

PATRICIA J. PAPADOPOULOS, MD

Rheumatology Fellow, Department of Medicine, Rheumatology Service, Walter Reed Army Medical Center, Washington, DC; Assistant Professor of Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD

JESS D. EDISON, MD

Rheumatology Staff, Department of Medicine, Rheumatology Service, Transitional Year Assistant Program Director, Walter Reed Army Medical Center, Washington, DC; Assistant Professor of Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD

The Clinical Picture

Soft tissue atrophy after corticosteroid injection



Patients need to be told about the potential for atrophy

FIGURE 1

A 27-YEAR-OLD WOMAN PRESENTS with pain and tenderness over her right radial styloid. Examination reveals tenderness to palpation and a positive Finkelstein test, and her condition is diagnosed as de Quervain tenosynovitis. She is referred for occupational therapy and for a corticosteroid injection.

Injection of the tendon sheath results in relief, but within several weeks she notes increasing pain, transient purplish skin discoloration, and soft tissue (fat) atrophy at the injection site (**FIGURE 1**).

Q: On the basis of the skin findings, which corticosteroid injection was most likely used?

- ☐ Triamcinolone hexacetonide (Aristospan)
- ☐ Dexamethasone sodium phosphate (Decadron)
- ☐ Betamethasone sodium phosphate and

betamethasone acetate (Celestone Soluspan)

- ☐ Triamcinolone acetonide (Kenalog-40)

A: Both triamcinolone hexacetonide and triamcinolone acetonide are correct, as they are the least soluble of the agents listed.

ADVERSE EFFECTS OF STEROID INJECTIONS

Soft tissue atrophy and local depigmentation are possible adverse effects of any steroid injection, particularly when given at a superficial site.^{1,2} Although these are rare, with an estimated risk of less than 1%, patients still need to be told about these potential side effects.³ In addition, these adverse effects of injection may be prevented by applying pressure with gauze over the injection site as the needle is

doi:10.3949/ccjm.76a.08096

withdrawn to prevent leakage of corticosteroid along the needle track.³

Soft tissue atrophy generally appears in 1 to 4 months and resolves 6 to 30 months later.⁴ Patients with darker skin are at greater risk of depigmentation.

The cause of the pigment changes is not fully understood but may be related either to the steroid or to the constituents of the vehicle in which the steroid is suspended.⁵

CHOOSING THE APPROPRIATE STEROID PREPARATION

Although soft tissue (fat) atrophy and local depigmentation are possible with any steroid preparation injected into soft tissue, the risk can be modulated by using a corticosteroid agent with appropriate solubility. A less soluble agent such as triamcinolone acetonide or hexacetonide is preferred for intra-articular injections of deep structures, such as the knee, elbow, or shoulder. A more soluble agent, such as betamethasone sodium phosphate and acetate or dexamethasone sodium phosphate, is preferred for soft tissue injections of bursae, tendon sheaths, metacarpophalangeal joints, proximal phalangeal joints, and the carpal tunnel.

OTHER POSSIBLE COMPLICATIONS

Other potential complications of corticosteroid injection include pain, bleeding, infection

(risk 1 in 40,000), flushing, post-injection flare (< 1%), nerve damage, tendon weakening, and rarely, tendon rupture. In cases of tendonitis, it is very important to ensure that the drug is injected into the tendon sheath and not the tendon. A general rule for tendon sheath injection is to not inject if resistance is met.

PATIENT UNWILLING TO RECEIVE MORE INJECTIONS

This patient's symptoms persist, with a painful right wrist, perhaps due to refractory de Quervain tenosynovitis, nerve damage, or tendinosis. In time, the tenosynovitis and atrophy may improve, but she is reluctant to receive any more injections, as she was not forewarned about the possibility of atrophy.

REFERENCES

1. **Saunders S, Longworth S.** Injection Techniques in Orthopaedics and Sports Medicine. 3rd ed. London: Elsevier; 2006.
2. **Cardone DA, Tallia AF.** Joint and soft tissue injection. *Am Fam Physician* 2002; 66:283–288.
3. **Gray RG, Gottlieb NL.** Intra-articular corticosteroids: an updated assessment. *Clin Orthop Relat Res* 1983; 177:235–263.
4. **Cassidy JT, Bole GG.** Cutaneous atrophy secondary to intra-articular corticosteroid administration. *Ann Intern Med* 1966; 65:1008–1018.
5. **Newman RJ.** Local skin depigmentation due to corticosteroid injection. *Br Med J (Clin Res Ed)* 1984; 288:1725–1726.

ADDRESS: Patricia J. Papadopoulos, MD, Department of Medicine, Rheumatology Service, Walter Reed Army Medical Center, 6900 Georgia Avenue, Washington, DC 20307; e-mail p.papadopoulos@us.army.mil.