Diabetes and Limited Joint Mobility

by Gary Scheiner MS, CDE

Just when we thought things couldn't get any worse for our patients with diabetes, we have a whole new class of complications to add to the mix: Limited joint mobility syndromes. Surprisingly, these syndromes can be among the earliest complications to appear in both type-1 and type-2 diabetes, typically appearing before most microvascular disorders.

Included are some familiar conditions: Adhesive capsulitis (frozen shoulder), flexor tenosynovitis (trigger finger), and Dupuytren's contracture (claw hand). However, limited range of motion can also affect the wrists, elbows, hips and ankles in people with diabetes.

Frozen shoulder is one of the more common afflictions. It affects approximately 20% of individuals with diabetes, four times the rate seen the non-diabetic population. Calcific shoulder periarthritis, which has a similar presentation, is three times more common in those with diabetes. In the first stage, pain grows progressively worse until range of motion is limited by the pain itself. In the second or "frozen" stage, pain diminishes, but range of motion becomes restricted -- particularly when moving the arm away from the body, over the head or behind the back. In the final or "thawing" stage, shoulder motion gradually returns toward normal, but may never reach pre-syndrome levels.

Trigger fingers occur when there is scarring in the sheath of one or more of the fingers. It also occurs in up to 20% of people with diabetes. After the scarring, nodules may form in one or both hands, producing pain and tingling. Usually, a single finger becomes locked in a bent or extended position, requiring help from the other hand to unlock.

In the hands, contracture results from thickening and fibrosis of the structures just under the skin of the palm. One or more fingers are pulled downward into a fixed (but not locked) arch shape. The risk of hand contacture increases with age and duration of diabetes. One key indicator of this condition is the inability to completely touch the knuckles of the fingers together when the hands are placed in a "prayer position" with the fingers fanned out.

The Culprits

At the root of joint mobility problems is hyperglycemia. Poor diabetes control is linked to the development of all forms of these syndromes. Elevated glucose levels cause sugar to stick to collagen in bones, cartilage and tendons. When collagen becomes glycosylated, it thickens, resulting in stiffness and preventing bones from moving smoothly through the full range of motion.

Even though diabetes is a known risk factor for joint mobility problems, any condition that keeps a person from actively moving their joints increases their risk. This could include injury, pain, or simple lethargy.

The Treatments

For those already experiencing joint mobility problems, physical therapy and non-steroidal anti-inflammatory medications such as ibuprofen often provide relief. Physical therapy should involve progressive range-of-motion stretches along with home exercises. Weekly yoga sessions (with home practice) have proven beneficial in relieving frozen shoulder

symptoms and improving range of motion in all planes.

Localized heat and ultrasound are sometimes used as adjuncts to physical therapy. If these fail to produce desired results, corticosteroid injections may be very helpful – especially when the hands are affected. However, be certain to discuss a blood glucose management plan with your patient, as steroids tend to cause significant insulin resistance. In severe cases, orthopedic surgery may be used to eliminate the problem.

Prevention

Control, control, and more control of blood glucose is essential since hyperglycemia is at the root of all diabetes-based joint mobility problems.

For those at risk, it is important to stretch and/or exercise the arms, shoulders, hands and wrists through a full range of motion on a daily basis. For those looking for specifics, "Crawl the Wall", "Reach Across" and "Towel Behind the Back" exercises are ideal for both preventing and improving frozen shoulder symptoms. The American Academy of Orthopaedic Surgeons website offers some excellent diagrams: http://orthoinfo.aaos.org/topic.cfm?topic=A00071