



ศูนย์พิษวิทยารามาธิบดี

คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล

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RAMATHIBODI POISON CENTER

Faculty of Medicine Ramathibodi Hospital, Mahidol University

Sukho Place Building, Sukhothai Rd., Bangkok 10300 Hotline 1367

Treatment protocol for ERGOTISM

1. **Stop all medications** which are suspected to be the cause of ergotism

2. **IV fluid:** adequate volume status. If the patient develops rhabdomyolysis, alkalization of urine might be considered.

3. **Monitoring:**

3.1) CBC, BUN/Creatinine, Electrolyte, LFT (at least AST/ALT)

3.2) EKG 12 leads

3.3) Post reperfusion injury:

A: Rhabdomyolysis: Serum K, CPK, (it may cause acute kidney injury)

B: Compartment syndrome

4. **Pain control and keep warm all extremities**

Analgesics and/or opioids as necessary: morphine 0.03-0.1 mg/kg/dose, IV or IM or SC repeat as required every 2-4 hours.

5. **Acute severe limb ischemia**

5.1) **ARTERIAL DILATORS:** sodium nitroprusside, or nitroglycerine, or nicardipine are the vasodilators of choice. Nitroglycerine is preferred if coronary spasm is suspected.

5.1.1 **Sodium nitroprusside** (dilution and infusion rate as shown in **Table 1**), dose:

Adult: 1-10 mcg/kg/min until reperfusion is achieved or systemic hypotension occurs

Infant: 0.5-1 mcg/kg/min may be administered and the infants monitored closely for metabolic acidosis and tachyphylaxis.

If sodium nitroprusside IV > 4 mcg/kg/min longer than 12 hours or >8-10 mcg/kg/min a few hours; **sodium thiosulfate 1.0 gm per for every 100 mg sodium nitroprusside** should be added.

5.1.2 **Nitroglycerine**, dose:

Adult: 10-20 mcg/min and increase by 5-10 mcg/min every 5 to 10 minutes. Maximum rate 200 mcg/min until is achieved or systemic hypotension occurs

Pediatric (older ≥29 days): 1-5 mcg/kg/min continuous IV infusion. Maximum dose is 60 mcg/kg/min.



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Table 1. Infusion rate (mL/hour) to achieve dosing of nitroprusside 1-10 mcg/kg/min

5% dextrose water	250 mL		500 mL		1000 mL	
Nitroprusside	50 mg		50 mg		50 mg	
(nitroprusside conc)	(200 mcg/mL)		(100 mcg/mL)		(50 mcg/mL)	
Na thiosulfate	500 mg		500 mg		500 mg	
Patient weight (kg)	1	10	1	10	1	10
	mcg/kg/min	mcg/kg/min	mcg/kg/min	mcg/kg/min	mcg/kg/min	mcg/kg/min
10	3	30	6	60	12	120
20	6	60	12	120	24	240
30	9	90	18	180	36	360
40	12	120	24	240	48	480
50	15	150	30	300	60	600
60	18	180	36	360	72	720
70	21	210	42	420	84	840
80	24	240	48	480	96	960
90	27	270	54	540	108	1080
100	30	300	60	600	120	1200

5.1.3 Nicardipine, dose:

Adult: 5 mg/hr initially may be increased by 2.5 mg/hr every 15 minutes not to exceed

15 mg/hr

5.1.4 Nifedipine may be added. Dose: 5-10 mg orally three times a day.

5.2) **ANTICOAGULANTS:** Either heparin sodium or low molecular weight heparin.

5.2.1 **Heparin sodium** (Heparin 5,000 unit in 0.9% Sodium chloride injection 100 mL)

Dose: - Initial dose: 80 units/kg IV bolus

- Maintenance dose: 18 units/kg/hr

- Serial activated partial prothrombin time (aPTT) q 6 hr and adjust heparin

dosage as recommended in the aPTT-Based Dosage Adjustment (**Table 2**). This Table



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provide protocols for unfractionated heparin (UFH) dosage adjustments based on activated partial prothrombin time (aPTT). All therapeutic aPTT ranges should be adapted to the responsiveness of the reagent and coagulometer.

Table 2. The aPTT-Based Dosage Adjustment

aPTT after the initial dose (sec)	Dose of heparin
< 35	Add another 80 units/kg bolus, then increase 4 units/kg/hr
35 - 45	Add another 40 units/kg bolus, then increase 2 units/kg/hr
46 - 70	No Change
71 - 90	Decrease infusion rate by 2 units/kg/hr
> 90	Hold infusion 1 hr, then decrease rate by 3 units/kg/hr

5.2.2 Low Molecular Weight Heparin (LMWH), dose 1 mg/kg SC q 12 hr

If CrCl < 30 mL/min: 1 mg/kg q 24 hr

If CrCl < 15 mL/min: consider unfractionated heparin (UFH) instead, if possible.

6. After the reperfusion and the signs and symptoms resolved, one of the following oral vasodilators may be continued (based on symptoms/clinical conditions)

6.1) Nifedipine: 10 mg orally three times a day OR

6.2) Captopril: 50 mg orally three times a day OR

6.3) Prazosin: 1 to 3 mg/day

These drugs are also use in the case of less severe acute or chronic peripheral ischemia caused by chronic therapy.