EAU Guidelines on Renal Cell Carcinoma

Diagnostic evaluation

SYMPTOMS:

Many renal masses remain asymptomatic until the late disease stages. The majority of renal cell carcinomas (RCCs) are detected incidentally by non-invasive imaging investigating various non-specific symptoms and other abdominal diseases.
Paraneoplastic syndromes are found in approximately 30% of patients with symptomatic RCCs. The classic triad of flank pain, visible haematuria, and palpable abdominal mass is rare (6–10%) and correlates with aggressive histology, advanced disease and poorer outcomes.

PHYSICAL EXAMINATION:

Limited role in RCC diagnosis. The following findings should prompt radiological examinations: palpable abdominal mass; palpable cervical lymphadenopathy; new occuring varicocele in adult and bilateral lower extremity oedema, which suggests venous involvement.

LABORATORY FINDINGS:

Commonly assessed laboratory parameters are 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, and urinalysis.

IMAGING: Most renal tumours are diagnosed by abdominal ultrasound (US) or computed tomography performed for other medical reasons.

Computed tomography (CT):

Contrast-enhanced multi-phasic CT has a high sensitivity and specificity for characterisation and detection of RCC, invasion, tumour thrombus and metastatic RCC. A change of 15 HU, or more, in the solid tumour parts demonstrates enhancement and thus vital tumour parts.
Abdominal contrast-enhanced CT angiography is useful in selected cases when detailed information on the renal vascular supply is needed.

Magnetic resonance imaging (MRI):

MRI has a slightly higher sensitivity and specificity for small cystic renal masses and tumour thrombi as compared to CT and is indicated in patients who are allergic to intravenous CT contrast medium and in pregnancy. For the diagnosis of complex renal cysts (Bosniak IIF-III) MRI may be also preferable.

Recommendations	Strength rating
Use multi-phasic contrast-enhanced computed tomography (CT) of abdomen and chest for the diagnosis and staging of renal tumours.	Strong
Omit chest CT in patients with incidentally noted cT1a disease due to the low risk of lung metastases in this cohort.	Weak
Use magnetic resonance imaging (MRI) to better evaluate venous involvement, reduce radiation or avoid intravenous CT contrast medium.	Weak
Use non-ionising modalities, including MRI and contrast-enhanced ultrasound, for further characterisation of small renal masses, tumour thrombus and differentiation of unclear renal masses, in case the results of contrast-enhanced CT are indeterminate.	Strong
Offer brain CT/MRI in metastatic patients when systemic therapy or cytoreductive nephrectomy is considered.	Weak

Radiographic investigations to evaluate RCC metastases:

- Use of nomograms to calculate risk of lung metastases have been proposed based on tumour size, clinical stage and presence of systemic symptoms. Chest CT is accurate for chest staging.
- There is a consensus that most bone metastases are symptomatic at diagnosis; thus, routine bone imaging is not generally indicated.

Offer brain CT/MRI in metastatic patients when systemic therapy or cytoreductive nephrectomy is considered.	Weak
Do not routinely use bone scan and/or positron-emission tomography CT for staging of renal cell carcinoma.	Weak

Renal tumour biopsy:

Can be considered in patients who are candidates for active surveillance of small masses, to obtain histology before ablative treatments, and to select the most suitable medical and surgical treatment strategy in the setting of metastatic disease. Renal mass biopsies are associated with reduced overtreatment of benign masses and offers patients additional information for an informed decision regarding optimal management.
In experienced centres, core biopsies have a high diagnostic yield, specificity, and sensitivity for the diagnosis of malignancy.

Perform a percutaneous biopsy in select patients who are considering active surveillance.	Weak
Use a coaxial technique when performing a renal tumour biopsy.	Strong
Do not perform a renal tumour biopsy of cystic renal masses unless a significant solid component is visible at imaging.	Strong
Use a core biopsy technique rather than fine needle aspiration for histological characterisation of solid renal tumours.	Strong

Genetic assessment:

Hereditary kidney cancer is 5–8% of all kidney cancer cases.
In case of renal cancer, if patient`s age is 46 years or younger, and/or with bilateral or multifocal tumours and/or with a first or second-degree relative with RCC and/or with close blood relative with a known pathogenic variant and/or with specific histologic characteristics, the risk of hereditary cancer is significantly higher.

Recommendations	Strength rating
Perform a genetic evaluation in patients aged ≤ 46 years, with bilateral or multifocal tumours and/or a first or second-degree relative with RCC and/or a close blood relative with a known pathogenic variant and/or specific histologic characteristics which suggest the presence of a hereditary form of RCC.	Strong
Refer patients to a cancer geneticist or to a comprehensive clinical care centre in case of suspected hereditary kidney cancer.	Strong