Children's Cancer and Leukaemia Group | the EXPERTS in CHILDHOOD CANCER

Langerhans cell histiocytosis in children

An information guide for parents, carers and families

The purpose of this guide is to give information about Langerhans cell histiocytosis to help you understand more about the type of cancer your child has.

Information in this guide should be used to support professional advice specific to your child's diagnosis. If you have any questions, it is important to ask your child's medical team.

What is Langerhans cell histiocytosis (LCH)?

LCH is an unusual condition. It has some characteristics of cancer but, unlike almost every other cancer, it may spontaneously resolve in some patients while being life-threatening in others.

About 50 children in the UK develop LCH each year. It can affect children of any age, and is more common in boys than in girls.

There has been some controversy about whether LCH is a cancer but it is classed as such and sometimes requires treatment with chemotherapy. LCH patients are therefore usually treated by children's cancer specialists (paediatric oncologists/haematologists). Most children will recover completely from LCH.

Langerhans refers to Dr Paul Langerhans, who first described the cells in the skin which are similar to the cells found in LCH lesions.

Histiocytosis refers to histiocytes which are cells that are part of the immune system, and are found in many parts of the body.

There are two types of histiocytes:

- **macrophage/monocyte cells** – these destroy harmful proteins, viruses and bacteria in the body
- **dendritic cells** – these stimulate the immune system

Langerhans cells are dendritic cells and are normally only found in the skin and major airways. In LCH, the abnormal dendritic cells that look similar to Langerhans cells may be found in different parts of the body, including the bone marrow, skin, lungs, liver, lymph glands, spleen and pituitary gland. When these abnormal dendritic cells accumulate in these tissues, they may cause damage.

LCH is divided into two groups:

- **single-system LCH** – when the disease affects only one part of the body, for example the skin or the bone
- **multi-system LCH –** when it affects more than one part of the body

Causes of LCH

We don't know what causes LCH but there is research going on all the time to try and find out. We do know

that LCH cells carry one of a range of mutations (e.g. BRAF V600E, MAP2K) that causes these dendritic cells to act in an abnormal way, causing LCH. It is not yet clear why and how this mutation occurs but this discovery provides us with potential targets for new experimental therapies. These mutations are not present in the cells of the rest of the body and therefore not passed on in families.

It is important to remember that nothing you have done has caused the LCH.

Signs and symptoms

The symptoms of LCH will depend on which part of the body is affected and whether the disease is affecting more than one part of the body.

Some common symptoms are:

- bone pain
- swelling and lumps on the skull
- skin rash such as cradle cap or nappy rash
- discharge from the ear
- hearing problems
- enlarged lymph glands
- irritability
- poor appetite
- breathing difficulties
- tummy problems such as diarrhoea
- liver problems including jaundice

In 10–20% of children with multi-system disease, the pituitary gland at the base of the brain is affected, causing hormonal problems. This can lead to passing larger amounts of urine and being very thirsty. This is called 'diabetes insipidus', which is different to 'diabetes mellitus' (sugar diabetes) and can be well-controlled with specific medicines. Occasionally, other pituitary hormones may be affected, causing poor growth or delayed puberty, which can also be treated.

How it is diagnosed

A variety of tests and investigations may be needed to diagnose LCH. Tests are likely to include the removal of a sample of cells from an affected part of the body (a biopsy). This is usually done in an operation under a general anaesthetic. The cells are then examined under a microscope. X-rays are taken of the bones, skull and lungs. Blood and urine tests will also be done.

Additional scans and tests may be required depending on which parts of your child's body are affected.

These tests help the doctors decide whether the disease is a single-system or multi-system type.

When your child is having the tests, they may need to stay in hospital. Any tests and investigations that your child needs will be explained to you.

Treatment

Single-system LCH may disappear without any treatment but some patients do require treatment.

Surgery, corticosteroids and oral indomethacin are some of the treatments used in single-system LCH. Multi-system LCH (and some single-system LCH) is treated with chemotherapy with or without corticosteroids.

Chemotherapy is anti-cancer medication that can destroy cancer cells, and corticosteroids are hormonal substances that are naturally produced in the body. Both chemotherapy and corticosteroids can help to destroy the LCH cells.

Treatment with drugs inhibiting specific, disease-causing mutations in LCH cells may be considered in a small number of children with high risk disease, who do not respond to standard treatment and those with rare complications. These drugs are known as BRAF inhibitors or MEK or MAPK inhibitors.

Your child's treatment will depend on the type of the disease. Your child's doctor will discuss the treatment options with you.

Side effects of treatment

Treatment for LCH can cause side effects, and your child's doctor will discuss these with you before the treatment starts. Any side effects will depend on the part of the body that's being treated and what treatment is being used.

