

Question time



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What is the difference between lymphoma and leukaemia?

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Leukaemia means 'white blood' in Greek and is so named because of the layer of excess white cells forming in a blood sample allowed to settle, whereas lymphoma means 'lymph tumour'.

Both diseases consist of a large number of differing malignant conditions all referred to as haematological cancers. Lymphomas are now usually named by the REAL/WHO (Revised European-American Lymphoma/World Health Organisation) classification. Leukaemias may be named by other systems such as the FAB (French American British) classification for acute leukaemia. People with these diseases tend to be managed, in hospital, by similar teams of people. Blood cells are produced from the immature cells - the stem cells - in the bone marrow. Stem cells can mature into red blood cells, white blood cells and platelets.

The major difference between these two groups of malignancies is that leukaemia is a defect in the growth and maturation of any of the blood forming cell lines of the bone marrow. Different leukaemias have different faults at different places in the growth and maturation cycle of blood forming cells. The result is infiltration of the bone marrow with lots of individual abnormal cells that are then released into the blood stream. This can not only involve both major types of white cells (**myeloid** or **lymphoid**) but also red blood cells and **megakaryocytes** (from which platelets derive). Leukaemia is often referred to as a liquid tumour.

Lymphoma, however, is an abnormality of the lymphoid cells only and originates in lymphatic tissue, especially lymph glands, although it can also be found in gut, skin or indeed bone marrow tissue. These cells form structured lumps where the lymphoma cells' relationships with each other and supporting tissues are important. Lymphoma is therefore an example of a solid tumour.

To confuse matters, lymphoma can 'spill' over into blood later in the disease in a leukaemic phase and leukaemia can infiltrate

organs, typically the spleen, enlarging them and forming a lump. Leukaemia cells can occasionally form tumours as well, for example **chloromas**, in acute myeloid leukaemia.

So what differences might a patient experience?

Symptoms

Since leukaemia involves bone marrow and the blood, people with this illness tend to go to their doctor with features of bone marrow failure such as infection, anaemia, tiredness, bruising and being generally unwell. An incidental blood test resulting in an abnormal blood count can lead to diagnosis. The presence of lymphoma does not always cause an abnormal blood count, but other symptoms of lymphoma can be the same as those above. However, there are also likely to be palpable tumours or symptoms due to the tumours interfering with body function.

Diagnosis

The diagnosis of leukaemia is made with a blood film and/or a bone marrow examination, whereas lymphoma requires a biopsy of one of the tumours. The tumour structure formed by the lymphoma cells is just as important for a correct diagnosis as is the appearance of the malignant cells themselves. Sophisticated laboratory

techniques like **immuno-phenotyping** and **karyotyping** are used to diagnose both conditions, but CT scanning is frequently used in lymphoma to search for other sites of disease to decide on treatment needed; it is used rarely in leukaemia, as lumps, which show up on scans, are not characteristic of leukaemia.

Treatment

Both leukaemia and lymphoma respond well to treatment in most cases. A variety of differing regimens of chemotherapy are

used in both conditions. Although leukaemia is sensitive to radiotherapy this tends to be used much more in lymphoma where localised tumours can be targeted. In some localised lymphoma like early Hodgkin lymphoma or early low grade non-Hodgkin lymphoma, radiotherapy can be curative.

The behaviour of the various leukaemias and lymphomas vary where localised tumours can be extremely fast growing and rapidly fatal without treatment and conversely both contain slow growing entities that may need minimal treatment or no treatment at all for some years after diagnosis.

In leukaemia the terms acute and chronic are used to describe these differences in behaviour whereas in lymphoma aggressive and indolent (or high and low grade) are used. Differences within the various types of leukaemia or lymphoma may be greater than differences between certain leukaemias and lymphomas. Indeed, chronic lymphocytic leukaemia has minimal differences from lymphocytic lymphoma other than that the former presents with abnormal cells in the blood and the latter with very similar cells but in tumours in the lymph glands.

If you would like to receive a copy of the 'Lymphoma classification' fact file please call the helpline.

Glossary

- **myeloid** - anything to do with the white cell manufacturing system
- **lymphoid** – anything to do with the lymphatic system eg lymphocytes or lymph nodes
- **megakaryocytes** – marrow cells from which platelets are produced
- **chloromas** – a mass of leukaemia cells forming a lump often in the head and neck area
- **immunophenotyping** – a method of staining cells using antibodies, that can be labelled to specific molecules on the surface or inside cells.
- **karyotyping** – a method of looking at types of chromosomes in cells

Dr Wotherspoon regrets that he is not able to give individual advice or reply to letters. Views expressed are those of the contributor. The Association does not necessarily agree with or endorse their comment.

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