CLINICAL CASE

Renal malacoplakia

J. A. Zapata-González*, J. Ojeda-Ibarra and J. B. Camacho-Castro

Hospital General de Zona N° 1, Instituto Mexicano de Seguro Social, Saltillo, Coah., Mexico

Abstract. The term “malacoplakia” comes from the Greek malakos and plakos, meaning “soft plaque”. It is an uncommon chronic inflammatory disease that often involves the bladder, but rarely the kidney. When this latter organ is affected, it is classified as a renal pseudotumor. The aim of this article was to present a case of renal malacoplakia treated by laparoscopic partial nephrectomy. A 68-year-old woman presented with type 2 diabetes mellitus (DM2) and recurrent urinary tract infections. A computed tomography (CT) scan revealed a contrast-enhanced solid renal mass measuring 25 x 25 mm. Laparoscopic transperitoneal nephrectomy was performed without incidences. The final histopathologic report was renal malacoplakia. Renal malacoplakia is uncommon and the definitive diagnosis is histopathologic. It is classified clinically and radiologically as a renal pseudotumor and should not be confused with renal neoplasia.

PALABRAS CLAVE
Nefrectomía parcial laparoscópica; Malacoplaquia renal; Seudotumor renal; México.

Malacoplaquia renal

Resumen “Malacoplaquia” es un término derivado de raíces griegas que significa “placa suave”. Es una enfermedad inflamatoria crónica poco común con afectación frecuente de la vejiga y raramente del riñón, donde se clasifican como un seudotumor renal. El objetivo del presente trabajo es exponer un caso de malacoplaquia en riñón, tratado con nefrectomía parcial laparoscópica. Presentamos el caso de una paciente femenina de 68 años de edad, con diabetes mellitus tipo 2 (DM2) y cuadros repetitivos de infecciones de vías urinarias. En la tomografía computarizada (TC) se observó una masa sólida renal derecha de 25 x 25 mm, con refuerzo tras la administración del material de contraste. Se llevó a cabo nefrectomía laparoscópica transperitoneal sin incidentes. El reporte histopatológico final fue: malacoplaquia renal. La malacoplaquia renal es una entidad poco frecuente, en donde el diagnóstico definitivo es histopatológico, se clasifica clínicamente y radiológicamente como un seudotumor renal, ya que puede ser confundido con una neoplasia renal.

0185-4542 © 2014. Revista Mexicana de Urología. Publicado por Elsevier México. Todos los derechos reservados.
Introduction

Renal neoplasia is a common entity that is characterized both clinically and radiologically by its incidence and prevalence in the group of solid kidney lesions. It is easily diagnosed through routine imaging studies. There are well-established radiologic parameters and criteria for an almost unerring diagnosis. However, much less is known about the lesions that imitate renal neoplasia (in the clinical, radiologic, and histopathologic setting) and therefore the histopathologic result often differs greatly from preoperative findings. These tumors can be made up of normal or benign renal tissue and are known as renal pseudotumors. Even though common lesions such as abscesses and renal cysts can be reliably diagnosed through imaging studies, atypical presentations of such common, and certain uncommon, entities can simulate renal neoplasias and result in unnecessary resection due to the preoccupation of malignancy.

Methods

A 68-year-old woman with type 2 diabetes mellitus (DM2) of 10-year progression treated with NPH insulin and regular control of her glycemia visited the Urology Service due to recurrent urinary tract infections and she frequently abandoned the antimicrobial regimens. Physical examination was unremarkable, with the exception of overweight. Within her evaluation protocol, a solid hypoechoic lesion was found in the ultrasound study; her evaluation was completed with non-contrast and contrast-enhanced abdominopelvic computed tomography (CT) scans. Laboratory and radiology studies reported: urinalysis pH 7.1, proteins +, erythrocytes 2 x field, leukocytes 20-25 x field, abundant bacteria, no crystals, and urine culture (+) 100,000 CFU/mL of *Escherichia coli* (*E. coli*) that was resistant to fluoroquinolones and trimethoprim sulfamethoxazole TMP/SMX and only sensitive to second and third generation cephalosporins. Blood chemistry: glycemia of 143 mg/dL, serum creatinine 1.2, uric acid 6 mg/dL, and 24-hour creatinine depuration in urine 77 in mL/min with the presence of albuminuria. Complete blood count and liver and thyroid profiles were normal, as were urinary cytology and urethrocystogram. The CT scan taken to study the right renal tumor revealed a solid right tumor in the lower pole that measured 25 mm x 25 mm in diameter, registering 24 HU in the non-contrast study and 57 HU in the contrast-enhanced study, and that disrupted the renal capsule. The contrast enhancement showed a heterogeneous, exophytic lesion (fig. 1) and the patient consequently underwent a laparoscopic transperitoneal partial nephrectomy.

Results

The previously described transperitoneal technique was utilized in the surgery. Warm ischemia time was 22 minutes, and intraoperative blood loss was 150 cc. Surgery duration was 140 minutes and postoperative creatinine was 1.2 mg/dL. There were no incidents. In relation to the pathology study, periodic acid-Schiff stain was carried out that showed Michaelis-Gutmann bodies, resulting in the diagnosis of malacoplakia.

