Frequently Asked Questions about FSHD

Content

What is FSHD?

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Facioscapulohumeral dystrophy is a hereditary muscle disease. Due to a genetic defect the DUX4 protein is produced, which affects skeletal muscles. This causes loss of skeletal muscle volume and strength.

2. Why is it called FSHD?

FSHD gets its name because the muscle loss is usually noticeable across facial (facio), back (scapula), and upper arm (humeral) muscles, but other areas, such as the abdominal core, hip girdle, and legs are also commonly affected.

3. How common is FSHD?

FSHD is one of the most common hereditary muscle diseases in the world; it is estimated 1 in 8,000 individuals, which is 870,000 people worldwide.

4. How many types of FSHD are there?

Two genetic forms of FSHD are generally distinguished, FSHD Type 1 and FSHD Type 2. The two types share the same symptoms, but they differ in their genetic cause. More than 95% of patients have FSHD type 1.

5. What is early onset FSHD?

Early onset FSHD is the severe childhood form and differs from classic FSHD. In early onset FSHD there is muscle weakness as well as 'extra-muscular' symptoms (such as developmental delay, epilepsy, hearing and visual problems).

6. What causes FSHD?

The cause of FSHD type 1 is in almost all cases to be found in the absence of certain pieces of DNA at the end of chromosome 4 (genetic location: 4q35). Research in 2010 showed that people with FSHD type 1, due to the shortening of the chromosome, produce a more stable form of a certain protein called DUX4 which is harmful to skeletal muscles. This causes their muscle cells broken down. Some muscles are more sensitive to this than others which results in this FSHD generally recognizable pattern. In FSHD type 2, there is no abnormality on chromosome 4, but on chromosome 18. This also leads to the production of DUX4, only via a different way. Although they differ in genetic cause, they share the same symptoms.

7. How do you notice that you have FSHD and how do you notice FSHD starting?

If FSHD runs in the family, you can often recognize certain symptoms before you really suffer. About two thirds of people with FSHD suffer from the disease because their muscle strength decreases, and they are being less able to move. They also often suffer from fatigue and/or pain.

8. At what age do the symptoms start?

The symptoms usually arise between 10 and 20 years of age, although the starting age may differ from preschool age to 50 years of age.

9. What are the symptoms?

Muscle loss is usually noticeable across facial (facio), back (scapula), and upper arm (humeral) muscles, but other areas, such as the abdominal core, hip girdle, and legs are also commonly affected. One feature of FSHD compared to other muscle-wasting conditions is that the muscles are not all affected in the same way at the same time. This progresses in an unpredictable way. This is why FSHD usually shows up asymmetrically, affecting only one arm or one leg, for example. Symptoms are often mistakenly attributed to an injury, and it may take many years before a doctor makes the correct diagnosis.

10. How will people be diagnosed?

The first step in diagnosing FSHD is a visit with a doctor for a physical exam. An initial diagnosis is based on the pattern of muscles affected. The doctor will ask a series of questions about the patient's family history and medical history. The doctor may order tests to determine whether the problems are a result of FSHD or to rule out other problems that could cause muscle weakness. These tests may include the following:

- Blood tests
- Neurological tests
- Muscle biopsies
- Genetic testing

11. What is the progression of FSHD?

Although the progression of FSHD can be different for everyone, it is usually slow, happening over decades. Most patients will notice that one arm (or shoulder, or leg) is weakened, while the other remains stronger. The reason for this asymmetry is unknown.

A doctor often diagnoses FSHD based on weakness in the face muscles and muscles around the shoulder blades, which results in "winging" of the scapula. As the disease progresses, the lower and upper leg muscles are often affected. About 20 percent of FSHD patients will become dependent on a wheelchair or scooter. Weakness in the abdominal muscles can cause a bulging abdomen and lumbar lordosis ("sway back").

FSHD can also have the following symptoms: hearing loss, respiratory problems, abnormal blood vessels in the back of the eye, and abnormal heart rhythms that are usually harmless. For many people, life with FSHD is a series of "drops" and "plateaus," where symptoms may remain the same for a stretch of time followed by a sudden progression.

12. What is the life expectancy of someone with FSHD?
Most people with FSHD can expect to have a normal lifespan. However, it is difficult to predict how FSHD will affect your quality of life. For almost all patients, skeletal muscles will weaken and waste throughout their life. This can, and often does, cause limitations on personal and occupational activities. FSHD does not appear to affect brain function. The heart and internal (smooth) muscles are also generally spared.

Genetics

1. Is FSHD hereditary?
Yes. FSHD type 1 is autosomal dominantly inherited, that is, if either parent has FSHD, their child has a 50% chance of also having FSHD. In FSHD type 2 the inheritance is more complex because it is depending on two genetic factors, both inherit independently.

