Kidney Tumor

وزراة التعليم العالي والبحث العلمي
كلية المعارف الجامعة
قسم المختبرات الطبية

Histopathology

المرحلة الرابعة

Kidney cancer common malignant tumor of the kidney is renal cell carcinoma, Followed by nephroblastoma (Wilms tumor) , Tumors of the lower urinary tract are more common than renal cancer.

Kidney cancer is most treatable and curable if caught in the earliest stage of the disease. Untreated and/or advanced kidney cancer can spread from the kidney into surrounding tissues and into the lymph nodes, lungs, liver, bones and brain, where it can form another cancerous tumor This is called metastasis. Kidney cancer is more common in men than in women.

l- renal cell carcinoma

It originates from renal epithelium and hence is located in the cortex.

Renal carcinoma represents 80-85%of primary malignant tumors of the

kidney. It affects male more common in six to seventh decades.

Risk factors include

- Smoking
- Exposure to pollution
- Cysts acquires in hemodialysis patients.

renal cell carcinoma

- Three common forms are found: A. B. C.
- Clear cell carcinoma,
- Papillary renal cell carcinoma,
- Chromophobe renal carcinoma

A- Clear cell carcinoma

- The most common type.
- Accounting for 70-80% of renal cancers.
- The majority of this type is sporadic but few cases occur in familial form on association with VHL disease.

A- Clear cell carcinoma

- VHL is an autosomal dominant disease .These patients show mutation and loss of VHL gene located on chromosome 3. The loss of VHL gene (Tumor gene) give rise to clear cell carcinoma.
- VHL disease inherited disorder characterized by the formation of tumors and fluid filled sacs (cysts) in many different parts of the body.

B- Papillary Renal Cell Carcinoma

- It account for 10-15% of renal cancer.
- Like clear cell carcinoma, this tumor occurs in sporadic and familial forms.
- But unlike clear cell carcinoma papillary renal cancer has no abnormalities of chromosome 3.
- Trisomy of chromosome 7 is seen commonly in this cancer.

C- Chromophobe renal carcinoma

- It is rare tumor It account for 5% only of renal cancer.

- There is multiple chromosomal abnormalities including 1,2,6,10,13.

1- Clear cell carcinoma:

- Are usually loner, May be large in size. It growth incortex. The cut surface is yellow to orange due to high lipid content.
- It shows areas of cystic softening and hemorrhage. As the tumor enlarge it invade the wall of collecting system, renal vein,adrenal gland and other tissues.

Morphology of renal carcinoma Macroscopic picture:

- This is a renal cell carcinoma growth in the lower pole of the kidney.
- It is circumscribed.

The cut surface appearance with yellowish areas, and hemorrhagic red areas

Morphology of renal cancer Papillary renal carcinoma

- Tend to be bilateral and multiple . It has less lipid content. There is evidences of necrosis , hemorrhage, and cystic degeneration.

3- Chromophobe type:

- Rare & has a brownish color

histological appearance of a renal cellcarcinoma:

- The neoplastic cells have clear cytoplasm and are arranged in nests with intervening blood vessels.
- This appearance is why they are often called "clear cell carcinomas

Clinical features of renal cell carcinoma

- The most frequent symptom is painless hematuria in over 50% of cases.
- Less commonly the tumor may enlarge and become palpable.
- Extra renal effect: Fever. Secretion of other hormone substances leading to hypocalcaemia, hypertension.

II- Wilms tumor

- nephroblastoma It is one of the most common cancer in children. It contains a variety of cells and tissue components derived from the mesoderm. Most cases occur between 2-5 years.

- Wilms tumor is associated with some congenital malformations disorders, One of these disorders is WAGR syndrome characterized by genital abnormalities and mental retardation. These disorders are associated with loss of tumor chromosome 11.

Morphology of Wilms tumor Macroscopic:

- The tumor tends to present mostly as a large ,solitary ,well circumscribed mass. On cut surface ,the tumor is gray, homogenous with foci of hemorrhage, cystic changes and necrosis.

Clinical picture of Wilms

- The clinical picture usually refer to the large size of the tumor, There is palpable abdominal mass. The patient presents with Fever,
- Abdominal pain and Lump Anemia
- Hematuria.

Diagnosing kidney cancer

- begins with taking a thorough personal and family medical history, including symptoms and risk factors for kidney cancer. Diagnosis also includes completing a physical examination. A test on the urine, called an urinanalysis, is performed to check for blood in the urine (hematuria) and to rule-out certain other conditions with similar symptoms, such as a bladder infection or kidney stones.

Rarely, a kidney biopsy may be necessary. A kidney biopsy involves removing a sample of cells from the kidney tumor with a very fine needle inserted through the skin. The sample of cells is then examined under a microscope for the presence of cancer cells to confirm a diagnosis. The prognosis for people with kidney cancer varies depending on the stage of advancement of the cancer, the specific type of kidney cancer, and other factors. Treatment of kidney cancer may include surgery, radiation therapy, targeted therapy, immunotherapy and/or chemotherapy The most common form of kidney cancer is renal cell cancer.

