Myelodysplastic syndromes

You have just been diagnosed with a 'myelodysplastic syndrome'.

This is an umbrella name for a group of disorders characterised by both similar symptoms and similar occurrence and evolution mechanisms.

'Myelo' refers to the bone marrow, that is the soft tissue inside your bones which is responsible for the production of all types of blood cells.

Medecin's notes :

Myelodysplastic syndromes are bone marrow disorders. The bone marrow produces such blood cells as white blood cells, red blood cells and platelets. Red blood cells carry oxygen in the blood and circulate it around the body while white blood cells fight infections and platelets are essential to ensure blood clotting and help stop bleeding. These three types of cells are produced within the bone marrow by so-called 'hematopoietic stem cells'.

In case of a myelodysplastic syndrome the bone marrow no longer works normally, because hematopoietic stem cells are abnormal (so-called myelodysplastic) so that they can no longer produce normal blood cells. The drop in the red and white blood cell and platelet counts causes the symptoms of the disease.

As the disease evolves immature cells called blasts tend to accumulate in the bone marrow. The more numerous those blasts, the greater the risk that the myelodysplastic syndrome will evolve into acute myelogenous leukaemia (AML), a form of leukaemia which requires urgent treatment (see AML information leaflet).

Myelodysplastic syndromes most often occur in elderly people, with an average age at diagnosis around 70 years, but these are rather rare disorders with only 2400 newcases each year in France.

In most cases myelodysplastic syndromes occur for no apparent reason. However this kind of disease may be secondary to chemotherapy or radiotherapy cancer treatments or to exposure to some chemicals. In all cases a myelodysplastic syndrome is neither contagious nor hereditary.

Clinical features

In the early stage most people affected have no symptom, but as the number of one or more cell types drops different troubles may occur :

- anaemia, i.e. a low red blood cell count. Its symptoms include pallor, fatigue, breathlessness and palpitations on exertion.
- repeated infections. The low white blood cell count weakens the immune system so that the body is less apt to fend off infections, however slight, which therefore become more frequent and more severe.
- bleeding. When the platelets become less numerous (thrombopenia), bleedings of various severity may occur, affecting mostly the nose and the gums. Ecchymoses and hematomas (commonly called bruises) may occur without any specific reason.

Diagnosis

A myelodysplastic syndrome is suspected first from a full blood count, made from a routine blood sample, which allows to count the number of different blood cells. This shows that the different counts are below the normal ranges. To make the diagnosis, however, a bone marrow biopsy is required. It is performed under local anaesthesia and consists in inserting a hollow needle into a bone, usually either the breastbone or the hipbone.

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Myelodysplastic syndromes (suite)

In case of infection

People with a myelodysplastic syndrome may have a lower white blood cell count, which weakens their immune system so that their body is less apt to fight off infection. In case of a fever you should get immediately in touch with your haematologist or your GP so that they can decide on your management. You will then be prescribed antibiotics tailored to your case.

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:**

A small quantity of bone marrow is then removed and examined under a microscope. This allows to identify the signs of dysplasia and to see the immature cells (blasts) present in the bone marrow. The diagnosis of myelodysplasia can thus be made and its subtype known as various forms exist.

The bone marrow sample is also used to make a karyotype, that is a study of the abnormal cell chromosomes to screen for possible anomalies.

These three investigations eventually allow to estimate the likely progress of the disease according to an international prognosis scale called IPPS (for International Prognostic Scoring System). This scale defines four groups according to the percentage of blasts found in the bone marrow, the chromosome anomalies that have been identified and the number of depleted cell lines (from one to three cytopenias). 1 stands for a low-risk group, 2 for a lower- intermediate-risk group; 3 for an upper-intermediate risk-group and 4 for a high-risk group.

It is important to assess the likely evolution in order to decide on a treatment.

Management

For patients with a high- or intermediate-risk myelodysplastic syndrome two treatments can be considered:

- Hematopoietic stem cell allograft is the only treatment that may be regarded as a cure. The graft consists in destroying the patient's immune cells and replacing them with a donor's stem cells. These new disease-free cells allow to restore a normal blood count. This type of graft requires finding a matching donor (within the patient's family or on a donor list). This treatment is heavy and may lead to serious complications (graft turning against host) and requires a hospital stay in a sterile room for several weeks, which is why it is offered only to patients likely to cope with it.
- Intensive chemotherapy consists in administering one or more chemotherapy drugs to destroy the abnormal cells within the bone marrow. When the treatment is efficient normal blood cell production is virtually restored, which reduces the symptoms of the disease. However after a lapse of time which varies from patient to patient myelodysplasia may recur. Maintenance or continuation chemotherapy, with smaller doses, is then usually prescribed to limit the risk of a relapse.

A new type of drugs called hypomethylants (or demethylants) are being experimented to treat myelodysplastic syndromes. The results obtained from clinical trials are so far promising. It is likely these drugs will be more commonly offered to patients.

When the disease carries a low to lower-intermediate risk the management aims first to restore normal blood counts, mainly the red blood cell count which will raise again thanks to regular red blood cell transfusions. However, patients receiving regular repeated transfusions are exposed to risks linked to iron buildup (so-called haematochromatosis, a disease due to an iron overload). Indeed transfusions bring a high amount of iron, which is why it is sometimes necessary to combine an iron-chelating treatment to help with iron elimination.

Meanwhile a treatment with an erythropoietic agent (ASE) is usually offered; it is a hormone which stimulates red blood cell production. However, other treatments may have a similar effect, such as immunosuppressives, as well as so-called immunomodulating drugs (angiogenesis inhibitors).

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