oblique muscles, which were found to be atrophied. The rest of the CTAP was unremarkable. Wide excision of the subcutaneous abdominal mass was performed.

The surgical specimen consisted of a tumor mass measuring 6.5 × 5.5 × 2.5 cm (fig2) and histopathology showed an

encapsulated clear cell RCC with Fuhrman nuclear grading 2 associated to CD10 expression.
Asserted as RCC abdominal wall recurrence.

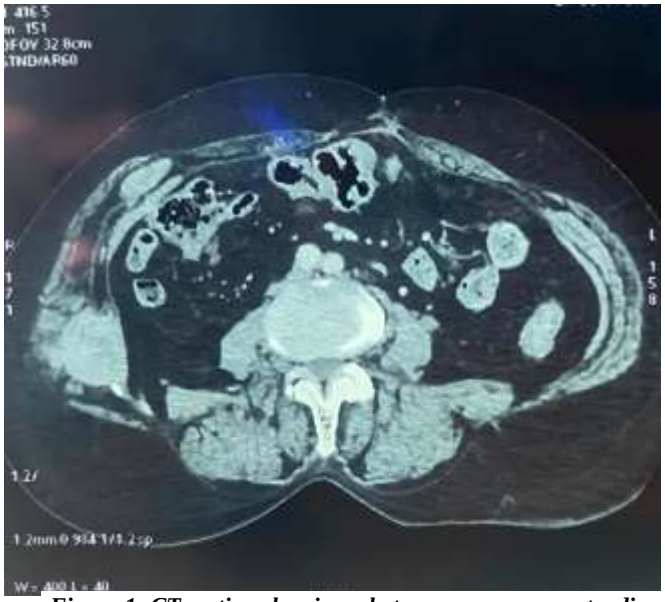

Figure 1: CT section showing a heterogenous mass extending in the 11th intercostal space on the right sid (Red arrow).

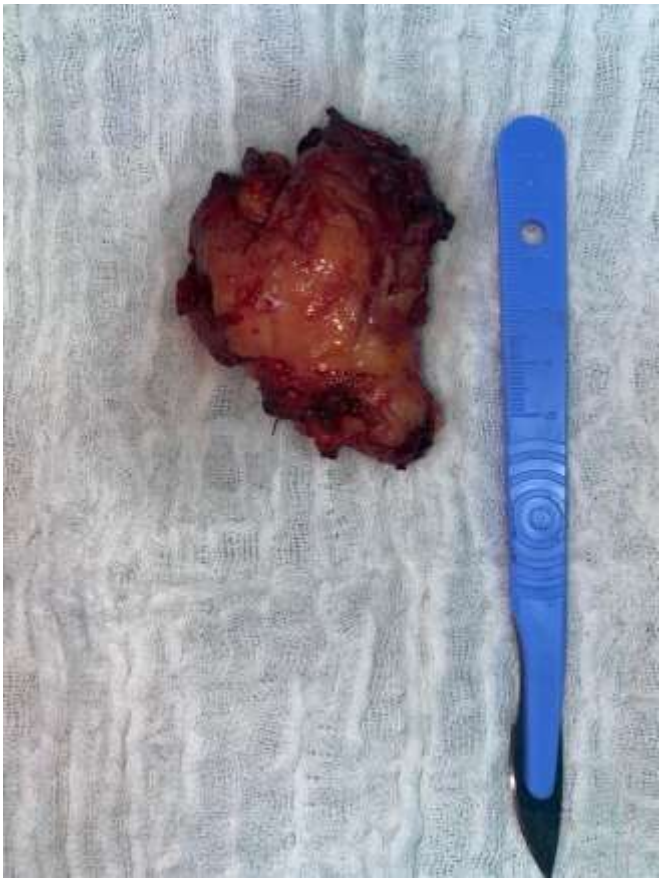

Figure 2:Surgical specimen of the mass excised,

3. DISCUSSION

Renal cell carcinoma (RCC) continues to dominate as the primary form of renal malignancies, representing approximately 90% of cases according to recent studies[4]. Findings indicate that among individuals diagnosed with localized clear cell RCC (ccRCC) and treated with curative intent, either through radical nephrectomy or partial nephrectomy, about 20-30% experience the development of distant or local recurrences within a five-year timeframe[5].

