Tumescent Infiltration of Corticosteroids, Lidocaine, and Epinephrine Into Dermatomes of Acute Herpetic Pain or Postherpetic Neuralgia

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The Cutting Edge: Challenges in Medical and Surgical Therapeutics

REPORT OF CASES

Twenty-six patients with herpetic neuralgia were divided into 2 groups. Group 1 consisted of 13 patients with acute herpetic neuralgia, arbitrarily defined as pain beginning from 0 days to 3 months after the onset of herpes zoster infection. Group 2 consisted of 13 patients treated during the course of the postherpetic neuralgia, arbitrarily defined as pain lasting 3 months or more from the onset of the herpes zoster outbreak.

Initial pain was scored subjectively by the patient on a scale of 0 to 10. Zero equaled no pain; 1 to 4, a level of pain that was annoying without having substantial effects on the patient’s lifestyle; 5 to 9, pain that affected normal routines and activities; and 10, unbearable pain that was extremely incapacitating.

THERAPEUTIC CHALLENGE

Pain from herpes zoster infection, whether acute or chronic, continues to be a vexing problem despite the widespread use of antiviral medications. Nagging pain complicated with sleepless nights, loss of appetite, and often times agitation or transient depression is a common scenario.

The challenge is to develop a safe technique that will bring immediate, complete pain relief from acute and postherpetic neuralgia, and break the vicious, relentless pain cycle. Furthermore, the challenge remains to keep the pain from returning or mute it substantially if it does return.

SOLUTION

The patients received an injection consisting of 0.05% lidocaine with 1:1 000 000 epinephrine in normal saline solution into the dermatomal area of their pain sensation. This is the standard diluted formula used for tumescent regional anesthesia for liposuction. Triamcinolone acetonide, ranging from 60 to 80 mg, was added to the tumescent mixture. The final solution was force injected into the affected skin and subcutaneous tissue with a 20-gauge lumbar puncture needle, using an infusion pump or a 10-mL disposable infusion syringe attached to an intravenous bag. The solution was injected into the upper dermis, as well as into the deeper reticular dermis and subcutaneous tissue including fat, until the entire affected area became tumescent or hardened as one would achieve with tumescent anesthesia for liposuction (Figure 1 and Figure 2). The amount of anesthetic solution injected depended on the extent of the area affected and ranged from 100 to 1000 mL. For patient comfort, 1% lidocaine with epinephrine (1:100 000) was injected into various epidermal spots prior to the lumbar puncture needle injections.

All but 1 of the 13 patients in group 1 had immediate, total relief of pain lasting for at least 48 hours after the injection. A certain amount of pain would then return, followed by gradual, continued relief in the majority of patients. Some of these patients continued using the analgesics or topical medications that had been prescribed by their primary care physicians before they underwent treatment. At the end of 12 weeks, 8 of the 13 patients were completely free of pain. Two additional patients experienced almost no pain except for an occasional annoying, crawling feeling. Another patient whose initial pain was classified at level 10 experienced a reduction in pain to level 6 at 12 weeks. This was a substantial improvement from his previous state of total incapacitation.

Another patient with an initial pain level of 10 experienced no relief from the injections, not even from the initial anesthesia. None of these patients were injected a second time.

In the group 2 patients, all but 1 had complete pain relief that lasted approximately 48 hours before pain began to return. In this group, there were 2 patients with postherpetic neuralgia of 3 months’ to 2 years’ duration. Their pain affected their normal routine and activities. One patient had no long-term response to the initial injection. The second patient’s pain level ranged from one that affected her lifestyle to one that was merely annoying. A second injection 6 weeks later resulted in a complete resolution of pain.
A second subgroup consisted of 4 patients who had postherpetic neuralgia of 2 to 4 years’ duration. One patient’s pain level dropped from one that affected her normal routine to complete freedom from pain. This occurred during the first week and continued throughout the 12-week period. A second patient’s pain level affected her normal routine and did not change on initial injection, although she got immediate transient relief. However, on a second injection the intensity of her pain level lessened to one in which the pain became annoying but did not substantially affect her lifestyle. A third patient whose initial pain was extremely incapacitating (level 10), did not achieve a long-term response to the initial injection. A second injection decreased her pain from level 10 to level 9. The fourth patient who began at an initial pain level of 10 had no subjective long-term response to the treatment.

There were 4 patients with postherpetic neuralgia of 4 to 13 years’ duration. One patient’s pain began at level 9 and dropped down to level 5 by 12 weeks. A second injection seemed to worsen her condition and at 6 weeks, her pain reached level 10. The results of the other 3 patients were equally disappointing. One of the 3 was injected a second time without long-term relief.

Figure 1. Tumescent injection of dermatome with a lumbar puncture needle attached to an infusion pump.

Figure 2. Fully tumescent herpes zoster neuralgia on the left side of the patient’s forehead.