2. Can FSHD develop spontaneously?
Yes. In about 30 percent of cases, there is no family history of FSHD.

3. Does everyone with the FSHD “mutation” develop symptoms?
No, not everyone with an FSHD-associated genetic change (FSHD genotype) will show symptoms of FSHD. Based on current knowledge, it is estimated that about 80 percent of individuals with the FSHD genotype will show symptoms, whereas 20 percent will be asymptomatic. We don’t know why some people show symptoms and others do not. There likely are other genetic and nongenetic factors playing a role. Importantly, if you have the FSHD genotype but are asymptomatic, you can still pass it on to a child who may show symptoms. Also, keep in mind that some people may have very subtle signs of FSHD that can only be noticed by a doctor, or their symptoms may not become apparent until later in life.

4. Is a genetic test needed to diagnose FSHD?
Yes, genetic testing is needed to diagnose FSHD and determine whether it is Type 1 or Type 2. Once one person in a family has had genetic testing to confirm the FSHD diagnosis, other affected family members may be diagnosed based on clinical findings without genetic testing. Relatives who have subtle findings or unclear symptoms may need genetic testing to confirm or rule out an FSHD diagnosis.

5. How does an individual get a genetic test for FSHD?
Genetic testing for FSHD is done on a blood sample and usually must be ordered by a doctor or nurse practitioner. In some countries, genetic counsellors can order genetic testing. Unfortunately, genetic testing is not accessible and reimbursed in all countries across Europe. On the website of FSHD Europe you find a list of European reference centres for FSHD genetic testing, centres of expertise in FSHD molecular diagnosis. Please contact your health care provider or national patient organization to learn more about genetic testing in your country. They will be able to coordinate your testing, including working with your insurance company, and organizing sample collection and shipment to the genetic testing laboratory.

6. Does the health insurance company cover the genetic test costs?
This may be different between countries across Europe. Please contact your health care provider or national patient organization to learn more about genetic testing in your country. They will be able to coordinate your testing, including working with your insurance company, and organizing sample collection and shipment to the genetic testing laboratory.

7. For individuals who are concerned about passing FSHD on to children, what are the options?
Individuals who want to have children but wish to prevent passing on FSHD can talk to a genetic counsellor to learn more about all these options, including the advantages, disadvantages, limitations, and risks. Preimplantation genetic testing (PGT) or prenatal testing could be considered.

Preimplantation genetic testing (PGT) is genetic testing of embryos created by in vitro fertilization (IVF). Cells from the embryos are tested to determine which ones have the FSHD genotype and which do not. Only embryos predicted to be unaffected with FSHD would be transferred to the woman's womb to begin the pregnancy. There is a small chance of error with PGT, so prenatal testing is often also recommended to confirm the result. If you are interested in using PGT, you should consult with a genetic counsellor to find out if PGT is an option for you and learn more details about what the process involves. IVF and PGT are very expensive, but your health insurance company may cover some or all the cost.

Prenatal testing is genetic testing done during a pregnancy to determine if the foetus (unborn baby) has FSHD. If the testing shows that the foetus has FSHD, the couple could choose to terminate the pregnancy. Genetic testing is performed on the chorionic villus sample or the amniotic fluid. Prenatal testing is highly accurate, but the procedures are associated with a small risk of miscarriage.

8. How can I or my relatives find a genetic counsellor?
Your neuromuscular specialist may be able to recommend a genetic counsellor at their hospital or nearby. Otherwise, your national patient organization may be able to help you, or you can contact one of the European reference centres for FSHD genetic testing/ centres of expertise in FSHD molecular diagnosis.

Current treatment

1. Can FSHD be treated?

There is no treatment or cure for FSHD yet. There are, however, steps you can take to ease its effects, including meeting with knowledgeable clinicians, some forms of exercise, non-steroidal anti-inflammatory drugs (NSAIDs), and dietary changes.

2. Is exercise good for FSHD?

Physical therapy, including light exercise, helps preserve flexibility. Swimming is especially helpful by making many movements easier. One should stay as active as possible, with rest breaks as needed during exercise and activities. Moderate aerobic exercise combined with cognitive behavioral therapy has been shown in a clinical trial to reduce chronic fatigue in FSHD patients.
Muscle strength training is not being harmful when it is done not too heavy or extreme, however it is poorly effective. Find a physical therapist who will take the time to learn about FSHD and is willing to work with you to develop exercises in your best interest. National patient organisations may also provide Physical Therapy Brochures.