RCC recurrences to the abdominal wall are extremely uncommon, only a few cases have been reported in Literature [6] [7] [8]. In addition to the distinctiveness of its location, the recurrence occurred in our case 8 years after the initial radical nephrectomy. Although rare, instances of late recurrences of RCC occurring beyond the initial five-year period have been documented in the literature [9]. While most cases of RCC recurrence after initial curative treatment tend to manifest within the five-year mark, late recurrences beyond this timeframe are recognized as a genetic peculiarity of RCC. Numerous studies have strived to identify and
elucidate the various factors that significantly influence late recurrence in RCC[10]. However, these studies, have so far failed to accurately predict the occurrence of late recurrence after “curative” radical nephrectomy of renal cell carcinoma.

The precise mechanisms underlying delayed recurrence in renal cell carcinoma (RCC) remain largely elusive, with several theories suggested to explain this phenomenon. Among the factors observed, one can identify diminished immune function leading to a loss of control over tumor cells, as well as alterations in hormonal elements, given that the occurrence of late recurrence is reported to be 2-3 times higher in females[11], as is the case with our patient backed-up by the personal history of breast cancer. Other theories include the presence of dormant micro-metastases, reactivation of quiescent tumor cells, or malignant cells seeding that get transferred and seed at different sites giving rise to late recurrences.

One prominent concept associated with late recurrence is tumor dormancy, as supported by previous research findings[12]. Dormancy is believed to occur with heightened frequency in RCCs and cutaneous malignant melanomas. It involves a state of cell cycle stagnation, characterized by the non-proliferative phase of cancer cells and an extended quiescent phase. The delicate balance between immune function and tumor growth is postulated to play a crucial role in maintaining this dormant state. Theoretically, a decline in immune function may serve as a trigger for reactivation of dormant lesions, subsequently leading to the appearance of metastasis. In the case of RCC, it is proposed that the decline in immune system efficiency associated with the natural process of aging may contribute to the manifestation of RCC

recurrences. The diagnostic and evaluation process for suspected local recurrence in renal cell carcinoma (RCC) necessitates the utilization of various imaging modalities, including computed tomography (CT), magnetic resonance imaging (MRI), and positron emission tomography (PET) [13].

In cases of recurrent RCC, a diverse range of treatment alternatives can be considered, including surgical resection[14] which is the therapeutic option we opted for in our specific case, systemic therapy encompassing targeted agents and immunotherapy, radiation therapy, and ablative techniques. [15]

The maintenance of long-term surveillance plays a critical role in the timely detection of recurrent disease, ultimately optimizing patient outcomes. Currently, a definitive consensus regarding the optimal frequency and timing of follow-up for patients who have undergone various interventions for renal cell carcinoma (RCC) remains elusive within the literature. This lack of consensus has resulted in inadequate patient outcomes, compromised cancer control, and escalated costs, as highlighted by a recent study.

Nevertheless, multiple international guidelines have been documented in the literature to address this issue. Notable examples include the National Comprehensive Cancer Network (NCCN) [16], American Urological Association (AUA) [17], European Association of Urology (EAU) [18], and The American College of Radiology (ACR) [19]. These guidelines primarily hinge upon the stage of RCC, whereby the higher the stage and aggressiveness of the tumor, the more rigorous and frequent the recommended follow-up becomes.
Discrepancies arise in terms of the frequency, modality (e.g., CT, MRI, ultrasound, or chest x-ray), and duration of surveillance endorsed by each respective guideline.

In general, the aforementioned principle primarily applies to patients who have undergone nephrectomy, with a confirmed absence of positive surgical margins. For individuals with clinically localized T1 stage disease, several guidelines propose less frequent follow-up due to the low risk of recurrence. However, patients who have undergone ablation procedures or those with positive surgical margins necessitate a more proactive follow-up strategy to promptly detect any signs of recurrence. For instance, the NCCN and AUA offer specific surveillance recommendations extending up to 3 years for pT1 patients, up to 5 years for postablation patients, and beyond for pT2 patients. The decision to continue surveillance beyond these time frames is typically at the discretion of the healthcare provider. In certain institutions, a tailored follow-up approach has been devised based on initial tumor stage, Fuhrman grade, and the patient's performance status.

4. Conclusion:

This case report highlights the complexities of managing recurrent RCC and emphasizes the importance of a multidisciplinary approach to optimize patient outcomes. Further research is warranted to better understand the mechanisms underlying late recurrences and to develop more effective strategies for prevention and management of recurrent RCC. Improved surveillance protocols and consensus on followup recommendations are needed to standardize care and provide better long-term outcomes for patientswith RCC.

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