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PRESRIPTION COMPOUNDING FOR

PAIN MANAGEMENT

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ACHILLES TENDINOPATHY

The following study concludes that topical glyceryl trinitrate treatment has demonstrated efficacy in treating chronic noninsertional Achilles tendinopathy and the treatment benefits continue at three years - “Three-year follow-up study of topical glyceryl trinitrate treatment of chronic noninsertional Achilles tendinopathy” (Foot Ankle Int. 2007 Oct;28(10):1064-8).

BACKGROUND: Topical glyceryl trinitrate treatment has demonstrated short-term efficacy in chronic noninsertional Achilles tendinopathy. No long-term follow-up is reported. We aimed to assess if the demonstrated efficacy of this treatment persisted 3 years after discontinuation of therapy.

METHODS: A follow-up study of 52 patients (68 tendons) treated with 6 months of glyceryl trinitrate therapy or placebo was performed 3 years after cessation of therapy. Assessment included pain scores, return to previous activity, the Victorian Institute of Sport Achilles tendon scale (VISA-A), asymptomatic patient outcomes, clinical assessment of tendon tenderness, and functional hop test.

RESULTS: Patients treated with topical glyceryl trinitrate had significantly less Achilles tendon tenderness ($p = 0.03$), and improved VISA-A scores ($p = 0.04$) than those in the placebo group; 88% (28 of 32 tendons) of patients were completely asymptomatic at 3 years (VISA-A score of 100) compared to 67% (24 of 36 tendons) of patients treated with rehabilitation alone ($p = 0.03$ with Chi square analysis). Other outcome measures showed nonsignificant trends towards improvement in the glyceryl trinitrate group (pain scores $p = 0.07$, functional hop test $p = 0.07$, and return to sport $p = 0.16$). The mean estimated effect size for all outcome measures was 0.21.

CONCLUSIONS: Topical glyceryl trinitrate treatment has demonstrated efficacy in treating chronic noninsertional Achilles tendinopathy, and the treatment benefits continue at 3 years. Significant differences in asymptomatic patient outcomes for the glyceryl trinitrate group continue at 3 years, and this is confirmed by the effect size estimate. This suggests that the mechanism of action of topical glyceryl trinitrate on chronic tendinopathies is more than an analgesic effect. PMID: 17923056

We have the ability to compound glyceryl trinitrate into a topical ointment.

An example of how you might prescribe follows:

<table>
<thead>
<tr>
<th>COMPOUNDED MEDICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glyceryl Trinitrate 0.2%</td>
</tr>
<tr>
<td>Topical Ointment</td>
</tr>
<tr>
<td>60gm</td>
</tr>
<tr>
<td>Apply BID/TID</td>
</tr>
</tbody>
</table>
TRIGEMINAL NEURALGIA

The following clinical study results suggest that misoprostol is effective and safe in the treatment of this specific type (multiple sclerosis) of refractory trigeminal neuralgia - “Misoprostol in the treatment of trigeminal neuralgia associated with multiple sclerosis” (J Neurol. 2003 May;250(5):542-5).

**ABSTRACT:** “Multiple sclerosis can be associated with trigeminal neuralgia which is often difficult to treat in this specific condition. We performed an open prospective trial on the efficacy and safety of the prostaglandin-E1-analogue misoprostol (600 microg per day) in the reduction of attack frequency and pain intensity in patients with refractory trigeminal neuralgia associated with multiple sclerosis. Eighteen patients completed the study period and 14 of them showed a reduction of more than 50 % in attack frequency and intensity beginning five days after treatment onset. There were only mild and transient drug related side effects in three patients. One patient stopped taking misoprostol after the study period because of severe menorrhagia. Our results suggest that misoprostol is effective and safe in the treatment of this specific type of refractory trigeminal neuralgia.” PMID: 12736732

This case report states that misoprostol relieved pain in six of seven patients who had failed to respond to conventional pharmacologic therapy - “Trigeminal neuralgia in multiple sclerosis relieved by a prostaglandin E analogue” (Neurology. 1995 Jun;45 (6):1097-100).

**ABSTRACT:** “Trigeminal neuralgia is an uncommon but troublesome symptom of multiple sclerosis that can be refractory to conventional treatments. Misoprostol, a long-acting prostaglandin E1 analogue, relieved pain in six of seven patients who had failed to respond to conventional pharmacologic therapy.” PMID: 7783870

With our state of the art compounding lab and pharmaceutical knowledge and experience, we have the ability to compound misoprostol into a transdermal gel. This form of delivery may decrease the systemic side effects associated with oral dosing.

