Acute lymphoblastic leukaemia

Your doctor has told you that you have acute lymphoblastic leukaemia (ALL) or acute lymphocytic leukaemia.

'Leukaemia' means that abnormal cells are present in your blood. They come from the bone marrow, that is to say the soft tissue inside your bones which is responsible for the production of all types of blood cells.

'Lymphoblastic' refers to the cells involved in this disease, they are called lymphoblasts. In a healthy person they protect the body.

'Acute' means the disease has a sudden onset, the first symptoms and the diagnosis are a few days to a few weeks apart. Treatment is started within days, or even hours, of the diagnosis.

Medecin's notes :

As some drugs may make patients, especially males, sterile, it is possible to preserve some sperm after the disease is diagnosed.

Acute lymphoblastic leukaemia is a form of cancer due to the uncontrolled proliferation of lymphoblasts which invade the bone marrow. The latter then stops functioning normally and more especially stops producing normal blood cells, which is known as bone marrow failure.
As a consequence anaemia (low red blood cell count) sets in, inducing fatigue, pallor breathlessness and palpitations. Because other white blood cells called polynuclear neutrophiles (neutropenia) are fewer, the body is more sensitive to infections, especially lung infections. Lastly, the lower platelet count (thrombopenia) may cause bleeding, especially from the mucosa (nosebleed, bleeding gums) and the skin (the slightest knock or blow may lead to haematomas or bruises).
The proliferation of lymphoblasts may lead to other troubles: bone pains, enlarged lymph nodes and spleen. In rare cases the lymphoblasts may migrate to the cerebrospinal fluid located in the skull and along the spinal column, thereby inducing damage to the nerves or the meninges.
However all these symptoms and troubles are not necessarily present.

ALL is a rare disease; indeed fewer than 300 new cases are reported every year in France. To date its causes are unknown; neither germs, nor the environment or life events can usually account for it. It is neither contagious nor transmissible and is not hereditary. This form of leukaemia may occur at any age, in infants as well as in the elderly.

Diagnosis

The diagnosis of ALL mainly relies on a full blood count (FBC) made from a simple blood sample and on a bone marrow examination called a myelogramme. The latter is performed under local anesthesia and consists in inserting a hollow needle into a bone, usually either the breastbone or the hipbone. A small quantity of bone marrow is then removed, thus allowing to examine abnormal lymphoblasts, their chromosomes and genes with different techniques. The treatment depends on the results of these investigations.
Meanwhile the cerebrospinal fluid is examined after a lumbar puncture, i.e. a needle is inserted between two vertebrae after an injection with a painkiller.

Treatments

The treatment is tailored to the patient's age, their medical history and the specific features of the disease. It usually consists of several phases:

- **The primary phase** lasts about a week. It is a preparatory phase during which the heart function is assessed to determine if the future treatment will be well tolerated. The AIDS and hepatitis viruses are also screened for; should they be present the treatment would have to be adapted.
  It is also during this period that a catheter is inserted; it is a thin flexible tube which is connected to a large vein so as to make both treatment administration and blood tests easier.

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Acute lymphoblastic leukaemia (suite)

Main adverse effects of the induction treatment

The most commonly used drugs during induction may lead to:

- alopecia, or temporary baldness
- nausea, which can be prevented with anti-emetic medicines
- intestinal troubles
- allergic reactions
- numbness in the fingers and feet

These different side-effects do not necessarily occur and their degree varies from one person to another.

Your treatment may induce adverse effects and carry risks. Your doctor will keep you informed and tell you what symptoms to watch out for before you start on the suggested treatment.

Participating in a clinical trial

The best way to contribute to the improvement of disease management is to treat patients in the context of clinical trial. If your doctor suggests this could apply to you, he will explain its purpose, protocol, expected benefits, potential risks and will give you an information leaflet.

Participating in a trial of course means you will first have to give your written informed consent.

Useful contacts:

- **Secretarial / appointment:**
- **Nursing consultation:**
- **Consulting psychologist:**
- **Social worker:**
- **In an emergency:**

The catheter may show through the skin and then be tipped, or be continuous with a small case laid under the skin. Catheter positioning is minor surgery most often performed under local anaesthesia.

- **Induction** therapy requires a one-month hospital stay at least and consists in remission- inducing chemotherapy, i.e. there are no visible signs of disease, lymphoblasts are below detectable levels in both the blood and the bone marrow and normal bone marrow function is restored. However thanks to molecular biology doctors now know that a small number of abnormal cells persist at that stage. This is called 'residual disease' making further treatment courses necessary.

- **Continuation or post-remission therapy** requires repeated chemotherapy sessions over several days in order to prevent relapse. Then according to the efficiency of the induction treatment, the characteristics of the disease and the patient's age, a hematopoietic stem cell transplantation (allograft) can be suggested. The cells are obtained from a matching donor among the patient's family or on a donor list. Stem cells are blood cells (already present in placental blood) responsible for the production of all blood cells.

- **Maintenance treatment** is reserved to patients who won't have a transplantation. It is chemotherapy, mostly by mouth, over a two-year period.

- **Nerve and meningeal damage** is prevented during both induction and continuation treatments in order to treat the possible migration of lymphoblasts into the cerebrospinal fluid. It requires several lumbar punctures in order to inject chemotherapy doses, as well as more often than not cranial radiotherapy.

Supervision

Once all treatments are completed, supervision is essential. It requires regular visits you're your haematologist to detect any relapse and possible late complications of the treatments. Full blood counts and myelogramme checkups are performed at regular intervals first, then are spaced out.

Acute leukaemia is not a disease with a bleak prognosis, recovery may be spoken of when the event-free period extends over several years.