Kidney cancer

Introduction

There are several types of kidney cancer, but renal cell carcinoma (RCC) is the most common type of kidney cancer in adults, responsible for 80% of cases. This is also called 'renal adenocarcinoma' and historically was referred to as 'hypernephroma'. Other tumours are either benign or malignant, but are not covered here.

RCC is the eighth most common cancer in the UK (2010). It is the seventh most common cancer among men in the UK (2010), accounting for more than 3% of all new cases of cancer in males. It is the ninth most common cancer among women in the UK (2010), responsible for more than 2% of all new cases of cancer in females. In 2010, 9,639 people in the UK were diagnosed with kidney cancer, 60% in men and 40% in women; 4,062 people died in the UK from kidney cancer in 2010.

RCC tends to be a cancer of older age, with only a quarter of cases occurring in people under the age of 60 years, and most commonly occurring in ages 60–70.

In the last ten years kidney cancer rates in the UK have increased by more than a quarter, and the rate has more than doubled since the mid-1970s. While some of this may be due to better detection of the disease, it is almost certain that there has also been a true increase in the occurrence of the cancer.

Overall survival rates for patients with RCC have increased over the last 40 years, but are still largely determined by the stage and grade of the cancer when it is treated.

Causes of kidney cancer

Kidney cancer is caused by mutations in the DNA of the cells found in the kidney. When this occurs, those cells begin to grow quickly, causing a growth or tumour, which will continue to grow and may spread to other areas of the body when cells break off and metastasise to other parts of the body. Most people with RCC develop it for no apparent reason.

Certain groups of people are at increased risk of developing RCC:

- Smoking is a major preventable risk factor for kidney cancer; on average smokers have a 25–50% increase in risk of kidney cancer. This risk reduces as soon as someone stops smoking.
- Obesity is an established risk factor for kidney cancer, increasing the chance by 20–25%.
- Kidney cancer risk increases by around 20–60% in those with a history of hypertension (high blood pressure).
- People with a close family member with kidney cancer have an increased risk of being diagnosed themselves.
- Approximately 2% of cases are associated with inherited syndromes such as hereditary papillary renal cell carcinoma and Von Hippel-Lindau disease (a hereditary disease that affects blood vessels in the brain, eyes, and other body parts).
- Exposure to certain chemicals, in particular asbestos or cadmium can increase the risk of kidney cancer.
- Patients on long-term kidney dialysis for kidney failure.
- Polycystic kidney disease.

Symptoms

Many people with kidney cancer have no symptoms at first, especially if it is small. As the cancer develops, there may be blood in the urine (haematuria). About half are now detected incidentally as scans are done for other conditions.

In up to half of cases, the first symptom is passing blood in the urine (haematuria) which is usually painless and is often intermittent. All cases of blood in the urine should be investigated, initially by seeing your GP.

Other symptoms include:

- Loin (side) pain (40%)
- High blood pressure (30%)
- Being generally unwell, or loss of appetite / weight (30%)
- Abdominal mass (25%)
- Pain or breathing difficulties due to spread of the cancer to bone, lungs or other organs. Up to 25% of tumours have spread by the time of diagnosis.

How is RCC diagnosed and assessed?

The diagnosis of RCC is usually initially suggested by an ultrasound scan of the kidney. This is usually followed by a staging CT scan of the abdomen and chest to see if the cancer has spread.

Imaging studies usually provide enough information for your surgeon to decide if an operation is needed. Most kidney cancers are referred to specialist hospitals, and are discussed by a team of doctors including kidney surgeons, radiologists, oncologists (cancer specialists) and pathologists, in their multi-disciplinary team (MDT) cancer meeting.

Kidney biopsy is not usually suggested for two reasons:

- There is a small chance that the cancer in the kidney may be spread as a result of taking a biopsy.
- Biopsies have about a 20% chance of missing any cancer that is present. A negative biopsy can therefore be misleading and lead to delayed treatment.

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Treatment

Surgery is the most effective treatment for RCC. If the cancer has not spread, surgery alone may be curative. If it has spread, surgery to remove the affected kidney may still be advised, often in addition to other treatments. This may improve symptoms and lengthen survival.

An operation to remove the entire affected kidney (radical nephrectomy) is the commonest treatment. Laparoscopic (keyhole surgery) surgery is now regarded as the standard approach, but still requires a cut the size of the kidney and tumour to remove the cancer intact at the end of the operation. Laparoscopy is usually possible for all but the largest or most complex tumours, resulting in shorter recovery time and better cosmetic results. Small tumours (usually less than 4cm) may be suitable for partial nephrectomy (removal of only part of the kidney with the tumour). The largest and most complex tumours involving extension of the tumour into the veins usually requires open surgery with a larger incision. Embolisation of the kidney artery (blockage of the artery by x-ray doctors) may be recommended for the larger and more complex tumours.

Occasionally, surgery is done to remove a 'secondary' tumour that has spread from the original kidney tumour to another part of the body, usually a lung.

There are newer treatments, some of which are experimental, that tend to be less invasive than surgery to remove the kidney. These include cryotherapy, where the tumour is frozen, and radio frequency ablation where the tumour is heated using high frequency electricity and high intensity focused ultrasound (HIFU). These tend to only be appropriate where there are multiple tumours in both kidneys or in more elderly patients with small tumours. In general, radiotherapy and traditional chemotherapy do not work for RCC.

Targeted kidney cancer therapies such as sunitinib, sorafenib, pazopanib, axitinib, tivozanib, temsirolimus, everolimus, bevacizumab and interferon-alpha have improved the outlook for RCC. Although they may allow patients to live longer if there is evidence of spread from the kidney, these therapies do not usually offer a cure. There are currently a number of clinical trials to look at the best way to use these drugs.

Prognosis (outlook for survival)

If a small cancer is confined within a kidney, and the patient is otherwise well, the outlook is good, with up to 95% surviving five years after surgery. If the kidney cancer is diagnosed when the cancer has already spread, a cure is less likely. However, treatment can often slow down the progression of the cancer.

Survival statistics can be downloaded for high and low risk disease at the following 2013 link, but please think carefully about whether you really wish to know the results before you look. These guidelines are designed for doctors, so they do go into a lot of medical detail:

https://uroweb.org/wp-content/uploads/10-Renal-Cell-Carcinoma_LR.pdf

Further information

An unusual but hopefully useful patient's perspective can be found at:
www.cancerguide.org/kidney.html

More links:
www.cancerresearchuk.org/cancer-help/type/kidney-cancer

www.patient.co.uk/health/kidney-cancer

www.kidneycancersupportnetwork.co.uk

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