Cochrane for Clinicians

Putting Evidence into Practice

Injected Corticosteroids for Plantar Heel Pain

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Clinical Question

Do corticosteroid injections improve plantar heel pain?

Evidence-Based Answer

There is low-quality evidence that corticosteroid injections slightly reduce heel pain at one month, but they make no significant difference beyond that time. Patients treated with corticosteroid injections were less likely to experience treatment failure—a designation that was defined differently between studies (number needed to treat [NNT] = 3). Injections do not appear to provide any functional benefits.[1] (Strength of Recommendation: B, based on inconsistent or limited-quality patient-oriented evidence.)

Practice Pointers

Plantar heel pain is common, accounting for four in 1,000 outpatient physician visits and an estimated 1 million visits per year in the United States.[2] Most plantar heel pain is caused by plantar fasciopathy, commonly called plantar fasciitis. Plantar fasciopathy is more likely in patients who are obese (odds ratio [OR] = 3.7; 95% confidence interval [CI], 2.9 to 5.6) and in those who have occupations in which the majority of time is spent standing (OR = 3.6; 95% CI, 1.3 to 10.1).[3] Plantar fasciopathy is common in runners, with an incidence of 31% over five years in one study.[4] The authors of this review sought to evaluate the effect of corticosteroid injections on plantar heel pain in adults.[1]

This Cochrane review included 39 randomized trials with 2,492 adults who had plantar heel pain.[1] Studies ranged from one month to two years in duration. The studies were of low to very low quality and were judged to have high risk of bias. Eight studies compared local corticosteroid injections with placebo or no treatment. At one month, corticosteroid injections provided slight clinical benefit (mean difference [MD] on a visual analog scale [0 to 100 mm; higher scores indicate worse pain] = −6.38 mm; 95% CI, −11.13 to −1.64). Between one and six months, corticosteroid injections had no significant pain benefit (MD = −3.47 mm; 95% CI, −8.43 to 1.48). Two studies evaluated function, although neither revealed benefit at any time during follow-up.

Three very-low-quality studies with a total of 363 patients evaluated treatment failure, defined as persistent pain at eight weeks, the need for repeat treatment at 12 weeks, or no pain relief at six months. Treatment failure was significantly reduced by corticosteroid injections (absolute risk reduction = 33.7%; 95% CI, 27.2% to 38.7%; NNT = 3 [95% CI, 3 to 4]).

This review also included comparisons between corticosteroid injections and 15 other interventions. No useful comparisons could be made because of the small sample sizes for the different interventions.

Types and doses of corticosteroid varied between studies, with two studies not reporting the corticosteroid used. Injections generally included local anesthetic. Adverse effects included postinjection pain, injection-site infection, and, rarely, rupture of the plantar fascia.

A network systematic review published in 2016 included some of the studies from this Cochrane review and determined that corticosteroid injections significantly improved pain over placebo at two months, but showed no difference at six months after treatment.[5] Guidelines from the American College of Foot and Ankle Surgeons from 2010 recommend corticosteroid injections as a first-tier intervention, along with weight loss,

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padding or strapping, orthotics, anti-inflammatory medication, and patient-directed Achilles and plantar fascia stretching.[6]

The practice recommendations in this activity are available at http://www.cochrane.org/CD009348.

Editor's Note: The number needed to treat for treatment failure reported in this Cochrane for Clinicians was calculated by the authors based on raw data provided in the original Cochrane review.

The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the U.S. government.

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Effectiveness of Skin-to-Skin Care for Procedure-Related Pain in Newborns

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Clinical Question

Is skin-to-skin care safe and effective in relieving procedural pain in neonates?

