



ศูนย์พิษวิทยารามาธิบดี

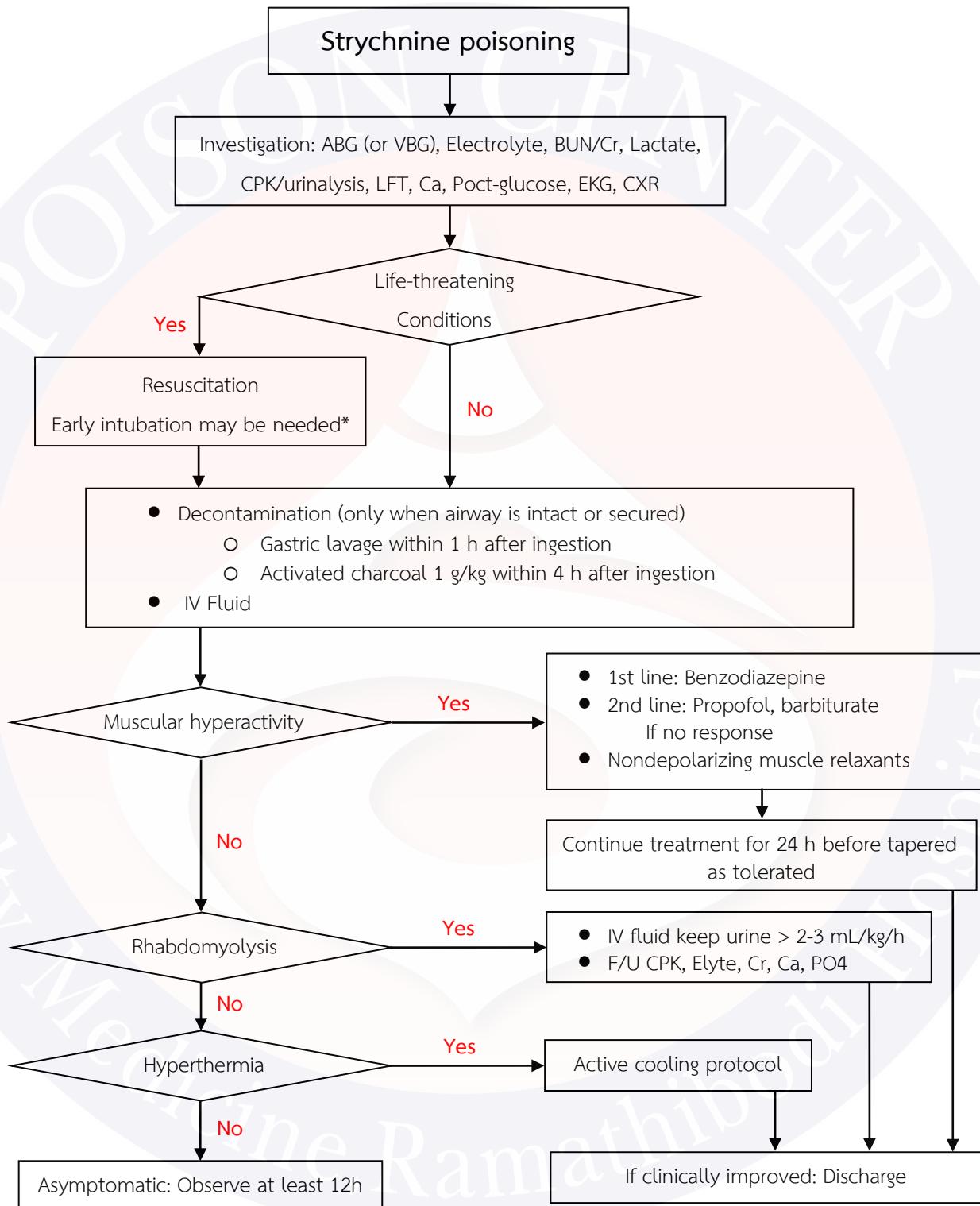
คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล

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RAMATHIBODIPOISONCENTER

Faculty of Medicine Ramathibodi Hospital, Mahidol University

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





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Strychnine

Alkaloid from seeds of *Strychnos nux-vomica* (แสร้งใจ, ตุ่มก้า); odorless, colorless, bitter taste crystalline powder.

Seeds of *S. nux-vomica* also contain brucine.

Commercial products (mostly contain 0.25%-0.5% strychnine by weight)	Veterinary products, Rodenticides, ยาเบื้องสุนัข Chinese herbal medicine (Maqianzi), Cambodian traditional remedy (slang nut) Adulterated in abused drugs
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Toxicokinetics:

- Lethal dose 50-100 mg, low protein binding, Vd 13 L/kg
- Rapidly absorb in GI tract, mucous membrane (reported dermal absorption in an alkaline solution)
- Metabolism: hepatic metabolism via CYP 3A4 (active metabolite: strychnine-N-oxide)
- First order kinetics, elimination half-life 10-16 h
- Excretion 1-30% unchanged in urine

Pathophysiology: Competitively inhibit the binding of glycine to its receptor

Clinical manifestation: Onset 15-60 min, delayed onset rarely reported

Clinical presentations	
"Conscious seizure" or "Spinal seizure"	Involuntary generalized muscle contraction+ pain, easily triggered by stimuli Mortality is due to hypoventilation and hypoxia
	Each episode of muscle contraction lasts 30-120 secs (recurs for 12-24 h)
Classic signs	Opisthotonus, facial trismus, risus sardonicus, flexion of upper limbs, extension of lower limbs
	Hyperreflexia, clonus, nystagmus
Hemodynamics	Hypotension, hypertension, bradycardia, tachycardia
Nonspecific symptoms	N/V, dizziness, chest/abdominal pain
Life-threatening complications	Rhabdomyolysis, AKI, hyperthermia-induced multiorgan failure, aspiration pneumonitis, anoxic brain injury, pancreatitis

NB: - Concentration is not correlated with clinical toxicity

- Prognosis is correlated with time to treatment, duration & episode of muscle contraction

Differential diagnosis: Tetanus, seizure, CNS infection, hypocalcemia, myoclonus (secondary from other metabolic disease such as kidney/liver disease), drug induced dystonic reaction, serotonin syndrome, neuroleptic malignant syndrome, malignant hyperthermia, sympathomimetic toxicidrome

Management:

- Resuscitation with airway protection
- Decontamination: OG lavage in early presentation, activated charcoal binds strychnine effectively at a ratio of 1:1
- Supportive treatment: stop the muscular hyperactivity as soon as possible, unnecessary stimuli should be avoided.

Drug of choice lists:

- 1st line: Benzodiazepines such as diazepam, midazolam
- 2nd line: Propofol and barbiturates

If no response, select nondepolarizing neuromuscular blockers such as rocuronium, vecuronium, pancuronium

- Hyperthermia should be treated by active cooling

- IVF to prevent rhabdomyolysis/AKI

Laboratory test for confirmation (Toxico Lab, Ramathibodi hospital):

- Urine sample 30 mL
- Clotted blood 3.5 mL

Reference:

Chan YC. Strychnine. In: Nelson LS, Hoffman R, Howland MA, Lewin NA, Goldfrank LR, Smith SW, editors. Goldfrank's Toxicologic Emergencies 11th ed. New York: McGraw-Hill Education; 2019. p. 1536-9.

เอกสารนี้จัดทำขึ้นเพื่อเป็นแนวทางในการดูแลรักษา การดักสินใจเพื่อให้การรักษาในรูปแบบเดิมรายขึ้นอยู่กับดุลยพินิจของแพทย์เจ้าของไข้เป็นหลัก