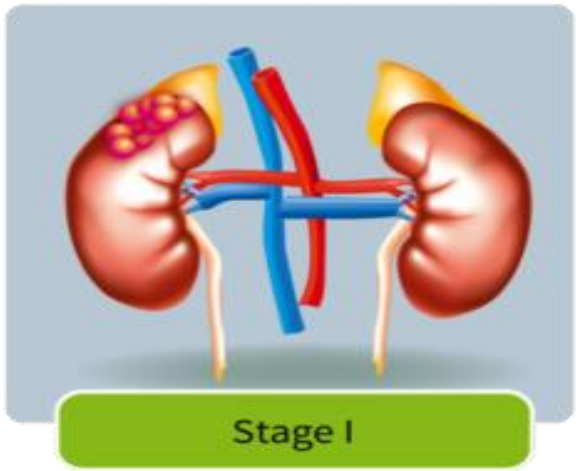
Pathophysiology

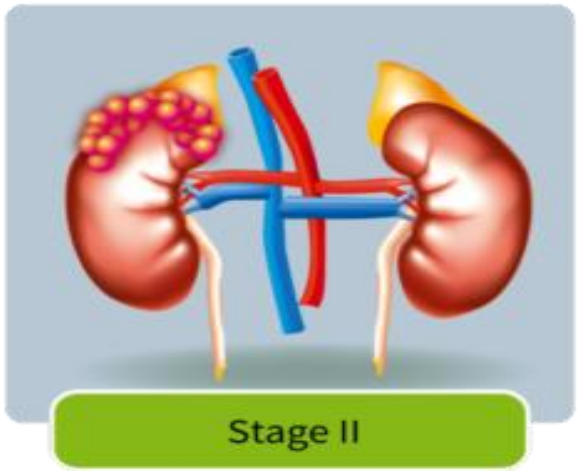
- Kidney cancer originates in the kidney in two principal locations: the renal tubule and the renal pelvis.
- Renal tubule cancers are renal cell carcinoma and clear cell adenocarcinoma.
- Renal pelvis are transitional cell carcinoma.

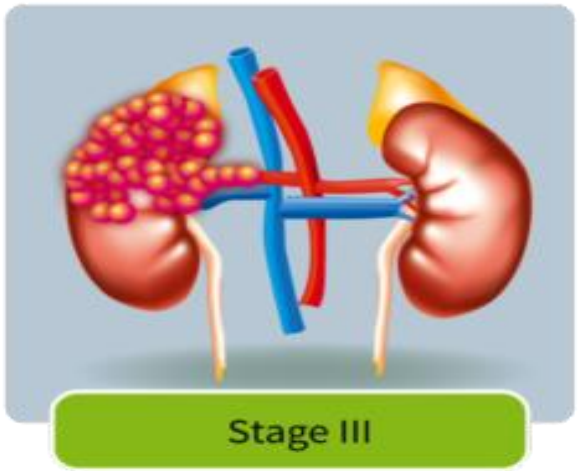
Stage of kidney tumor

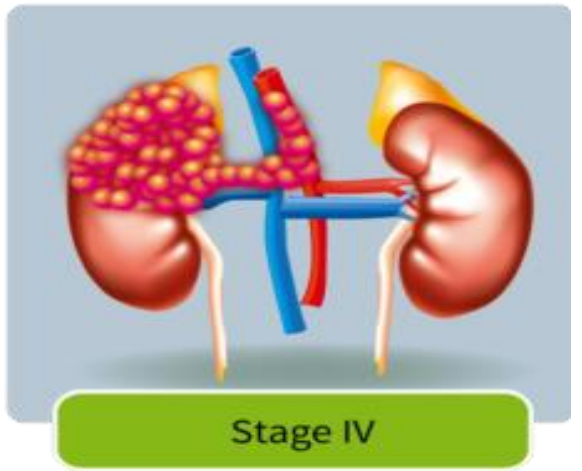
- **Stage I:** The tumor is 7 cm or smaller and is only located in the kidney. It has not spread to the lymph nodes or distant organs.
- **Stage II:** The tumor is larger than 7 cm and is only located in the kidney. It has not spread to the lymph nodes or distant organs.
- **Stage III:** Either of these conditions:
- A tumor of any size is located only in the kidney. It has spread to the regional lymph nodes but not to other parts of the body .
- **Stage IV:** Either of these conditions:
- The tumor has spread extends into the adrenal gland on the same side of the body as the tumor, possibly to lymph nodes, but not to other parts of the body .

Stages of kidney cancer









Stage I	Stage II	Stage III	Stage IV
The cancer is only within the kidney and has not spread. The cancer is less than 7 cm in size. If the cancer can be removed it is most likely to be cured with surgery. 9 out of 10 people will be alive and free of the cancer at five years after an operation.	The cancer is larger than 7 cm but is still confined to the kidney and has not spread outside of the kidney. Surgery is a good treatment option. The five year survival rate is still very high after surgery for stage 2 kidney cancer.	The kidney cancer has moved nearby outside the kidney, but has not spread to distant organs. For example, the cancer might have spread into the fat around the kidney, into the blood vessel coming out of the kidney, or into lymph nodes near the kidney. Ask your doctor about all treatment options and clinical trials.	The kidney cancer has spread widely outside the kidney; to the abdominal cavity, to the adrenal glands, to distant lymph nodes or to other organs, such as the lungs, liver, bones, or brain. Ask your doctor about all treatment options and clinical trials.