Most side effects are short-term and gradually disappear once treatment stops. Side effects of chemotherapy can include:

- feeling sick (nausea) and being sick (vomiting)
- temporary hair loss
- tiredness
- low blood count leading to an increased risk of infection and bruising and bleeding (blood and/or platelet transfusions may be needed)
- a sore mouth and tummy
- diarrhoea

Side effects of corticosteroids can include:

- mood changes
- increased appetite and weight gain

Clinical trials

Many children have their treatment as part of a clinical research trial. Clinical trials are carried out to try to improve our understanding of the best way to treat an illness, usually by comparing the standard treatment with a new or modified version. Clinical trials mean there are now better results for curing children's cancers compared with just a few years ago.

Your child's medical team will talk to you about taking part in a clinical trial and will answer any questions you have. Taking part in a research trial is completely voluntary, and you'll be given plenty of time to decide if it's right for your child. You may decide not to take part, or you can withdraw from a trial at any stage. You will then receive the best standard treatment available.

National treatment guidelines

Sometimes, clinical trials are not available for your child's tumour. In these cases, your doctors will offer the most appropriate treatment, using guidelines which have been agreed by experts across the UK. Children's Cancer and Leukaemia Group (CCLG) is an important organisation which helps to produce these guidelines.

Donating to a tissue bank

LCH is a rare disease and more research is needed to help doctors develop better treatment for the future. Your child's hospital team will offer you the opportunity to anonymously donate tissue left over from tests carried out, for example, a biopsy or bone marrow test, to the tissue bank. This sample of tissue can then be used by scientists to learn more about LCH and how best to treat it. This is voluntary, and you will have plenty of time to decide if you wish to take part.

Follow-up care and monitoring

Once treatment has finished, the doctors will monitor your child closely with regular appointments to be sure that the LCH has not come back and there are no complications.

LCH sometimes comes back and your child may need treatment again. If this happens, treatments for LCH that have worked for them before may be effective again. The same or different treatment may be required.

After some time, your child will not need to visit the clinic so often, but will continue to be monitored for possible permanent consequences of the disease (e.g. a low production of certain hormones, hearing problems) and may need treatment for these conditions.

Months or years later, some children may develop late side effects from the treatment they have had but this is less common with the medicines used for LCH. Please visit www.cclg.org.uk/life-after-childhood-cancer for more information.

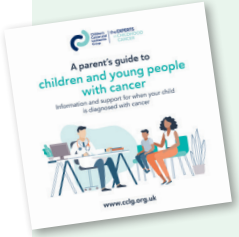
Your child's doctor or nurse will talk to you about any possible late side effects and will keep a close eye on possible long-term side effects in follow-up clinics.

If you have specific concerns about your child's condition and treatment, it's best to discuss them with your child's doctor, who knows the situation in detail.

Your feelings

It's devastating to hear that your child has cancer and you may feel overwhelmed but there are many professionals and organisations to help you through this difficult time. You may have many feelings, such as fear, guilt, sadness, anger, and uncertainty. These are all normal reactions and are part of the process that many parents go through.

It's not possible to address in this guide all of the feelings you may have. However, the CCLG booklet 'A parent's guide to children and young people with cancer', talks about the emotional impact of caring for a child with cancer and suggests sources of help and support. Your child may have a variety of powerful emotions throughout their experience of cancer. The Parent's Guide discusses these further and talks about how you can support your child.



The CCLG booklet 'A parent's guide to children and young people with cancer' is available FREE of charge from your child's hospital

All CCLG booklets and leaflets can be downloaded or ordered from our website:

www.cclg.org.uk/publications

USEFUL ORGANISATIONS

Children's Cancer and Leukaemia Group (CCLG) publishes a variety of free resources to order or download
www.cclg.org.uk

Young Lives vs Cancer offers practical support to children and young people with cancer and to their families
www.younglivesvscancer.org.uk

Macmillan Cancer Support offers support and advice to those affected by cancer.
www.macmillan.org.uk

Histiocytosis Association raises awareness for histiocytic disorders, provides educational and emotional support and funds research.
www.histio.org

Histio UK supports patients and their families, raises awareness of histiocytic disorders and funds research to find a cure. It also publishes the 'Langerhans Cell Histiocytosis (LCH): A Parent's Guide'.
www.histiouk.org

References

This factsheet has been compiled using information from a number of reliable sources, including:

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- McLain KL. *Treatment of Langerhans cell histiocytosis.* UpToDate. www.uptodate.com (accessed April 2014)

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Children's Cancer and Leukaemia Group (CCLG) is a leading national charity and expert voice for all childhood cancers.

Each week in the UK and Ireland, more than 30 children are diagnosed with cancer. Our network of dedicated professional members work together in treatment, care and research to help shape a future where all children with cancer survive and live happy, healthy and independent lives.

We fund and support innovative world-class research and collaborate, both nationally and internationally,to drive forward improvements in childhood cancer. Our award-winning information resources help lessen the anxiety, stress and loneliness commonly felt by families, giving support throughout the cancer journey.

Our work is funded by donations. If you would like to help, text 'CCLG' to 70300 to donate £3. This will cost £3 plus a standard rate message.

If you have any comments on this factsheet, please contact us at publications@cclg.org.uk