Herpes zoster following intra-articular corticosteroid injection

N. F. Fernandes, R. Malliah, T. P. Stitik, P. Rozdeba, W. C. Lambert, and R. A. Schwartz

SUMMARY

Localized herpes zoster following intra-articular corticosteroid injection is remarkable. We describe an 80-year-old woman with severe osteoarthritis that received an intra-articular injection of 80 mg methylprednisolone in her knee, followed 1 day later by the appearance of linear unilateral vesicles and bullae on her leg in a dermatomal distribution adjacent to the injection site. The roofs of several blisters showed classic viral cytopathic effects for herpes including keratinocytes with multinucleation and margination of chromatin. Varicella zoster virus immunostaining revealed positive staining in the keratinocytes. One plausible explanation is herpes zoster virus reactivation secondary to localized immunosuppression from corticosteroid injection.

Introduction

Herpes zoster, the most common disease resulting from the varicella-zoster virus, results from reactivation of the virus (1–3). Herpes zoster occurs primarily in elderly and immunocompromised patients. Known risk factors for reactivation include age and decreased immunity. A number of reports have implicated trauma as a risk factor in herpes zoster (4–6). However, herpes zoster has been described as a complication of epidural steroids in the treatment of complex regional pain syndrome and other pain disorders (7, 8). Our case implies that herpes zoster may be precipitated by intra-articular corticosteroid injection.

Case report

The patient was an 80-year-old obese woman with a history of hypothyroidism, hypertension, glaucoma, and over 30 years of severe osteoarthritis. After receiving an intra-articular injection of 80 mg methylprednisolone in her left knee, the patient returned the following day complaining of a rash in a dermatomal distribution distal to the site of injection. She had been given intra-articular corticosteroid injections for osteoarthritis without complications in the past. The patient reported using 2.5% hydrocortisone cream on the rash without any improvement. She denied constitutional symptoms such as fever and chills. On physical examination, the

KEY WORDS

herpes zoster, varicella zoster, corticosteroids

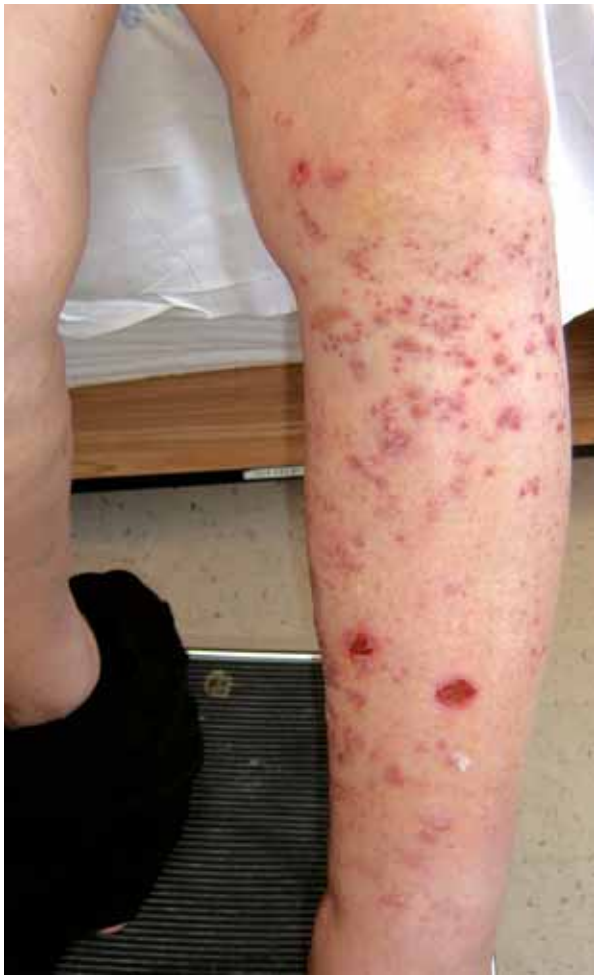

Fig. 1. Characteristic linear unilateral vesiculobullous eruption on lower extremity in a dermatomal distribution.

patient had petechiae on her left lower extremity and a linear unilateral vesiculobullous eruption on her left leg (Fig. 1). The affected region was mildly tender to palpation and was moderately edematous without being hot or erythematous. Doppler examinations of the leg were negative for deep vein thrombosis. The patient's leg was moderately edematous, so a punch biopsy specimen of a vesicle was not taken due to concern about the possibility of poor wound healing. Instead, several blister roofs were removed for histopathologic examination. They demonstrated the classic viral cytopathic effects for herpes, including keratinocytes with characteristic multinucleated keratinocytes with nuclear molding and margination of chromatin (Fig. 2). Polymerase chain reaction was negative for herpes simplex virus 1 and 2. Varicella-zoster virus immunostaining revealed positive staining in keratinocytes with viral cytopathic effects (Fig. 3).

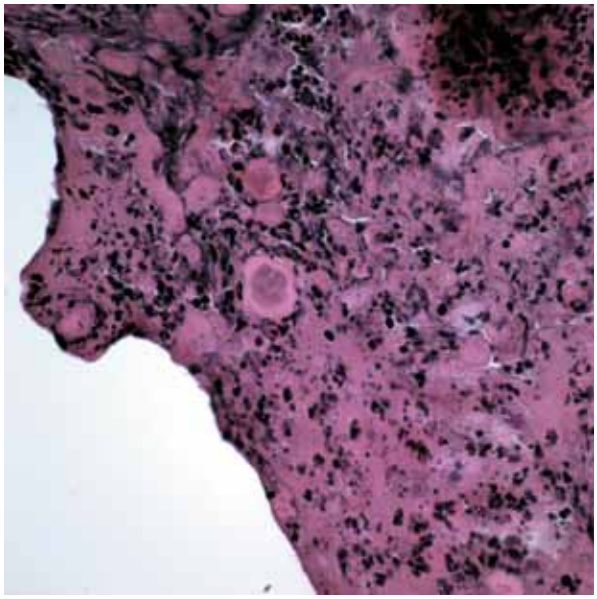

Fig. 2. Multinucleated giant cells from blister roof specimen. Note the cell in the middle exhibiting typical herpesvirus features: margination of chromatin, multinucleation, and nuclear molding (hematoxylin and eosin, original magnification ×100).