3. Is FSHD related with pain complaints and fatigue?

Yes, pain and chronic fatigue is a problem faced by many people with FSHD. Pain and fatigue can be significant factors in limiting daily activities. Over 70 percent of people with FSHD experience debilitating pain and fatigue. a majority of FSHD patients report pain. When muscle strength decreases, you may compensate this by overuse of other muscles, which can result in pain and fatigue. Not many studies have been done about pain in FSHD. The FSHD University includes a webinar on pain and describes the multidisciplinary theory of pain and pain management. Managing pain in individuals with FSHD (youtube.com)

4. Is FSHD related to headache?

In case of weakness of the respiratory muscles, morning headaches can occur due to reduced oxygen uptake during the night. It is also possible that tension headaches occur due to muscle weakness in the shoulder girdle and neck region.

5. Is pain relief possible with nutritional supplements or homeopathic remedies, or is there another therapy?

There are no nutritional supplements or homeopathic remedies that combat pain. Besides the standard painkillers that you can purchase at the drugstore or through a doctor’s prescription there are no other specific pain therapies available.

6. Is surgical intervention useful?

Sometimes surgical intervention is performed on facial muscles. There is not enough known to make a statement about the usefulness of this. There are various methods to secure a shoulder blade. As a result, one can reach the arm better when lifting (most often unloaded) and it has a cosmetic effect. Little is known about the long-term effects and the decision to consider this surgery is very complex and highly individualized. The procedure is extremely specialized and therefore not common.

7. Is anaesthesia risky for FSHD patients?

Anaesthesia- related adverse events are related to muscular dystrophies. Patients with neuromuscular disorders deserve special attention when it comes to anaesthesia because many of the agents used (gases and chemicals) have effects on both muscle and nervous tissue. The main areas of concern are how the anaesthetics agents will affect the muscle and nervous tissue including the heart, which is, itself, a muscle. A skeletal deformity such as scoliosis, or curvature of the spine, can also affect the way the patient responds to anaesthesia, so it is important to consider that, too. You can use a Medical Alert card or SOS card for emergency contacts and medical provider to inform people about your diagnosis. You can find them online; print them out and carry them in your wallet. You can also download an ICE (In Case of Emergency) app and enter the relevant information. Before having planned surgery, it is advised to discuss with the anaesthetist.

8. Is abdominal reconstruction surgery possible? Is wearing a compression belt helpful?

Abdominal reconstruction is considered ineffective because of the weakness of the abdominal core muscles. Wearing a compression belt or corset can be helpful for some individuals to be able to stand or walk longer. However, a corset can possibly also limit you in your movements and activities.

9. Can I have my eyes lasered?

People with FSHD often have dry eyes and that is a risk factor for laser surgery. Always consult with an ophthalmologist first to discuss the options, including the advantages and disadvantages.

10. Besides dry eyes, are there any other eye complaints?

Sometimes a slight deviation occurs in the retina vessels, however in general this doesn’t lead to any complaints. In case of the more severe childhood onset of FSHD, a regular check at the ophthalmologist is recommended.

11. Is FSHD related to breathing difficulties?

In general, the lung function of people with FSHD remains unaffected. However, people with a severe form of FSHD, severe scoliosis (curvature of the back) and wheelchair dependent, can suffer breathing difficulties. Air stacking or respiratory support may be required. This specifical applies for people with additional lung diseases. For wheelchair-bound patients, it is recommended to check their lung function.

12. What is air stacking?
This is a technique in which air is blown into the lungs through a mask or mouthpiece. This will improve coughing strength.

13. Are hearing complaints related to FSHD?
In half of the children with FSHD, hearing complaints (problems with high tones) occur.

14. Is there a connection between FSHD and poor intestinal function/ bowel movements?
No, however less physical activity may cause problems such as constipation.

15. Is there a connection between FSHD and cold legs/feet?
Yes, less exercise and less muscle mass will result in less heat production.

16. Is sleep apnea related to FSHD?
Sleep apnea is a brief interruption of the breathing during sleep. Limited research is performed on this topic. It seems to occur more often when having FSHD. If you have any complaints such as poor sleep, fatigue or excessive daytime sleepiness, morning headache, it is advised to consult your doctor about this.

Clinical trials

1. What is a clinical study or clinical trial?
A clinical trial is a type of clinical research study involving human volunteers. Usually, the term refers to a research study that tests a medicine, medical device, or other type of therapy to see if it is a safe and effective way to treat a disease. It may also be called an “interventional clinical trial” or simply a “clinical study.”

2. What are the phases of clinical trials?
Clinical trials are typically conducted in 4 phases. All phases are used to assess how safe a medicine is, what the side effects might be, and how well it works. However, each phase has a slightly different focus. What researchers learn in one phase helps them design the next phase.

