



Insulin Dependent Diabetes Trust

Joint and Muscle Problems

Updated December 2008

Registered Company Number 3148360
Registered Charity No 1058284



Contents

Connective tissue disorders

Tests that your doctor may carry out

Myopathy

Chiroarthropathy [diabetic prayer]

Frozen Shoulder [adhesive capsulitis]

Trigger finger

Dupuytren's Contracture

Carpel Tunnel Syndrome

Stiff Man's Syndrome [SMS] also known as Stiff Person's Syndrome

Diffuse idiopathic skeletal hyperostosis [DISH]

- Joint and skeletal disorders, known as connective tissue disorders, have been recognised as complications of diabetes for some time.
- They tend to receive less attention than the other complications of diabetes and the progress of these conditions is often not monitored.
- They are not life-threatening but they can be distressing and painful conditions that may alter the lifestyles for many people

Connective tissue disorders

Connective tissue is the material between the cells of the body

that gives tissues form and strength. It also is involved in delivering nutrients to the cells around the body. It is made up of dozens of proteins including collagens. These proteins vary in quantity to provide different structures with varying functions: bone, cartilage, tendons and ligaments as well as fatty and elastic tissues.

Many connective tissue disorders are caused by mutations [alterations] in genes for building tissues and these mutations may change the structure and development of skin, bones, joints, heart, blood vessels, lungs, eyes and ears. Some connective tissue disorders are not directly linked to these mutations but some people may be genetically predisposed to becoming affected. Inherited connective tissue disorders may not be evident at birth but may appear after a certain age or after exposure to a particular environmental stress.

Tests that your doctor may carry out

In connective tissue disorders there may be inflammation/infection present and/or there may be damage to muscles. There are two tests that the doctor may carry out:

- **ESR Test [erythrocyte sedimentation rate]** - this is the 'standard' blood test that GPs often carry out for many conditions to find out if there is any infection present in the body. A high result means that there is an infection and this can then be treated.
- **Creatine Kinase Test** - this is carried out to diagnose and monitor the progress of neuromuscular disorders. Creatine kinase [CK] is a protein found mainly in muscle and it is an enzyme that encourages a biochemical reaction to occur to provide a quick source of energy for the cells. If muscle is damaged, then during the muscle regeneration muscle cells break open and their contents go into the bloodstream. This means that the amount of CK in the blood will rise indicating that muscle damage has occurred and this can be caused by chronic disease or by acute muscle injury.

Myopathy

Myopathy is a general term used to describe any disease of muscles, such as the muscular dystrophies and myopathies associated with thyroid disease. It can be caused by endocrine disorders, including diabetes, metabolic disorders, infection or inflammation of the muscle, certain drugs and mutations in genes. In diabetes myopathy is thought to be caused by neuropathy, a complication of diabetes. General symptoms of myopathies include muscle weakness of limbs sometimes occurring during exercise although in some cases the symptoms diminish as exercise increases. Depending on the type of myopathy, one muscle group may be more affected than others.

Treatment - this varies according to the type of myopathy but may include drug therapy such as immuno-suppressants, physiotherapy, bracing or surgery.

Chiroarthropathy [diabetic prayer]

This is often called limited joint mobility and in people with diabetes generally involves the small joints of the hands, although it can affect larger joints such as wrist, shoulder, knees, hips. It is usually painless but numbness and pain may be present if there is also neuropathy or angiopathy of the hand. Most people do not report the problem until there is some deformity or loss of movement of the fingers. The affected fingers are swollen with a thick, tight and waxy skin and there is an inability to press both hands together hence the term, diabetic prayer. Other disorders of the hand, such as carpal tunnel syndrome and Dupuytren's contracture, have different and distinct clinical features. Chiroarthropathy is linked with more serious microvascular complications of diabetes eg retinopathy, nephropathy and neuropathy, so diagnosis is important. The causes of chiroarthropathy are not really understood.