Evidence-Based Answer

Skin-to-skin care, also known as kangaroo care, effectively reduces physiologic and behavioral measures of pain in neonates during painful procedures and has no identified adverse effects. Infants who received skin-to-skin care during painful procedures had a heart rate of 10.8 beats per minute less, cried for 34 fewer seconds, and had reduced pain scores immediately following the procedure compared with infants who did not receive skin-to-skin care.[1] Family physicians should encourage skin-to-skin care for newborns undergoing painful procedures. (Strength of Recommendation: A, based on consistent, moderate- to good-quality patient-oriented evidence.)

Practice Pointers

Most newborns undergo painful procedures in their first weeks of life, including intramuscular injections (e.g., hepatitis B vaccination[2]) and heel lance (e.g., state-mandated genetic screening[3]). Untreated neonatal pain could have adverse behavioral, autonomic, and hormonal responses, and may affect brain and cognitive development. Neonatal pain control is therefore an important part of newborn care. Skin-to-skin care, in which newborns wearing only a diaper are held next to their mother's bare chest, has many benefits, including improved breast milk production, breastfeeding duration, parent satisfaction, sleep organization, and a longer duration of quiet sleep.[1] Skin-to-skin care is a possible alternative to pharmacologic analgesics for painful procedures.

The authors of this Cochrane review sought to determine if skin-to-skin care is effective in reducing pain during newborn procedures.[1] The 25 studies in the review included 2,001 infants.[1] None of the studies reported adverse effects. Studies examined response to pain during or after painful procedures (heel lance, intramuscular injection, venipuncture, or tape removal) with skin-to-skin care compared with no treatment or another treatment (e.g., dextrose, breastfeeding). Outcomes included physiologic measures (e.g., heart rate, oxygen saturation, cortisol levels) or behavioral measures (e.g., cry duration, facial grimacing scores), or a composite score of the two. Because of a high degree of heterogeneity between designs and outcomes, only a few studies could be combined for analysis.

A meta-analysis of five studies (n = 161) showed a mean decrease in heart rate of 10.8 beats per minute (95% confidence interval [CI], –13.6 to –7.9) during painful procedures in infants receiving skin-to-skin care vs. no treatment. Four of the five studies (n = 120) examined heart rate with skin-to-skin care applied before, during, and after the procedure (duration of postprocedure treatment was defined in only one study: 20 minutes), and meta-analysis found no significant difference in postprocedure heart rate recovery vs. no treatment. A meta-analysis of two separate studies (n = 49) examining oxygen saturation during the procedure showed no significant difference between skin-to-skin care and no treatment.

A separate meta-analysis, which included four studies that measured the postprocedure duration of crying (n = 133), favored skin-to-skin care over no treatment after heel lance (mean difference [MD] = –34.16 seconds; 95% CI,

–42.86 to –25.45) and intramuscular injection (MD = –8.83; 95% CI, –14.63 to –3.02). A meta-analysis of five studies (n = 267) that used the Premature Infant Pain Profile—a validated composite pain measurement tool scored from 0 to 21 using physiologic and behavioral indicators—showed a significant decrease in postprocedure scores with skin-to-skin care at 30 seconds (MD = –3.21; 95% CI, –3.94 to –2.47) and 60 seconds (MD = –1.64; 95% CI, –2.86 to –0.43), but not at 120 seconds.

Two additional studies compared skin-to-skin care by the mother, father, or another female provider and found no significant difference in Premature Infant Pain Profile scores. Studies comparing skin-to-skin care with other interventions could not be combined for analysis, although they reported that skin-to-skin care had significantly lower composite pain scores (based on physiologic parameters and behaviors observed) compared with the use of sweet-tasting substances (dextrose, sucrose, or glucose) and score reductions similar to those of breastfeeding. The combination of skin-to-skin care with sweet-tasting substances or breastfeeding, or the combination of all three, was also better than any intervention alone.

The American Academy of Pediatrics and the Canadian Paediatric Society have recommended skin-to-skin care as an intervention when feasible.[4,5]

The practice recommendations in this activity are available at http://www.cochrane.org/CD008435.

The opinions and assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the U.S. Army Medical Department or the U.S. Army Service at large.

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