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Cinical manifestations of renal tumors

laboratory diagnosis

Benign Tumor

common symptoms :

- flank pain
- palpable mass
- Hematuria
- most diagnoses result from anincidental renal mass

Although the initial identification of a benign mass is through imaging, such as ultrasonography, computed tomography (CT), or magnetic resonance imaging (MRI), these modalities are imperfect in their identification of benign histology

renal cyst

- Most patients with renal cyst disease are diagnosed incidentall
- pain
- a palpable mass
- hematuria
- in the case of ADPKD, pulmonary symptoms from mass effect in the kidney

Evaluation is through imaging, which can include

- Ultrasonography
- CT
- MRI

The goal of imaging in cystic renal disease is evaluation of malignancy risk

oncocytoma

- Most cases of oncocytoma occur asymptomatically as an unilateral incidental renal mass (5% occur bilaterally)

- Definitive diagnosis of oncocytoma is typically postoperative;however, there are certain imaging clues to the diagnosis

AML

- As with most renal masses, patients with AML are often diagnosed incidentally

- historically up to 15% of patients have Wunderlich syndrome (spontaneous retroperitoneal hemorrhage)
- the diagnosis of AML can be made on imaging

Papillary Adenoma of the Kidney

Because papillary adenomas are, by definition, less than 1 cm in size, they are often diagnosed pathologically as a concomitant finding with RCC and therefore require no further directed therapy

Metanephric adenoma

- approximately one-half of patients are diagnosed incidently
- flank pain
- gross hematuria
- a palpable mass
- polycythemia

The cause of polycythemia in metanephric adenoma has been investigated using in vitro cell cultures, which demonstrated the production of erythropoietin, IL-6, IL-8, G-CSF, and GM-CSF

Metanephric adenoma may exist on a continuum with Wilms tumors and papillary RCC and can be distinguished based on histology and immunohistochemical staining

- Cystic nephroma and MESTs are biologically related and histologically similar
- Frequent expression of estrogen and progesterone receptors in tumor tissue is reported with a female predisposition
- Cystic nephroma clinically resembles Wilms tumor, particularly in children

Hemangiomas :

Presentation is often incidental

Renal lymphangiomas:

Presentation is often incidental

compression and involvement o f the renal pelvis can cause

- signs and symptoms of obstructive uropathy
- hypertension
- hematuria
- Proteinuria
- hemorrhage
- chyluria

- Juxtaglomerular cell tumor (also known as reninoma or JGCT), is a tumor arising from the juxtaglomerular cells of the kidney
- The hallmark of these tumors is overproduction of renin

- symptoms of hyperaldosteronism

- polydipsia
- Polyuria
- myalgias
- double vision
- headaches
- Hypertension
- hypokalemia
- proteinuria

RCC

- Because of the sequestered location of the kidney within the retroperitoneum, many renal masses remain asymptomatic and nonpalpable until they are locally advanced.

- With the more pervasive use of noninvasive imaging for the evaluation of a variety of nonspecific symptom complexes, more than 60% of RCCs are now detected incidentally

Symptoms associated with RCC can be due to

- local tumor growth
- Hemorrhage
- paraneoplastic syndromes
- metastatic disease

Flank pain is usually due to

- hemorrhage
- clot obstruction
- occur with locally advanced or invasive disease

- The classic triad of flank pain, gross hematuria, and palpable abdominal mass is now rarely seen

- This is fortunate because this constellation of findings almost always denotes advanced disease and some refer to it as the “too late triad

Other indicators of advanced disease include

- weight loss
- fever
- night sweats
- Palpable mass
- cervical lymphadenopathy
- nonreducing varicocele
- bilateral lower extremity edema

A minority of patients present with symptoms directly related to metastatic disease

- bone pain
- persistent cough

- A less common but important presentation of RCC is that of spontaneous perirenal hemorrhage, in which the underlying mass may be obscured