Treatment - because of the relationship with the microvascular complications of diabetes, improved diabetic control is advised but there is no well established treatment. Physiotherapy is important to maintain movement and prevent further deterioration. Surgery and corticosteroid injections may help in severe cases.

Prevalence:

- 4 -14% of the nondiabetic population
- 8.4 - 55% of people with Type 1 diabetes
- 4.2 -77% of people with Type 2 diabetes

Studies show a wide variation which could be due to genetic or racial factors or incorrect diagnosis. However, it does increase with the duration of diabetes

.....

Frozen Shoulder [adhesive capsulitis]

An early sign of frozen shoulder is when lifting the arm above the head, reaching across the body or behind the back is difficult. This is followed by pain, often worse at night, the pain then reduces but the range of movement is more limited and may last for 4-12months. In the final stage the condition begins to resolve although surgery may be needed to restore movement. The cause is unknown but thought to involve an underlying inflammatory problem. The capsule around the shoulder joint thickens and contracts leaving less space for the upper arm bone to move around. It can also occur after long periods of immobilisation eg after injury or surgery.

Treatment - drugs such as aspirin or ibuprofen to reduce the inflammation and pain, muscle relaxants, physiotherapy, exercises, heat or ice therapies, corticosteroid injections but surgery only if there is no improvement after several months. Some people have reported a positive response from acupuncture.

Prevalence:

Frozen shoulder affects more women than men, usually starts between ages 40 and 65 and affects 10-20% of people with diabetes.

.....

Trigger finger

This is a common condition which results in a bent finger, as if pulling a trigger on a gun. The finger may be swollen, stiff and painful and there may be a bump over the joint in the palm of the hand. It involves the tendons and pulleys in the hand that bend the finger. The tendons connect the muscles to the forearm with the bones of the finger and each tendon is covered by a sheath. As the fingers are bent, the tendons glide backwards and forwards guided by a restraining pulley. If the tendon sheath becomes inflamed it swells and may develop a nodule or thickening of the tendon. The nodule passes through the pulley as the finger bends but gets stuck as the finger straightens which causes further irritation and swelling until eventually the finger locks in this bent position. The exact cause is unknown. It affects people over 40 and people with a history of diabetes or rheumatoid arthritis particularly at risk of developing it.

Treatment - aims to reduce the swelling and cycle of irritation so initially treatment is rest, splinting of the finger and taking aspirin or ibuprofen to reduce the swelling and pain. If the problem persists a steroid injection in the tendon sheath can relieve the pain and locking for several months. People with diabetes may require surgery to release the tendon and this can restore movement immediately.

Dupuytren's Contracture

This is a fairly common condition in the palm of the hand that can cause the fingers to contract. It occurs when the connective tissue under the skin in the palm of the hand begins to thicken and shorten and as the tissue tightens it may pull the fingers down towards the palm of the hand. The first sign is a nodule near the base of the little finger and the ring finger. Gradually other nodules may appear across the first joint of the fingers, the skin puckers and the finger is pulled towards the palm. It usually affects the ring finger first followed by the little, the long and the index fingers, although there is evidence that in diabetes different fingers are affected. The problem is not pain but the restriction of movement. Although again the cause is unknown, there is a genetic link because it affects people of northern European decent. It is seven times more common in men than women and usually does not show up until after 40 years of age. People with diabetes, alcoholics and those taking anticonvulsant drugs have a higher risk of Dupuytren's contracture.

Treatment - the only treatment is surgery but this is usually only if the contracture has developed into a deformity. The outcome is usually good.



Carpel Tunnel Syndrome

The carpel tunnel is a narrow, rigid passage of ligament and bones at the base of the hand that contains the median nerve [runs from the forearm to the hand] and tendons. If there is thickening of irritated tendons or other swelling the tunnel narrows and the median nerve is compressed. The symptoms often start gradually at night during sleep with burning, tingling or itching in the palm of the hand and fingers, especially the thumb and first two fingers and this can progress to daytime pain, weakness or numbness in the hand and wrist that may

extend up the arm.

