

Introduction

This fact sheet has been prepared to help you understand more about non-Hodgkin's lymphoma, a cancer of the lymphatic tissues.

There are two groups of lymphoma-Hodgkin's disease and non-Hodgkin's lymphoma. 'Hodgkin' is the name of the doctor who, in 1832, recognised these two groups of lymphoma.

Many people feel understandably shocked and upset when they are told that they have non-Hodgkin's lymphoma. This is intended to help you understand the diagnosis and treatment of the disease. We cannot advise you about the best treatment for you. You need to discuss this with your own doctors. However, we hope this information will answer some of your questions and help you in thinking about the questions you want to ask your doctors.

What is Cancer?

Cancer is a disease of the body's cells. Our bodies are constantly making new cells: to enable us to grow, to replace worn-out cells, or to heal damaged cells after an injury. Normally, cells grow and multiply in an orderly way. Occasionally, however, some cells behave abnormally. They multiply in an uncontrolled way, and these cells may grow into a lump which is called a **tumour**.

Tumours can be **benign** (not cancerous) or **malignant** (cancerous). Benign tumours do not spread outside their normal boundary to other parts of the body. A malignant tumour is made up of cancer cells. If these cells are not treated they may spread into surrounding tissues.

If the cancer cells spread beyond their normal boundaries then the tumour is malignant, that is, it is a cancer.

(PICTURE)

(PICTURE)

Sometimes cells break away from the original (primary) cancer and spread to other organs. When these cells reach a new site they may continue to grow and form another tumour at the site. This is called a secondary cancer or **metastasis**.

In some cancers, it is the body's blood cells which multiply abnormally. These cancers are called leukaemia, myeloma and lymphoma, and include non-Hodgkin's lymphoma.

The lymphatic system

The **lymphatic system** is part of the **immune system**, the system that defends the body against infection. The lymphatic system is a network of small lymph nodes (or lymph glands) connected by very thin lymph vessels, which branch into every part of the body except the brain and spinal cord. The major nodes can be found in the neck, armpits, chest, abdomen, pelvis and groin. Other parts of the lymphatic system include the spleen, thymus and bone marrow.

A clear fluid called lymph flows through the lymph vessels. It contains white blood cells called **lymphocytes**, special proteins called **antibodies**, and some waste products. Lymphocytes and antibodies are important parts of your body's immune system.

The lymph fluid passes through the **lymph nodes**, which filter out bacteria and other harmful agents.

Non-Hodgkin's lymphoma

Lymphoma is a general term for a cancer that begins in the lymph tissue.

Non-Hodgkin's lymphoma is a group of cancers of the lymph nodes. These cancers differ in the type of lymph cells they affect, the symptoms they cause and the speed at which they grow.

Sometimes non-Hodgkin's lymphoma appears at the same time in several parts of the body.

When you have non-Hodgkin's lymphoma appears are the same time in several parts of the body.

When you have non-Hodgkin's lymphoma, large numbers of abnormal **lymphocytes** are made. These abnormal lymphocytes replace some of your normal lymphocytes.

This can disrupt your immune system and reduce your ability to fight infections. The lymph nodes also become enlarged, forming painless lumps (tumours).

Grades of non-Hodgkin's lymphoma

Non-Hodgkin's lymphoma are grouped into three main grades – low, intermediate and high – according to their level of aggression, rate of growth and how the cells look.

(PICTURE)

Low-grade lymphoma usually occur in older individuals and often there are no distinct symptoms, so the onset can develop slowly over time.

Intermediate – and high-grade lymphoma usually have a more rapid growth and onset.

Causes of non-Hodgkin's lymphoma

Although effective treatments for non-Hodgkin's lymphoma are available, the causes of this group of cancers are unknown. Sometimes, it can occur after organ transplantation and as a complication of Acquired Immune Deficiency Syndrome (AIDS).

How common is non-Hodgkin's lymphoma?

The group of cancers known as non-Hodgkin's lymphoma is one of the ten most common cancers in Victoria. For example, in 1995, close to 800 people were diagnosed with non-Hodgkin's lymphoma.

These cancers can occur in children; however they are more common in adults.

Diagnosis

The first sign of the disease is often a painless swelling in the neck, armpit, groin or belly. Sometimes people also experience loss of weight, fevers and drenching sweats at night. They may also feel generally tired and unwell.

How non-Hodgkin's lymphoma is diagnosed

Non-Hodgkin's lymphoma is diagnosed using a number of tests, most importantly, **tissue biopsy**.

Tissue biopsy

Correct diagnosis of non-Hodgkin's lymphoma can only be made by removing an enlarged node and examining it under a microscope to see if it contains cancer cells. This is called a **biopsy**. It is a minor operation and may be done using a local or general **anaesthetic**.

Further tests for 'staging the disease'

If the tissue biopsy shows lymphoma cells, further tests will be carried out to determine how far the cancer cells have spread. This is called 'staging the disease'.

How non-Hodgkin's lymphoma is staged

The location and spread of the cancer determine how the lymphoma is staged.

