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CASE REPORTS
PRIKAZI SLUČAJEVA

DIAGNOSTIC IMAGING OF GIANT CHROMOPHOBE RENAL CELL CARCINOMA – CASE REPORT

RADIOLOŠKA DIJAGNOSTIKA GIGANTSKOG HROMOFOBNOG KARCINOMA BUBREŽNIH ĆELIJA – PRIKAZ SLUČAJA

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Abstract

Introduction. Renal cell carcinoma is the most common kidney malignancy, accounting for approximately 3% of all adult malignancies. Chromophobe renal cell carcinoma, a relatively rare subtype, comprises about 5% of all renal cell carcinoma cases and is generally associated with a more favorable prognosis compared to other subtypes. Only 10% of patients present with the classic triad of hematuria, pain, and a flank mass, and more than 40% are asymptomatic. Early detection and appropriate management are crucial for improving patient outcomes. **Case Report.** A 57-year-old female presented with an anemic syndrome (erythrocytes 3.05 x 10^{12}/L, hemoglobin 71 g/L) and weakness over a 10-day period. She reported no weight loss and maintained a normal appetite. Abdominal ultrasound revealed a heterogeneous mass in the right epigastrium, inseparable from the right kidney. Subsequent computed tomography imaging confirmed a mass in the upper pole of the right kidney measuring 13.7 x 11.3 x 17 cm, with necrotic areas and microcalcifications. Radical nephrectomy was performed, and histopathological analysis confirmed chromophobe renal cell carcinoma and chronic pyelonephritis. Despite postoperative treatment, the patient died one year later due to tumor recurrence and multiorgan failure. **Conclusion.** Although chromophobe renal cell carcinoma is less aggressive than other subtypes, it still presents significant challenges. In this particular case, the outcome was fatal because the patient failed to present symptoms in time, making this case unique. Regular check-ups and early diagnostic evaluation are crucial to facilitate timely intervention and improve outcomes.

Key words: Diagnostic Imaging; Tomography, X-Ray Computed; Carcinoma, Renal Cell; Early Diagnosis

Sažetak

Uvod. Karcinom bubrežnih ćelija je najčešći maligni tumor bubrega i čini otprilike 3% svih karcinoma kod odraslih. Hromofobni karcinom bubrežnih ćelija, relativno redak podtip, čini oko 5% slučajeva i generalno je povezan sa boljom prognozom u poređenju sa drugim podtipovima. Samo 10% osoba sa karcinomom bubrežnih ćelija ima klasičnu trijadu simptoma: hematuriju (prisustvo krvi u mokraći), bol i masu u slabinskoj regiji, dok više od 40% obolelih ne pokazuje nijedan od ta tri simptoma. Rano otkrivanje i odgovarajuće lečenje su ključni za poboljšanje ishoda kod pacijenata. **Prikaz slučaja.** Pacijentkinja starosti 57 godina dolazi kod hematologa sa anemičnim sindromom (eritrociti 3,05 x 10^{12}/L, hemoglobin 71 g/L) i slabosti tokom poslednjih 10 dana. Nije imala gubitak telesne mase i imala je očuvan apetit. Daljim ispitivanjem, ultrazvuk abdomena je pokazao heteroehogenu masu u desnom epigastrijumu, neodvojivu od desnog bubrega. Kompjuterizovana tomografija je potvrdila prisustvo mase u gornjem polu desnog bubrega dimenzija 13,7 x 11,3 x 17 cm, sa nekrozama i mikrokalcifikacijama. Patohistološki nalaz nakon radikalne nefrektomije potvrdio je dijagnozu hromofobnog karcinoma bubrežnih ćelija i hroničnog pijelonefritisa. Nažalost, godinu dana nakon nefrektomije, pacijentkinja je preminula usled recidiva karcinoma i kasnijeg multiorganskog otkazivanja. **Zaključak.** Hromofobni karcinom bubrežnih ćelija, iako manje agresivan u odnosu na druge podtipove, i dalje predstavlja značajne izazove. U ovom konkretnom slučaju, ishod je bio fatalan jer pacijentkinja nije imala rane simptome, na vreme, što čini ovaj slučaj specifičnim. Redovne kontrole i rana dijagnoza su ključni za pravovremeno prepoznavanje bolesti i poboljšanje ishoda.

Ključne reči: dijagnostički imidžing; CT; karcinom bubrežnih ćelija; rana dijagnoza

Introduction

Renal cell carcinoma (RCC) is the most common malignant tumor of the kidney, accounting for approximately 3% of all adult cancers and represents about 90% of kidney malignancies [1]. Clinical presentation varies widely, ranging from asymptomatic cases to those with severe symptoms. The classic

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Abbreviations
RCC – Renal Cell Carcinoma
CT – Computed Tomography
MRI – Magnetic Resonance Imaging

triad of hematuria, pain, and a flank mass is present in only 10% of cases, often indicating advanced disease. Over 40% of RCC cases present with none of the three symptoms [2].

RCC includes several histological subtypes, the most common being clear cell RCC (70-90%), followed by papillary RCC (10-15%) and chromophobe RCC (~ 5%) [3]. Chromophobe RCC is thought to originate from the intercalated cells of the collecting duct system [4]. Compared to clear cell RCC, chromophobe RCC typically exhibits less aggressive behavior, with a lower rate of metastasis and better overall prognosis [5]. It is more common in older individuals and has been associated with chronic kidney diseases, including end-stage renal disease and dialysis dependence [6].

Diagnosis relies on clinical evaluation, imaging (such as CT and MRI), and definitive histopathological analysis [7,8]. Surgical management, including partial or radical nephrectomy, remains the primary treatment modality. In select cases, adjuvant therapies such as immunotherapy may be employed [9].

Case Report

A 57-year-old female presented for a routine annual medical examination. Laboratory tests revealed an anemic syndrome (erythrocytes 3.05 x 10^{12}/L, hemoglobin 71 g/L). The patient reported a 10-day history of generalized weakness but denied weight loss or appetite changes. Physical examination by a hematologist revealed a palpable mass in the right lower abdomen, prompting referral to an abdominal ultrasound.

Figure 1. Axial CT scan of the abdomen – Renal cell carcinoma

Figure 2. Coronal CT scan of the abdomen – Renal cell carcinoma

Ultrasound imaging showed a well-demarcated *heterogeneous* mass in the right epigastric region, measuring approximately 16.2 x 14.5 cm, inseparable from the parenchyma of the right kidney and compressing the liver parenchyma. A complementary CT scan of the abdomen and pelvis confirmed a mass in the upper pole of the right kidney, measuring 13.7 x 11.3 x 17 cm, with areas of necrosis and microcalcifications **(Figure 1).** The mass compressed adjacent structures but showed no evidence of infiltration **(Figure 2)**. Delayed-phase imaging demonstrated loss of function in the right kidney. The mass was classified as RCC (Renal Cell Carcinoma). No signs of dissemination in the abdomen and pelvis were found.
The patient underwent a radical right nephrectomy three days later. Histopathological examination confirmed chromophobe renal cell carcinoma and chronic pyelonephritis. Postoperative therapy with sunitinib (Sutent) was initiated.

Despite initial treatment, the patient developed tumor recurrence and multiorgan failure, ultimately resulting in death one year after surgery.

Conclusion

This case illustrates the diagnostic and therapeutic challenges posed by chromophobe renal cell carcinoma, despite its typically favorable prognosis. In this instance, the absence of specific symptoms led to a delayed diagnosis, contributing to a fatal outcome. Regular check-ups and early diagnosis are crucial for the timely identification of the disease and improving outcomes.

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