It is thought to be a combination of factors that put pressure on the nerve and tendons, rather than a problem with the median nerve itself. The most likely cause is congenital with some people just having a narrower tunnel but other common factors are injury to the wrist that causes swelling, overactivity of the pituitary gland, rheumatoid arthritis, and fluid retention.

Carpel tunnel problems affect three times as many women as men. People with diabetes or other metabolic disorders that can directly affect nerves are more susceptible to compression have a higher risk of developing carpel tunnel problems.

Treatment - obviously underlying causes such as diabetes or arthritis should be looked at first but treatment generally is resting the affected hand for two weeks, avoidance of anything that may worsen the symptoms and if necessary applying a splint to immobilise the wrist. In more severe cases drugs physiotherapy and/or surgery may be needed.

New research - has found that genetics, rather than repetitive hand use, is responsible for carpal tunnel syndrome. *[American Academy of Orthopaedic Surgeons annual meeting: February 20, 2007]*

However, according to the researchers genetics do not provide the whole answer.

Age, genetics, obesity, diabetes, thyroid, various types of hormonal conditions, even pregnancy are predisposing factors but there are external factors that will bring on the symptoms. So the researchers suggest that a person may have a genetic or multi-factorial predisposition to carpel tunnel syndrome but something may cause the symptoms to develop. In other words, people who use their hands continuously and laboriously don't get carpel tunnel more frequently eg construction workers don't get it any more frequently and nor do

court reporters who don't stop using their hands all day for hours on end.

The study authors suggest that these findings may affect disability, workers' compensation and personal-injury claims.

.....

Stiff Man's Syndrome [SMS] or Stiff Person's Syndrome

This is a rare slow progressive neurological disorder and the symptoms are painful contractions and spasms of voluntary muscles, particularly those of the back and upper legs. It is caused by rogue antibodies in the blood causing muscles to lock unexpectedly leaving the person with this condition paralysed for minutes or hours at a time. The symptoms may worsen when the person is exposed to anxiety or sudden motion or noise. Sleep usually suppresses the frequency of the contractions.

Researchers think that stiff person syndrome may be an autoimmune disorder. How rare is rare? This is difficult to estimate because doctors often think that the symptoms are psychological or due to depression. 50% of people with SMS also have Type 1 diabetes although the link between the two conditions has not been proved scientifically.

It is interesting to note that the information on the National Institute of Health website says that other autoimmune disease such as diabetes may occur more frequently in people with Stiff Man's Syndrome. Interesting because if we look at the diabetes literature it is described the other way around as a 'rare complication of diabetes'!

Treatment - the drug diazepam, a muscle relaxant, provides improvement in most cases, as do some other drugs. Physiotherapy may also be helpful in some people.

Diffuse idiopathic skeletal hyperostosis [DISH]

This is where there is calcification of the spinal ligaments and the most common part to be affected is the thoracic [chest] spine. It may also be accompanied by general calcification of other ligaments and tendons. The symptoms are stiffness of the neck and back with decreased movement but pain is not the most marked symptom. The cause is not known but the prevalence of DISH is higher in people with diabetes than the general population, especially in people with Type 2 diabetes who are obese.

Treatment - there is no evidence that good diabetic control delays the onset or improves the condition. Treatment is physiotherapy, aspirin or ibuprofen

If you have experiences about these conditions that could help others, please contact Jenny Hirst, IDDT, PO Box 294, Northampton NN1 4XS, tel 01604 622837 or e-mail jenny@iddtinternational.org

Insulin Dependent Diabetes Trust

PO Box 294
Northampton
NN1 4XS

tel: 01604 622837

fax: 01604 622838

e-mail: support@iddtinternational.org

website: www.iddtinternational.org