Department of Immunology, University Hospital of Wales

Consultants: Prof S Jolles, Dr T El-Shanawany, Dr R Cousins, Dr P Williams
Specialist Trainees: Dr M Ponsford, Dr S Wijetilleka
Immunology Clinical Specialist Nurses: E Carne, C Kingdon, C Price, T Matthews

X-Linked Agammaglobulinaemia (XLA)

What is XLA?

Agammaglobulinaemia means that there are no immunoglobulins in the blood. Immunoglobulins are also called antibodies. The body uses immunoglobulins to fight off infections, and in particular bacterial infections.

X-linked describes the genetics of the condition. The X and Y chromosomes determine what sex you are. Boys have one X chromosome and one Y chromosome while girls have two X chromosomes. This means that an X-linked condition affects boys and girls differently. Because girls have 2 copies of the X chromosome, if one of the chromosomes carries a defective copy of the XLA gene, they still have a second X chromosome with a normal working copy of the gene. This means that XLA affects boys. Girls can be carriers of the gene, and though unaffected themselves, can pass on the condition.

Boys who have the condition start having symptoms early in life, from around the age of 6 months.

Why does it happen?

A type of immune cell known as B cells are responsible for the production of antibodies. Antibodies help the immune system fight off infections, and in particular bacterial infections.

In XLA, the presence of a genetic mutation means that the body is unable to produce any B cells and therefore, there are no antibodies either. The other components of the immune system work properly, but the ability to fight off bacterial infections is reduced.

What might my symptoms be?

The low levels of antibodies result in increased susceptibility to infections. The usual pattern is an increase in the number and severity of bacterial infections of the lungs and sinuses. The symptoms result from the infections and may include cough, sputum production, fever, tiredness and muscle pain. Recurrent chest infections can cause damage to the lungs and can results in a condition known as bronchiectasis. In bronchiectasis sputum pools in the damaged areas and causes persistent coughing and also increases the chance of future infections. It is therefore important that chest infections are treated promptly to avoid the development or worsening of bronchiectasis.

How is XLA diagnosed?

The following findings would be expected in XLA:

- Absent antibodies
- Absent B cells
- There is usually (but not always) a family history of the condition

Genetic tests can help to identify those who don't have the disease but are carriers of the gene.

What treatments can be used?

The main treatment is immunoglobulin replacement therapy. This replaces the low levels of immunoglobulins and can be administered in 2 ways. Intravenous immunoglobulin (IVIg) is given directly into the vein, usually every 3 weeks. Subcutaneous immunoglobulin (SCIg) is given just under the skin, for example on the abdomen, usually weekly. There is a newer method of administering immunoglobulin known as facilitated SCIg (fSCIg) which allows immunoglobulin to be given subcutaneously every 3 weeks. The choice between the different ways of infusing immunoglobulin will be discussed with you and the different methods suit different people. The dose and how often the infusions need to be given varies and is tailored to each individual's requirements.

Infections should be promptly treated with antibiotics. Often high dose antibiotics continued for at least 10 days are used. If the episodes of infection are frequent, you may be started on prophylactic antibiotics – this is a low dose of antibiotics taken regularly, even when you are well. The aim of prophylactic antibiotics is to prevent an infection from starting. The antibiotic chosen varies from person to person according to individual circumstances. For example, allergies to antibiotics, the species of bacteria and the site(s) of infection will all influence the antibiotic choice.

Further information

Please ask us in clinic any questions that you have about XLA or your treatment. If planning a family, the genetics can be discussed further and it may be possible to arrange for testing of any family members who may wish to check if they are carriers of the condition.

PID UK (Primary Immunodeficiency UK) and UKPIPS (UK Primary Immunodeficiency Patient Support) are patient groups for those affected by immunodeficiencies. Their websites are below (note that we have no editorial control for the websites and take no responsibility for their content):

www.piduk.org
www.ukpips.org.uk

Author: Dr Tariq El-Shanawany
Document Owner: Immunodeficiency Centre for Wales

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