COMMENT

This was a pilot study. No attempt has been made to determine statistical significance. One must also remember that we are dealing with subjective levels of pain. We have not used any placebo injections as a control and we are treating a patient population, especially in the long-standing postherpetic neuralgia group, that may be skewed toward patients with psychological overtones. Furthermore, the amount of corticosteroid chosen per injection was conservative, based on data in which concentrated injections of corticosteroids were injected into the treatment sites. Serum samples to determine systemic absorption and effect on the pituitary adrenal axis were not collected. Furthermore, the concentration of lidocaine chosen was very dilute, probably too dilute, and well within the toxic end point of 55 mg/kg given as a safe injection amount for tumescent liposuction. Moreover, lidocaine was arbitrarily used instead of a longer acting anesthetic, since the safety data on longer acting anesthetics injected into cutaneous tissue have not been worked out well.

These results are intriguing, nonetheless. They are similar to, if not more encouraging, than the results of Epstein. He injected approximately 30 mL/d of 2 mg/mL triamcinolone acetonide into the involved sites and repeated this daily until the desired result was obtained. He sometimes used as many as 14 treatments. In his study, he achieved complete response in 40 patients (35.2%); good results (occasional pain) in 37 patients (28.9%); fair results (some improvement, but not enough to be worthwhile) in 20 patients (15.6%); and no benefit in 26 patients (19%). Overall, he found that 64% of the patients achieved acceptable improvement. A major drawback to his study was the lack of a controlled population. Furthermore, there was marked pain on injection and multiple injections were necessary, taking several days to inject large dermatomes. Anesthetics that would have greatly decreased the pain immediately on injection were not used. Similarly, Portnoy et al have shown that sympathetic nerve blocks are effective for immediate, short-term relief of acute herpes zoster pain, but controlled trials to determine efficacy in the prevention of postherpetic neuralgia have not been performed.

Early nonrandomized studies supported the efficacy of high-dose oral corticosteroids given during the acute phase of herpes zoster outbreak in reducing the frequency, extent, and duration of postherpetic neuralgia. More recently, the number of physicians prescribing oral corticosteroids during the acute phase of herpes zoster outbreak has been reduced because of negative study results, the lack of randomized controls, and the fear of dissemination of herpes zoster virus in immunocompromised hosts. The recent introduction of potent antiviral medications has shown some efficacy in reducing the frequency of postherpetic neuralgia.

Of late, there has been renewed interest in oral corticosteroid therapy for herpes zoster infection. Mertz shows that oral corticosteroids plus antiviral medications clearly are more beneficial than antiviral medications alone. This work, combined with the meta-analysis of Lycka, suggests that systemic corticosteroid treatment decreases the proportion of patients developing postherpetic neuralgia. Whitley et al studied 201
patients with herpes zoster infection who were treated with 800 mg of acyclovir, 5 times a day for 21 days, plus prednisone, 60 mg/d for 7 days. Treatment with prednisone was tapered to 30 mg/d for 7 days, followed by 15 mg/d for 7 days. These findings were compared with those of groups who had received acyclovir plus prednisone placebo, and a group who received prednisone plus acyclovir placebo, or placebo for both prednisone and acyclovir. The combination of acyclovir plus prednisone had the greatest effect on the resolution of acute neuritis after 1 month of evaluation. These patients returned to uninterrupted sleep 2 to 3 times more quickly without help from analgesic agents compared with the groups of patients using placebos. Postherpetic neuralgia was not improved with the use of placebo or with any active treatment.

My clinical observations demonstrate that forced large-volume injections of dilute lidocaine and corticosteroid solution add another method of pain control for patients with herpes zoster infection. The optimum amounts of corticosteroid and anesthetic and the frequency of retreatment remain to be determined. Some neurologists believe that lessening the pain early eliminates a cascade of events that otherwise may lead to postherpetic neuralgia. The tumescent injections, combined with other pain-lowering regimens, including the use of oral analgesics, topical capsaicin, topical doxepin hydrochloride, a topical cream combination product of lidocaine and prilocaine hydrochloride, tricyclic antidepressants, and antiviral medications, seemed to help in a number of patients who were already receiving some form of therapy. The injection was the icing on the therapeutic cake that immediately and substantially reduced the pain.

Tumescent injection of lidocaine with epinephrine is a logical approach to bring about immediate relief of pain resulting from acute or postherpetic herpes zoster neuralgia. How much and how soon the corticosteroid becomes systemic was not studied. Delivering the corticosteroid by injecting very dilute amounts into the tissue itself may provide an advantage over systemic corticosteroids. It is hoped that this article will stimulate interest in a controlled study that will answer many of the questions that I have raised.

REFERENCES

10. McKendrick M, for the Famciclovir Herpes Zoster Clinical Study Group. Reduction of zoster-associated pain (ZAP) by famciclovir. Presented as a poster at the Seventh International Conference on Antiviral Research (ICAR); February 27-March 4, 1994; Charleston, SC.

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