Discussion

A series of entities are capable of imitating renal neoplasia. Some of them, such as renal cysts and abscesses, can be diagnosed with great radiologic accuracy and without

![Figure 1](image1.png)

*Figure 1*  Computed tomography image showing a contrast-enhanced heterogeneous lesion in the right lower pole.

![Figure 2](image2.png)

*Figure 2*  Malacoplakia is a chronic inflammatory lesion able to produce destructive nodular masses that can be confused with neoplasia, as shown in this figure. The nodule is composed of histiocytes with mixed inflammatory elements. The inflammatory response, in particular Gram-negative bacteria, most frequently *Escherichia coli*, can result in malacoplakia. The substitution of the renal parenchyma by the nodular inflammatory infiltrate is obvious (periodic acid-Schiff x100) (original magnification).
invasive methods. Unfortunately, many renal lesions are capable of radiologically simulating renal neoplasia and due to this uncertainty many lesions are resected following nomograms that predict the probability of malignancy.¹ These lesions are known as renal pseudotumors, lesions that “imitate” renal neoplasia very well. Renal pseudotumors can be classified as follows, depending on the tissue they contain: developing tissue, granulomatous disease, infectious diseases, vascular disorders, or even splenorenal fusion.¹⁻⁵ Some pseudotumors can mimic hematomas, angiomyolipomas, and, as mentioned above, renal cell carcinoma.

Acute or chronic infections that result in renal abscess can pose diagnostic difficulties, simulating malignancy radiologically and during the operation, given that the extensive inflammatory process can invade the perirenal soft tissue.⁶⁻⁷ Upon pathologic examination, the lesions are characterized by the formation of abscesses with varying degrees of reactive surrounding tissue and changes in repair. The causal microorganisms can be Gram-negative or Gram-positive bacilli, including the species *Actinomyces*. Actinomycotic abscesses contain sulfur granules that can facilitate diagnosis. The category of infections includes: granulomatous disease, sarcoidosis, xanthogranulomatous pyelonephritis, focal chronic pyelonephritis, and malacoplakia.

Xanthogranulomatous pyelonephritis is common in our environment; it is the final result of obstructive uropathy secondary to renal lithiasis. There is a typical enlargement of the affected kidney and it becomes functionally excluded.

Even though imaging studies provide precise diagnosis in up to 90% of the cases, some pseudotumors cannot be distinguished from malignant lesions, particularly when the process is segmented or focal, rather than diffuse. The majority of radiologic findings of malacoplakia tend to be very suggestive of malignancy.⁶⁻⁹

Their histopathologic diagnosis is also microscopically difficult (it should be mentioned that from the surgical perspective, the extensive inflammatory process can invade the perirenal soft tissue and the surgeon can confuse it with an invading carcinoma), because these lesions are characterized by the formation of abscesses with varying degrees of reactive surrounding tissue and changes in repair. Malacoplakia is composed of a large quantity of polymorphonuclear cells (acute inflammation) and cells that represent a chronic inflammatory process, including abundant lipid-charged foamy macrophages, a characteristic that gives the tumor a yellow color (fig. 2).⁸⁻¹⁰

Malacoplakia is a rare form of chronic inflammatory disease with a distinctive histopathologic characteristic.⁸⁻¹⁰ Diagnosis can only be made histologically. The structures known as Michaelis-Gutmann bodies are the key diagnostic marker. Von Hansemann was actually the first to see the disease in 1901 in a human case of malacoplakia (figs. 3 y 4), after having read about a similar pathology in a veterinary journal. Afterwards he analyzed the case with his assistant Gutmann who then collaborated on the study of the disease with the expert biochemist Michaelis. Von Hansemann published his study in 1903 one year after Gutmann and Michaelis. Both publications were in German, poor translations most likely lending to the confusion in the historical documentation. Today the Von Hansemann cells (eosinophilic histiocytes) and Gutmann-Michaelis bodies (basophilic intracytoplasmic inclusions) are recognized as the *sine qua non* of the disease.¹¹⁻¹²

The exact pathogenesis of malacoplakia is still unknown. A very common theory is that there is an abnormal macrophage response due to a defect in lysosomal function. It has been suggested that the macrophages in malacoplakia are capable of phagocytizing bacteria, but incapable of digesting them. There is general agreement that a patient with malacoplakia has an underlying disease that implicates an abnormal or altered immune response and that microorganisms also have a role in the pathogenesis,
especially *E. coli* that is found in more than 80% of the cases. Before 1990, malacoplakia was a serious disease with a high mortality rate and poor recovery of renal function, and at that time, nephrectomy was the recommended treatment of choice. In the 1990s, quinolones, antibiotics with a high intracellular penetration, were adopted as the treatment of choice for this disease.

Malacoplakia can affect many organs and soft tissue but it is most frequent in the lower urinary tract. However, renal parenchymal involvement is uncommon and represents 15% of urinary tract cases. Renal malacoplakia in patients with allografts rarely affects the kidney allograft itself, and to date there are very few such reports.

**Conclusions**

Malacoplakia is an infrequent granulomatous disease that can produce renal pseudotumors and it should be considered in the differential diagnosis of solid renal tumor in immunosuppressed patients.

**Conflict of interest**

The authors declare that there is no conflict of interest.

**Financial disclosure**

No financial support was received in relation to this article.

**References**