Discussion

Herpes zoster (shingles) results from reactivation of the varicella-zoster virus (1–3). It tends to remain

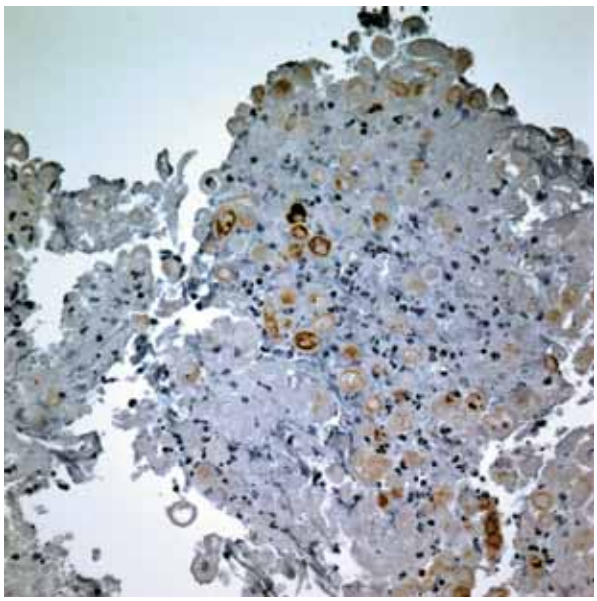

Fig. 3. Immunostain for varicella-zoster confirming its presence as opposed to herpes simplex virus.

dormant in the spinal dorsal root ganglia or cranial sensory ganglion after primary varicella infection. Herpes zoster is relatively common, particularly in elderly and immunocompromised individuals. Known risk factors for reactivation include age, chronic corticosteroid use, and decreased immunity (1). Previous case reports have indicated that trauma may be a risk factor for herpes zoster (4–6). However, it may also be a complication of epidural steroids in the treatment of complex regional pain syndrome and other pain disorders (7, 8).

Steroid injections are employed for a number of disorders, including herpes zoster and post-herpes zoster neuralgia (9). Our patient had received steroid injections for 15 years without previously developing herpes zoster. It developed shortly after the corticosteroid injection without prodromal symptoms in a typical dermatomal distribution distal to the site of injection. Microscopic examination showed pustular debris with characteristic multinucleated keratinocytes with nuclear molding and margination of chromatin. Herpes simplex virus 1 and 2 infection was ruled out through evaluation by PCR. Varicella-zoster virus infection was confirmed with positive staining in the keratinocytes using immunohistochemistry.

Our case demonstrates a possible link between the use of intra-articular corticosteroids and activation of herpes zoster. Because intra-articular corticosteroids are immunosuppressive, they may give the varicella-zoster virus the opportunity to flourish and reactivate. Another possibility is that localized trauma to the joint may have precipitated the herpetic eruption (4–6). The occurrence of the eruption shortly following the injection and the location of the eruption adjacent to the site of injection imply a causal link between the intra-articular corticosteroid injection and the eruption rather than just coincidental infection.

REFERENCES

1. Wareham DW, Breuer J. Herpes Zoster. Br Med J. 2007;334:1211–5.

2. Janniger CK, Droano AN: Zoster. eMedicine [Internet]. 2008. [cited 2009 Feb 10] Available from: http://emedicine.medscape.com/article/909908-overview

3. Papadopoulos AJ, Birnkrant AP, Schwartz RA, Janniger CK: Childhood herpes zoster. Cutis. 2001;68:21–23.

4. Svozilkova P, Rihova E, Diblik P, Kuthan P, Kovarik Z, Kalvodova B**.** Varicella zoster virus acute retinal necrosis following eye contusion: case report. Virol J. 2005;2;77.

5. Lee MR, Ryman W. Herpes zoster following cryosurgery. Australas J Dermatol. 2005;46:42–3.

6. Jarade EF, Tabbara KF. Presumed reactivation of herpes zoster ophthalmicus following laser in situ keratomileusis. J Refract Surg. 2002;18:79–80.

7. Parsons SJ, Hawboldt GS. Herpes zoster: a previously unrecognized complication of epidural steroids in the treatment of complex regional pain syndrome. J Pain Symptom Manage. 2003;25:198–9.

8. Szokol JW, Gilbert HC. A herpes zoster outbreak temporarily associated with an epidural steroid injection. Reg Anesth Pain Med. 1998;23:328.

9. Shakir A, Kimbrough DA, Mehta B. Postherpetic neuralgia involving the right C5 dermatome treated with a cervical transforaminal epidural steroid injection: a case report. Arch Phys Med Rehabil. 2007;88:255–8.

AUTHORS' ADDRESSES

Neil F. Fernandes, MD, Dermatology, Pathology, and Physical Medicine & Rehabilitation, New Jersey Medical School, 185 South Orange Avenue, Newark, NJ 07103
Rajit Malliah, MD, same address
Todd P. Stitik, MD, same address
Paul Rozdeba, same address
W. Clark Lambert, MD, PhD, same address
Robert A. Schwartz, MD, MPH, Professor & Head, same address, corresponding author, E-mail: roschwar@cal.berkeley.edu