Guideline: Adult Thrombolytic Therapy for Frostbite Patients

Updated: 3/10/2022

Clinical guideline summary

CLINICAL PATHWAY/GUIDELINE NAME: Adult Thrombolytic Therapy for Frostbite Patients

PATIENT POPULATION AND DIAGNOSIS: Adult patients with frostbite

APPLICABLE TO: Spectrum Health, Butterworth

BRIEF DESCRIPTION: No current guideline exists for the management of patients with cold injury/frostbite. This document aims to bridge this gap.

OVERSIGHT TEAM LEADER(S): Tracy Hosford, Amy Spencer

OWNING EXPERT IMPROVEMENT TEAM (EIT): ***

MANAGING CLINICAL PRACTICE COUNCIL (CPC): Acute Health

CPC APPROVAL DATE: March 2022

OTHER TEAM(S) IMPACTED: Wound Team

IMPLEMENTATION DATE: ***

LAST REVISED: 2/02/2022

FOR MORE INFORMATION, CONTACT: Tracy Hosford

References:


Clinical pathways clinical approach

TREATMENT AND MANAGEMENT:

- Consult to Burn team to discuss patient and determine treatment plan
- Rapid rewarming with 100–104°F (38–40°C) water over 30-40 minutes
  - Should occur in the Hydrotherapy room on 4 North, or with clean water sources (warmed sterile water)
- Tetanus prophylaxis (ACS tetanus-prone wound class)
- Narcotic analgesics
- Gabapentin
- Ibuprofen (600 mg every 6 hours)
- Limb elevation with splinting as needed
- No ambulation until edema has resolved or 72 hours, whichever is first (and only in protective footwear)
- No smoking

After Rewarming:
- Debride clear blisters, leave hemorrhagic in place for 72 hours.
- Dress wounds with Silvadene/Aloe Vera mix and change daily, washing wounds with soap and water
- Assess for Prognosis to determine if Thrombolytics indicated:

  **Good Prognosis (No Lytics)**
  - Warm skin after rewarming
  - Intact sensation Pink digits without bullae
  - Distal bullae with clear blister fluid

  **Poor Prognosis (Lytics)**
  - Cool skin after rewarming
  - Numb digits
  - Dusky or blue/purple digits without bullae
  - Bullae with hemorrhagic blister fluid
  - Absent Capillary refill
  - Absent Doppler pulses

If Patient with evidence of Poor Prognosis:
- consider CT Angiogram with delays to assess for blood flow to the distal affected extremities.
- Screen for contraindications for Lytic therapy – consider Head CT in poor historians
- If Lytic therapy is planned arrange for SICU admission
- Goal to start lytic infusion within 1 hour of re-warming end time to minimize warm ischemia time

Contraindications for Thrombolytic Therapy

- Inability to obtain consent from the patient or guardian
- Delirium or substance withdrawal
- Recent trauma
- Recent hemorrhagic stroke
- Recent surgical procedure
- Bleeding diathesis
- Cold contact injury without frostbite injury
- Age less than 5 years
- Greater than 24 hours of warm or cold ischemia
- Evidence of freeze-thaw-refreeze injury
- Methamphetamine use at time of presentation
- Pregnancy

Clinical algorithm:

SH Burn Center Frostbite Treatment Guideline

If concern for severe frostbite injury, contact Burn Surgeon on Call. Burn team to initiate rapid rewarming (in 4 North hydrotherapy room via temp controlled circulating water), pain management (ibuprofen, gabapentin)

Assess For Prognosis

Good Prognosis

Standard Treatment

Admission vs Outpatient per discretion of Burn Attending

Labs obtained during Lytics:
CBC – admission and post lytics
PTT/INR – admission and Post lytics
Fibrinogen – admission, 3hrs in to lytics, post lytics

Wound care:
Aloe vera/silvadene, change daily or per Burn Attending discretion

Hyperbaric Therapy:
Discuss indications with HBO attending on call to determine if patient would benefit.

Poor Prognosis

Screen for Lytic Therapy Contraindications

Obtain CT Angiogram*

Admission order to SICU

Order Lytic Therapy: Peripheral Infusion
0.15 mg/kg Bolus
Followed by
0.15 mg/kg/hr infusion over 6 hours
(Use Alteplase: Frostbite order set)

Post lytic therapy:
- therapeutic anticoagulation for up to 7 days with heparin or lovenox
-81 mg ASA therapy for 1 month

* If able, obtain CT during transport to SICU. Lytics may be started based upon clinical indicators without a CT angio