

Muscular Dystrophy Association Motor Neuron Disease Clinic

At
The University of Utah
Department of Neurology

SWELLING, REDNESS AND COLDNESS

Sometimes a patient notes that a foot or hand has become swollen or red, and it may also feel cold. This can be worrisome, but should not be of great concern. These features can be explained as a natural consequence of not using muscles.

Circulation

Normally, the heart pumps blood out to all parts of our body. However, blood gets back to the heart from our arms and legs by a combination of the heart pumping and by our limb muscles contracting around our veins and milking the blood back up to the heart.

Swelling

Normally, a small amount of serum leaks from our blood vessels into surrounding tissues. Serum is salty, and draws water with it. This would cause limb swelling, except the serum is drawn into another set of vessels called the lymphatic vessels. The lymph system has no natural pump, and relies on limb muscles contracting around them to milk the serum back up.

Therefore, inactive limb muscles will not get rid of the serum and the swelling from the collected fluid will cause the limb to be puffy or swollen.

Again, this is normal. In fact, it happens to everyone's feet when they are sitting and are relatively inactive, such as in a car or especially in an airplane. The swelling goes away soon after the muscles become active with walking.

However, with ALS, the inability to use muscles fully, as in walking or using hands, means that the swelling never fully goes down.

There are several factors that can be controlled. For example, blood, serum and fluid have a longer distance to travel against gravity when legs or arms are dangling. Therefore, when sitting, propping feet up will reduce the distance between foot and heart. Similarly, resting one's hand on a pillow across the lap instead of hanging down at one's side will reduce the distance to the heart. Swelling will be least in the morning after sleeping flat.

The muscle pumping system is so efficient that there does not have to be a major difference in the degree of muscle weakness between two arms or two legs. The weaker limb will swell more.

Redness

Along with swelling, a foot or hand may appear dark red or purple in color. This is due to the veins not being able to pump back all the blood because of muscle weakness. This redness reflects more red blood cells in the capillaries (small blood vessels). Again, this is not harmful.

Coldness

Our extremities are warmed by hot blood pumped from our core out to our limbs. The body is economical in that it does not pump more blood than needed. Therefore, if our muscles are weak from ALS they need less blood. This means they will not be as warm. However, they will not be so cold as to be in danger of frostbite.

Muscle Weakness and Cold

Muscles work best when they are warm. Everyone will experience some weakness and stiffness of muscles when they are cold. Common examples are cold hands trying to turn a key. When muscles are weak from ALS, they become more susceptible to cold temperatures. This should be kept in mind in the winter, and one should keep mittens handy.

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