Muscular Dystrophy UK
Fighting muscle-wasting conditions

Limb girdle muscular dystrophy 2I (LGMD2I)

What is LGMD2I?

LGMD2I is an autosomal recessive form of limb girdle muscular dystrophy (LGMD). It is one of the most common forms of LGMD, especially in Northern Europe. The age of onset of muscle weakness is extremely variable, the most common being between 10 and 20 years of age. It can also range between two and 40 years.

What causes LGMD2I?

LGMD2I is caused by mutations in the Fukutin-related protein gene (FKRP), which gives instructions to produce a protein important to the muscle fibres.

Mutations in the FKRP also cause a form of severe congenital muscular dystrophy (MDC1C).

How is it diagnosed?

The diagnosis can be suspected by findings on a muscle biopsy or when a doctor experienced in muscular dystrophy examines you. A serum creatine kinase (CK) blood test (which measures muscle damage) may also show raised levels which indicate a problem in the muscles. The diagnosis has to be confirmed by identifying a mutation in the FKRP gene which is done on a DNA sample from a blood test. This is often done following a clue from the muscle biopsy or examination.

What is the prognosis?

People with LGMD2I often have initial symptoms of weakness and wasting (loss of muscle bulk) in the hip, thigh and shoulder muscles. This weakness is usually even on both sides of the body and leg involvement is present before shoulder and arms. This weakness can result in frequent falls, toe-walking or in a particular 'waddling gait' (swaying from side to side). This can also cause people to have hyperlordosis (arched back). People can have difficulty in running, climbing stairs and rising from the floor. As the condition progresses, mobility becomes increasingly more difficult.

Shoulder and arm weakness can lead to difficulties in raising the arms above the head, and in lifting objects. Some people may complain of muscle pain and cramps, especially in the legs, even before the onset of muscle weakness.

Calf hypertrophy (large calves) and macroglossia (large tongue) can be present.

This factsheet is under review, due for updating later in 2017. If you have any queries, please contact us

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People with LGMD2I can develop joint contractures (tightening) and more frequently they involve the ankles. Facial and neck muscles are not usually involved and therefore swallowing problems are unlikely. Unlike congenital muscular dystrophy type 1C, Learning difficulties and eye problems are not features of LGMD2I.

People with LGMD2I are at risk of heart and breathing problems. These problems can occur even when weakness is mild. However, as the condition progresses, heart and breathing involvement tend to increase.

People with heart problems can experience symptoms of breathlessness and tiredness. However, some people can have heart problems even when they do not show symptoms.

Breathing problems are common in LGMD2I and these may occur before losing the ability to walk (loss of ambulation). The first symptoms of breathing involvement can include poor sleep, nightmares, tiredness or headaches after waking up in the morning, lack of appetite and falling asleep during the day. As LGMD2I can involve the diaphragm, the first symptoms may be difficulty in breathing when lying flat.

LGMD2I is a variable condition in terms of severity. The weakness is always progressive with time although the rate of progression varies from person to person. Same people may be only mildly affected, whereas others may show a relatively rapid deterioration of weakness, resulting in loss of independent ambulation in early adulthood.

Life expectancy and quality of life depend upon the identification and treatment of the associated complications such as heart and breathing problems.

Is there a treatment or cure?

To date there are no specific treatments for LGMD2I, however careful management of the symptoms of the condition can improve a person's quality of life. Keeping mobile is important for all people affected by muscular dystrophy. There are no guidelines about the type or intensity of activities however it is recommended that any exercise is done within your limitations and ensuring you remain comfortable. Extreme tiredness, muscle pain and cramps during or after activities can mean that you have pushed yourself too hard and therefore those activities should be avoided. Swimming is a good activity because it promotes movement of all muscles without increased strain.

Joint contractures (tightening) can occur in LGMD2I and therefore regular physiotherapy is recommended. This can be carried out by a physiotherapist or people can be taught to do this by themselves in their own home. These types of exercises can include the stretching of all joints, in particular the ankles, knees and elbows. If ankle contractures impair mobility, referral for an orthopaedic opinion may be indicated. Orthoses (splints) are sometimes worn day or night to enhance good positioning of the ankle joints. In the case of severe contractures, minor surgical procedures may be necessary.

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People with LGMD2I are at risk of developing breathing difficulties. Therefore regular monitoring of respiratory function (forced vital capacity – FVC), in lying as well as sitting, is recommended to identify any problems and treat them if necessary. Sometimes overnight studies are indicated (pulse oximetry) and people may benefit from treatment with assisted ventilation at night. People affected by LGMD2I should have the pneumovax vaccination and annual flu immunisations to prevent serious chest infections.

Because of the risk of problems with the heart in LGMD2I, regular heart checks are required and these should include ECG (electrocardiogram) and echocardiogram. Many treatments are available and these will be discussed with you by a cardiologist.

Patients' registry

There is an international patients' registry for LGMD2I. The registry is aimed at all patients with a diagnosis of LGMD2I, and for patients from all around the world. By registering, patients can be directed to clinical research as well as current and future trials.

Patients can register through an online system (www.FKRP-registry.org), where they answer a short set of questions about their condition. More information about the registry can also be found on the TREAT-NMD website (http://www.treat-nmd.eu/resources/patient-registries/international-fkrp-registry/).

Other relevant factsheets from Muscular Dystrophy UK:

- The limb girdle muscular dystrophies (LGMD)
- Inheritance

We're here for you at the point of diagnosis and at every stage thereafter, and can:

- give you accurate and up-to-date information about your or your child's muscle-wasting condition, and let you know of progress in research
- give you tips and advice about day-to-day life, written by people who know exactly what it's like to live with a muscle-wasting condition
- put you in touch with other families living with the same muscle-wasting condition, who can tell you about their experiences
- tell you about – and help you get – the services, equipment and support you're entitled to.

If you would like your GP or other health professional to have more information about the Limb-girdle muscular dystrophies, we have some relevant materials. We've developed an online training module for GPs, as well as one for physiotherapists working with adults with muscle-wasting conditions. Contact our helpline or email us to find out more.

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If you have feedback about this factsheet please email info@musculardystrophyuk.org.

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Here for you

The friendly staff in the care and support team at the Muscular Dystrophy UK's London office are available on **0800 652 6352** or **info@musculardystrophyuk**.org from 8.30am to 6pm Monday to Friday to offer free information and emotional support.

If they can't help you, they are more than happy to signpost you to specialist services close to you, or to other people who can help.

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