Phase 1:
- Usually the first time the medicine is put in a human
- Understand how the medicine acts in the human body
- Find the best dose(s) of the medicine

Phase 2:

- Begin to define how well the medicine works
- Usually compares the medicine to a placebo or existing treatments

Phase 3:

- Better define how well the medicine works
- Always compares the medicine to a placebo or existing treatments
- The final data-gathering step before applying for approval from regulatory bodies

Phase 4:

- Continued study of the medicine after approval

3. What is a placebo?

A placebo is a mock version of a medicine. It looks like the real medicine, but it does not contain the active ingredients that interfere with disease. Researchers can compare results from the placebo to those from the real medicine. This helps them to determine if the medicine works.

4. Why participate in research?

Although many breakthroughs and insights were gained over the past years of research, there is still no treatment available for FSHD. Therefore, patient participation is indispensable. When you participate in research, you:

- help researchers understand how FSHD progresses;
- help establish the tools needed to see if new drugs are effective;
- increase understanding of the costs of living with FSHD;
- advance knowledge about the diversity in the FSHD community;
- improve care at the doctor's office.
- If you want to participate in research, it is important to register in a patient registry.

5. What is a patient registry?

Patient registries are databases containing information about individuals who are affected by a specific disease, such as FSHD. In rare diseases, they play an important role in the development of new therapies.

Patient registries can:

- Identify participants in clinical trials
- Help develop care standards, to help improve the care people receive
- Support specific research questions for doctors and scientists
- Contribute to the natural history of FSHD
- Provide a link to the research community enabling people to receive information directly relevant to their condition.

We encourage all FSHD patients to register yourself in a national patient registry. Not all countries may have a specific FSHD patient registry, some have neuromuscular registries.

Please contact the patient organization in your country or ask your healthcare provider to learn more about this.

6. Do I need to have a genetic test to take part in a clinical trial?
Yes, you will most likely need a clinical genetic test. For more information contact your doctor or visit the FSHD Europe website where you can find a list of European reference centres for FSHD genetic testing, centres of expertise in FSHD molecular diagnosis. It is hoped that this will improve the accessibility of genetic testing throughout Europe and allow other centres to contact them.

4. Where can I find more information on current trials and studies?
The National Institutes of Health website Search for: Other terms: facioscapulohumeral, Recruiting studies | List Results | ClinicalTrials.gov provides free access to information on clinical studies and trials. You can also find a list of FSHD studies and trials, including some that are not in clinicaltrials.gov on the website of the FSHD Society Current Trials and Studies | FSHD Society

5. How can I increase my changes of getting into a clinical trial?
By registering yourself in a national patient registry you can be invited to participate in a clinical trial.

6. What are inclusion and exclusion criteria?
Inclusion criteria are health traits that allow you to be included in a study. Exclusion criteria are health trains that cause you to be excluded from a study. Together, inclusion and exclusion criteria define who is eligible for a clinical trial.

7. What is screening?
Screening is the process to find out if you are eligible for a study. This usually involves answering questions and performing tests with the study team. For example, you might need do bloodwork, an MRI, and perform tests to measure your strength. Screening almost always happens at an in-person visit. A screening visit can take several hours and be exhausting.

8. What is pre-screening?
Pre-screening is the process to narrow down patients before scheduling an in-person screening visit. This might involve learning more about the study and answering questions about your health. Pre-screening typically happens via phone, email, or video call.

9. What is informed consent?

Informed consent is the process of learning everything you need to know about a study and deciding if you want to take part. Informed consent is often part of the screening visit, though sometimes it is done over the phone or a video call. Informed consent includes learning about:

- the purpose of the study
- what you will be asked to do
- what tests and procedures will be performed
- the schedule of study visits
- the risks and benefits
- how your data is used

You will receive a copy of this information in an “Informed Consent Form.” If you agree to take part in the study, you will give your consent by signing the Informed Consent Form. Importantly, you can withdraw your consent and decide not to take part in a study at any time and for any reason.

10. Can patients continue getting the medicine after a clinical trial is complete?

Maybe. Some clinical trials allow all patients to receive the medicine after they complete the study, even if they were in the placebo group. This is called an open-label extension. Open-label extensions are optional. If you take part, the study team will continue to collect data on you.

More information

This FAQs document is based on the Dutch version made by the FSHD patient group of Spierziekten Nederland in collaboration with multiple medical advisors of the FSHD centre of Expertise (Radboudumc and LUMC) and information from the FSHD Society https://www.fshdsociety.org. For more information contact your own doctor, national patient organisation or FSHD Europe (info@fshd-europe.info).