

Patient information on

CANCER

Dr. Rehan A. Kazi

MBBS, MS, DNB, DLORCS (Eng), DOHNS (Eng), PhD (London) UICC fellow
Head & Neck Cancer Surgeon

This leaflet gives a brief description about what is cancer and how cancers develop and spread. There are separate leaflets on the different types of cancer.

Cancer is a disease of the smallest units in the body the cells. There are many different types of cells in the body, and so many different types of cancer can arise from the different types of cells. However, unlike normal cells, the cancer cells are abnormal and multiply 'out of control'.

What are cells?

Normal body cells

The human body is made up from millions of tiny cells. Different parts of the body such as organs, bones, muscles, skin, and blood are made up from different specialised cells. All cells have a centre called a nucleus containing thousands of genes. These genes are like 'codes' which control the different functions of the cell. Certain genes control when the cell should divide and multiply, and certain genes even control when the cell should die. Normally, our body only makes the right number of cells that are needed. As old cells wear out or become damaged, new cells are formed to replace them. Some cells normally multiply quickly. For example, you make millions of red blood cells each day as old ones become worn out and are broken down. Some cells do not multiply at all once they are mature, for example, brain cells.

Abnormal cells

However, sometimes a cell can become abnormal. This occurs because one or more of the genes in the cell has become damaged or altered and thus affecting its function. Lots of abnormal cells may then develop from a single original abnormal cell. These cells do not know when to stop multiplying. A group of abnormal cells may then form. If this group of cells gets bigger, it becomes a large lump of abnormal cells called a tumour.

What are tumours?

A tumour is a 'lump' or 'growth' of tissue made up from abnormal cells. Tumours are divided into two types - benign and malignant.

Benign tumours

They are not 'cancerous' and are not usually life-threatening. These may form in various parts of the body. Benign tumours usually grow slowly, and do not spread or invade other tissues. They often do no harm if they are left alone. However, some benign tumours can cause problems. For example, some grow quite large and may cause local pressure symptoms, or

look unsightly. Also, some benign tumours that arise from cells in hormone glands can make too much hormone which can cause unwanted effects.

Why do benign tumours not spread to other areas?

Cells that make up benign tumours are different to malignant cells. Cells in benign tumours tend to be quite similar to normal cells. They do not invade local tissues. A benign tumour often grows slowly within a 'capsule' or within normal cells which surround the tumour. A benign tumour tends to look and feel smooth and regular and have a well defined edge. This is unlike a malignant tumour which may look 'craggy' and irregular, and its edges tend to be mixed up with the nearby normal cells and tissue.

Malignant tumours ('cancers')

Malignant tumours tend to grow quite quickly, and invade into nearby tissues and organs which can cause damage. The original site where a tumour first develops is called a primary tumour. Malignant tumours may also spread to other parts of the body to form 'secondary' tumours (metastases). These secondary tumours may then grow, invade and damage nearby tissues, and spread again.

Note: not all cancers form solid tumours. For example, in cancer of the blood cells (leukaemia) many abnormal blood cells are made in the bone marrow and circulate in the bloodstream.

How do malignant tumours grow and spread?

Local growth and damage to nearby tissues

Malignant cells multiply quickly. However, to get larger, a tumour has to develop a blood supply to obtain oxygen and nourishment for the new and dividing cells. Cancer cells make chemicals that stimulate tiny blood vessels to grow around them which branch off from the existing blood vessels. This ability for cancer cells to stimulate blood vessels to grow is called 'angiogenesis'.

Malignant cells have the ability to push through or between normal cells. So, as they divide and multiply, malignant cells invade and damage the local surrounding tissue.

Spread to lymph channels and lymph nodes

Some malignant cells may get into local lymph channels. (The body contains a network of lymph channels which drains the fluid called lymph which bathes and surrounds the the body's cells.) The lymph channels drain lymph into lymph nodes (sometimes called lymph glands). There are many lymph nodes all over the body. A malignant cell may be carried to a lymph node and there it may become trapped. However, it may multiply and develop into a tumour. This is why lymph nodes that are near to a tumour may enlarge and contain cancerous cells.

Spread to other areas of the body

Some malignant cells may get into a local small blood vessel (capillary). They may then get carried in the bloodstream to other parts of the body. The cells may then multiply to form 'secondary' tumours (metastases) in one or more parts of the body. These secondary tumours may then grow, invade and damage nearby tissues, and spread again.

Types of cancer

There are more than 100 different types of cancer. Each type is classified by the type of cell the cancer originates from. For example, a breast cell, a lung cell, etc. Each type of cancer generally falls into one of three categories.

- Carcinomas are cancers that arise from cells which line a body surface, or the lining of a gland. For example, the skin, or the lining of the gut, mouth, cervix, airways, etc.
- Sarcomas are cancers that arise from cells which make up the connective tissues such as bones or muscles. For example, an osteosarcoma is a cancer of bone tissue.
- Leukaemias and lymphomas are cancers of cells in bone marrow and lymph glands. For example, leukaemia is a cancer of cells that make white blood cells.

There are often great differences between different types of cancers. For example:

- Some grow and spread more quickly than others.
- Some are more easy to treat than others, particularly if diagnosed at an early stage.
- Some respond much better than others to chemotherapy, radiotherapy, or other treatments.
- Some have a better outlook (prognosis) than others. For some types of cancer there is a very good chance of being cured. For some types of cancer, the outlook is poor.

So, cancer is not just one condition. In each case it is important to know exactly what type of cancer has developed, how large it has become, whether it has spread, and how well the particular type of cancer responds to the commonly pursued treatments of surgery, radiotherapy and chemotherapy.