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| Stage I | Cancer is found in only one lymph node area or one area/organ outside the lymph nodes. |
| Stage II | Cancer is found in two or more lymph node areas on the same side of the diaphragm . Cancer is found in one area/organ outside of the lymph nodes and in the lymph nodes around it. Other lymph node areas on the same side of the diaphragm may be involved. |
| Stage III | Cancer is found in the lymph node areas on both sides of the diaphragm. It may have spread to an area/organ near the lymph node area, or to the spleen, or both. |
| Stage IV | Cancer has spread in more than one spot, within or outside the lymph system (for example, liver, lung or bone). |
| Relapse | The cancer has come back after being treated. |

Staging is a very important part of the diagnosis as it allows the doctors to recommend the best treatment for you. Symptoms, rate of spread and treatment can vary for different people. Staging may take from one to three weeks. The following tests may be used to determine the extent of the condition.

Blood tests

Blood may need to be taken so it can be examined for evidence of cancer cells. Blood tests will also be used to monitor the success of your treatment.

Throat examination

Your throat may be examined by specialist doctors to see if your tonsils (which are part of the **lymphatic system**) and other areas of the throat are affected.

Bone marrow biopsy

This test is done by collecting a small amount of fluid from your **bone marrow** into a syringe. The biopsy is done under a local **anaesthetic** to minimise the pain which many people experience during the procedure. Once the sample of bone marrow has been collected, it is examined under the microscope to see if any **lymphoma** cells have spread to the bone marrow.

CT scan (formerly called a CAT scan)

It is likely that you will have a computerised tomography (CT) scan. The CT scan is a special type of x-ray which gives a three-dimensional picture of the organs and other structures in your body. It usually takes about 30-40 minutes to complete this painless test.

You will be asked to lie flat on a table while the CT scanner, which is large and round like a doughnut, rotates around you. A dye may be injected into a vein, probably in your arm, before the scan. This will make the pictures that the scanner takes clearer. You will be asked not to eat or drink for a while before you have your scan. Most people are able to go home as soon as their scan is over.

A child with a non-Hodgkin's lymphoma will also have an **ultrasound** scan of his or her abdomen.

Gallium scan

This test allows for your whole body to be checked. You will receive an injection of gallium, a sort of metal. After a few days, when the gallium has had time to circulate around your body, you return to the hospital to have pictures of your body taken with a special camera (a gamma camera). The camera 'sees' the gallium outlining organs and structures in your body.

PET scan

A positron emission tomography (PET) scans builds up clear and detailed cross-section pictures of the body. You will be injected with a glucose solution containing a very small amount of radioactive material. The scanner can 'see' the radioactive substance, which shows where the glucose is being used in the body. Cancerous cells show up as areas where glucose is being used by actively growing cells.

What doctors and other health professionals will I see?

Your general practitioner will refer you for initial tests to confirm whether or not you have cancer. If a diagnosis of cancer is made, he or she will also refer you to a specialist who will advise you about treatment options. Specialists and health workers who care for people with non-Hodgkin's lymphoma include:

- Surgeons: who are responsible for biopsies and other surgical procedures
- Medical oncologists and haematologists: who are responsible for **chemotherapy** and co-ordinating the total treatment
- Radiation oncologists: who are responsible for **radiotherapy**
- Dietitians: who recommend the best diets to follow while you are in treatment and recovery
- Nurses: who assist you through all stages of your hospitalisation and cancer experience.
- Social workers and occupational therapists: who will advise you on support services available and help you to resume normal activities.

Treatment

The main form of treatment for non-Hodgkin's lymphoma is **chemotherapy** (drug treatment). Treatment will depend on the grade and stage of your lymphoma. For some adults with very early stages of the disease, **radiotherapy** (x-ray treatment) may be used. Children, however, are not treated by radiotherapy.

Your treatment may be given to you as an outpatient, but usually it will mean spending a few days in hospital. During your treatment you will also have regular check-ups, including blood tests.

In some adults, the disease is very slow growing and may initially require no treatment other than regular checkups.

Chemotherapy

This is the treatment of cancer by special anti-cancer drugs. The aim is to kill all cancer cells while doing the least possible damage to normal cells.

Combinations of drugs are usually given in the treatment of most types of non-Hodgkin's lymphoma. Some combinations may be used for five days within a three week period, while other may be used on a weekly basis. Some people can have all their chemotherapy drugs as tablets. Other people need to have the drugs injected into a vein. This is called intravenous treatment. Intravenous therapy is the main form of chemotherapy used for children, although some are given tablets.

Side effects of chemotherapy

Some drugs used in chemotherapy can cause side effects. They may include feeling sick, vomiting, depression, feeling off-colour and tired, and some thinning or loss of hair from your body and head. These side effects are temporary, and steps can be taken to prevent and reduce them.

Radiotherapy

Radiotherapy is used only in adults in the treatment of non-Hodgkin's lymphoma.

Radiotherapy treats cancer by using x-rays to kill cancer cells.

These x-rays can be precisely targeted onto cancer sites in your body. Treatment is carefully planned to do as little harm as possible to your normal body tissues.

In non-Hodgkin's lymphoma, radiotherapy is most commonly used as an adjuvant (or assisting) treatment to the main treatment of chemotherapy, particularly where there are very large lymph nodes.

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