An example of how you might prescribe follows:

**COMPOUNDED MEDICATION**

<table>
<thead>
<tr>
<th>Misoprostol 0.006% Transdermal Gel</th>
</tr>
</thead>
<tbody>
<tr>
<td>30ml</td>
</tr>
<tr>
<td>Apply 0.5ml locally BID</td>
</tr>
</tbody>
</table>
ALLODYnia

The following clinical papers discuss the effectiveness of ketamine and lidocaine in treating allodynia in patients with different types of pain.


**ABSTRACT:** A double-blind placebo-controlled crossover trial was used to determine the effects of topical ketamine, an N-methyl-d-aspartate (NMDA) receptor antagonist, on the sensory disturbances in 20 patients with complex regional pain syndrome (CRPS). On two occasions separated by at least one week, sensory tests to light touch, pressure, punctate stimulation, light brushing and thermal stimuli were performed in the symptomatic and contralateral limb and on each side of the forehead before and 30min after 10% ketamine cream was applied to the symptomatic or healthy limb. Venous blood for the plasma estimations of ketamine and norketamine was obtained 1h after application of the creams. Ketamine applied to the symptomatic limb inhibited allodynia to light brushing and hyperalgesia to punctate stimulation. Systemic effects of the ketamine are unlikely to account for this as the plasma levels were below detectable limits. As touch thresholds were unchanged, NMDA receptors may contribute to the sensory disturbances in CRPS via actions at cutaneous nociceptors. Alloodynia and hyperalgesia were detected in the ipsilateral forehead to a range of stimuli (brushing, pressure, punctate stimulation, cold, heat, and warmth). In several patients, ketamine treatment of the symptomatic limb inhibited alloodynia to brushing the ipsilateral forehead, suggesting that the mechanism that mediates alloodynia in the symptomatic limb contributed to alloodynia at more remote sites. The present study shows promise for the use of topical ketamine as opposed to parenteral and oral forms which often result in undesirable side effects.” PMID: 19703730


**ABSTRACT:** This study investigated the effect of intravenous lidocaine at two doses (1 mg/kg and 5 mg/kg over 2 hours) and an intravenous saline placebo on the pain and allodynia of postherpetic neuralgia (PHN). Twenty-four patients were studied using a randomized, double-blind, within-patient crossover design. Each patient received normal saline, lidocaine 0.5 mg/kg/h, and lidocaine 2.5 mg/kg/h for a 2-h period. The McGill Pain Questionnaire Short Form, visual analogue scores (VAS), and area of alldynia were measured at intervals during the infusions. Free plasma lidocaine levels were also measured. The results were statistically analyzed using Student's t-test for paired data. The VAS for ongoing pain showed a significant reduction after all the infusions (P < 0.05). For dynamic pressure-provoked pain, the VAS was unaffected by placebo but showed a reduction at an equal level of significance with both lidocaine infusions (P < 0.05). The area of allodynia of PHN, as mapped by brush stroke, declined in association with intravenous lidocaine (0.5 mg/kg/h = P < 0.05; 2.5 mg/kg/h = P < 0.001). Placebo had no significant effect on the area of allodynia. These findings demonstrate a positive effect on pain and alldynia following a brief intravenous infusion of lidocaine. The higher dose infusion may produce plasma levels in the toxic range, with no significant clinical increase in response.” PMID: 10388248

An example of how you might prescribe follows:

**COMPOUNDED MEDICATION**

**Ketamine 5%/Lidocaine 10%**

Topical Gel

100ml

Apply sparingly to affected area(s) 3-4x daily PRN

With our state of the art compounding laboratory and pharmaceutical knowledge and experience, we have the ability to compound ketamine and lidocaine into one topical gel.
**Directions**

_________________________________________________________________________________________________________
_________________________________________________________________________________________________________

Prescriber’s Signature____________________________________   Refills:  1    2    3    4    5    6    7    8    9    10   11   12    NR

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**Achilles Tendinopathy**

[ ] Glyceryl Trinitrate 0.2%   Topical Ointment
Quantity 60gm
Directions: Apply BID/TID

**Trigeminal Neuralgia**

[ ] Misoprostol 0.006%   Transdermal Gel
Quantity 30ml
Directions: Apply 0.5ml locally BID

**Allodynia**

[ ] Ketamine 5% / Lidocaine 10%   Topical Gel
Quantity 100ml
Directions: Apply sparingly to affected area(s) 3-4x daily PRN

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**Compounding Pharmacy Solutions**

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