- Zhang et al. have shown that more than 50% of patients with perirenal hematoma of unclear cause have an occult renal tumor, most often AML or RCC

Symptoms of localized or locally advanced disease

- Hematuria
- Flank pain
- Abdominal mass
- Perinephric hematoma
- Obstruction of the inferior vena cava
- Bilateral lower extremity edema
- Nonreducing or right-sided varicocele

Symptoms of systemic disease

- Persistent cough
- Bone pain
- Cervical lymphadenopathy

Constitutional symptoms

- Weight loss
- Fever
- Malaise
- Paraneoplastic syndromes

Paraneoplastic syndromes

- are seen more commonly with metastatic disease
- many resolve once the malignant lesion(s) are surgically removed

- Hypercalcemia can also be managed with vigorous hydration and diuresis, or with other medical approaches

- Paraneoplastic syndromes are found in 10% to 20% of patients with RCC and few, if any, nonrenal malignancies are associated with a comparable quantity and diversity of such syndromes
- In fact, RCC was previously referred to as the internist's tumor because of the predominance of systemic rather than local manifestations.

Paraneoplastic syndromes are more common in metastatic disease and less common (almost nonexistent) in patients with small, incidental renal masses

The most common of these syndromes is elevated erythrocyte sedimentation rate, which accounts for more than 50% of identified paraneoplastic syndromes

Under normal circumstances, the kidney produces 1,25-dihydroxycholecalciferol, renin, erythropoietin, and various prostaglandins, all of which are tightly regulated to maintain homeostasis.

RCC may produce these substances in pathologic amounts, and it may also elaborate a variety of other physiologically important factors

- parathyroid hormone-like peptides
- lupus-type anticoagulant
- human chorionic gonadotropin
- Insulin
- various cytokines
- inflammatory mediators

Hypercalcemia

- 13% of patients with RCC
- paraneoplastic phenomena
- osteolytic metastatic involvement of the bone

The signs and symptoms

- nausea
- Anorexia
- Fatigue
- decreased deep tendon reflexes

Hypertension and polycythemia

- increased production of renin directly by the tumor
- compression or encasement of the renal artery or its branches, effectively leading to renal artery stenosis or arteriovenous fistula within the tumor
- polycythemia, hypercalcemia, ureteral obstruction, and increased intracranial pressure associated with cerebral metastases

Polycythemia associated with RCC can be due to

- increased production of erythropoietin
- directly by the tumor
- by the adjacent parenchyma in response to hypoxia induced by tumor growth

nonmetastatic hepatic dysfunction or Stauffer syndrome

- 3% to 20% of cases
- Almost all patients with Stauffer syndrome have an elevated serum alkaline phosphatase level
- 67% have elevated prothrombin time or hypoalbuminemia,
- 20% to 30% have elevated serum bilirubin or transaminase level
- thrombocytopenia and neutropenia

Typical symptoms include

- fever
- weight loss
- Hepatic metastases must be excluded.

A variety of other less common, but distinct paraneoplastic syndromes associated with RCC include

- Cushing syndrome
- hyperglycemia
- galactorrhea
- Neuromyopathy
- clotting disorders
- cerebellar

Commonly assessed laboratory parameters

- serum creatinine
- glomerular filtration rate (GFR)
- complete cell
- blood count
- erythrocyte sedimentation rate
- liver function study
- alkaline phosphatase
- lactate dehydrogenase
- (LDH)
- serum corrected calcium
- coagulation study
- Urinalysis
- urinary cytology (the collecting system)
- endoscopic assessment(the collecting system)

Split renal function should be estimated using renal scintigraphy in the following situations

- when renal function is compromised, as indicated by increased serum creatinine or significantly decreased GFR

- when renal function is clinically important; e.g., in patients with a solitary kidney or multiple or bilateral Tumours

Renal scintigraphy is an additional diagnostic option in patients at risk of future renal impairment due to comorbid disorders.