

Case Conference

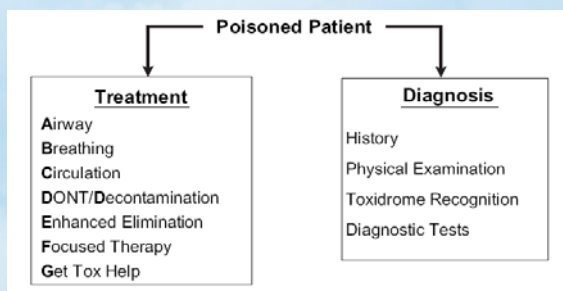
2010/05/12

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Discussion

1. The approach to the patient with an unknown overdose
2. Tricyclic antidepressant overdose
- 3.

The two-pronged approach to the poisoned patient



The Approach to the Patient with an Unknown Overdose.
Emerg Med Clin N Am 25 (2007) 249–281

Poisoned patient - History

- Type of toxins
- Time of exposure (acute or chronic)
- Amount
- Route of administration (ingestion, IV, inhalation)
- Why (accidental, suicide attempt, euphoria, therapeutic misadventure)
- History of psychiatric illness or previous suicide attempts
- Inquire about all drugs
- the presence of empty pill bottles or drug paraphernalia that were at the scene

The Approach to the Patient with an Unknown Overdose.
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Poisoned patient – Physical Examination

- Toxic vital sign
 - 包括EKG(QRS, QTc, morphology, rhythm)
- NE: consciousness, pupil, nystagmus, tendon reflex, muscle power
- Oral mucosa: dry or secretion
- Bowel sound
- Urination or urine retention
- Skin: dry or diaphoresis

Toxic vital sign – our patient

- Tachycardia (FAST)
 - Free base or other forms of cocaine, freon(二氯二氟代甲烷)
 - Anticholinergics, antihistamines, antipsychotics, amphetamines, alcohol withdrawal
 - Sympathomimetics(cocaine, caffeine, amphetamines, PCP), solvent abuse
 - Theophylline, TCAs, thyroid hormones
- Slow respiration (SLOW)
 - Sedative-hypnotics (barbiturates, benzodiazepines)
 - Liquor (alcohols)
 - Opioids
 - Weed (marijuana大麻)

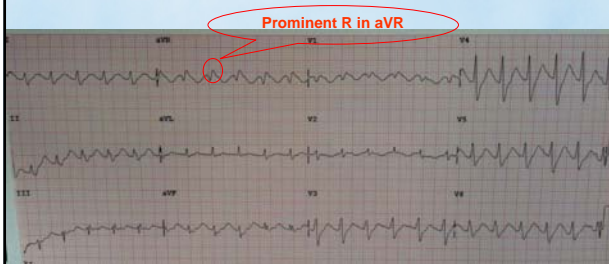
TCA intoxication - Diagnosis

- Three C one A
 - Coma
 - Convulsion
 - Cardiac arrhythmia
 - Acidosis
- ECG finding
 - Sinus tachycardia
 - QRS widening
 - QTc prolong
 - Right deviation of the terminal 40ms QRS axis
 - Prominent R in aVR
 - R wave in aVR > 3mm or R/S_{aVR} ratio > 0.7
 - deep S in lead I

Prominent R in aVR



Our patient

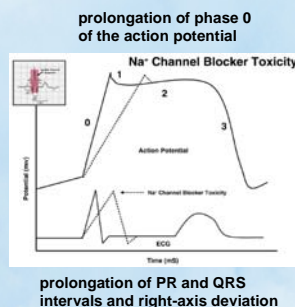
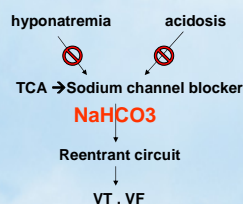


QTc: 471, Heart rate: 137

Major pharmacodynamic effects of cyclic antidepressants

1. **Sodium channel blockade** (quinidine-like membrane-stabilizing effects)
2. Alpha1-adrenoreceptor blockade
3. Inhibition of reuptake of biogenic amines (e.g., norepinephrine, serotonin)
4. Muscarinic receptor blockade (**anticholinergic effects**)
5. Histamine receptor blockade (antihistaminic effects)
6. **Potassium efflux blockade**
7. Indirect GABAA antagonism caused by binding at picrotoxin receptor

Sodium channel blocker Toxicity



Electrocardiographic abnormalities associated with poisoning
American Journal of Emergency Medicine (2007) 25, 672–687

SALT: Sodium Channel Blockade Toxidrome

- Shock
- Altered mental status
- Long QRS
- Terminal R in aVR

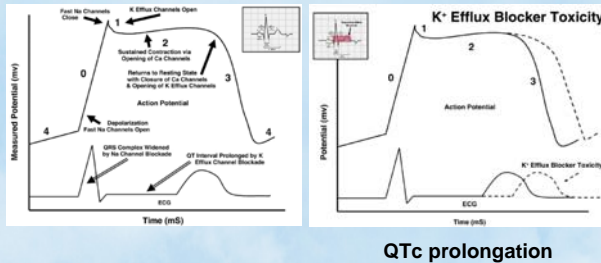
Responsive to NaHCO₃

Table 2 Na⁺ channel blocking drugs

Amantadine
Carbamazepine
Chloroquine
Class IA antiarrhythmics
Disopyramide
Quinidine
Pronounced
Class IC antiarrhythmics
Flecainide
Propafenone
Cisapride
Cocaine
Cyclic antidepressants
Amitriptyline
Amoxapine
Desipramine
Doxepin
Imipramine
Nortriptyline
Meprobamate
Diltiazem
Diphenhydramine
Hydrochlorothiazide
Lorazepam
Oxycodone
Phenothiazines
Moxifloxacin
Thioridazine
Propofol
Propylthiouracil
Quinine
Mefenamic acid

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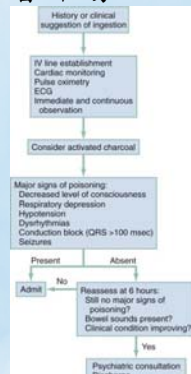
Potassium efflux blockade



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吃入多少TCA 才會中毒?

- > 10 mg/kg or 1000mg
- Absorbed from the GI tract
 - Absorption is prolonged in overdose (anticholinergic effect → delay GI motility)
- Peak plasma concentration in 2 ~ 4 hrs
- 6 hours observation



Treatment – NaHCO₃

- Dose of IV bolus?
 - 1 ~ 2 mEq/kg
- Endpoint of IV bolus?
 - Until QRS narrows or until serum pH increases to 7.5 to 7.55
- Maintain dose?
 - 3 amp 8.4% NaHCO₃ (50meq/amp) into 1 L D5W → as usual maintain rate for IV fluid

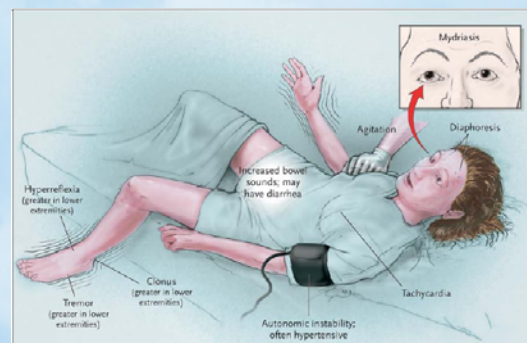
Treatment

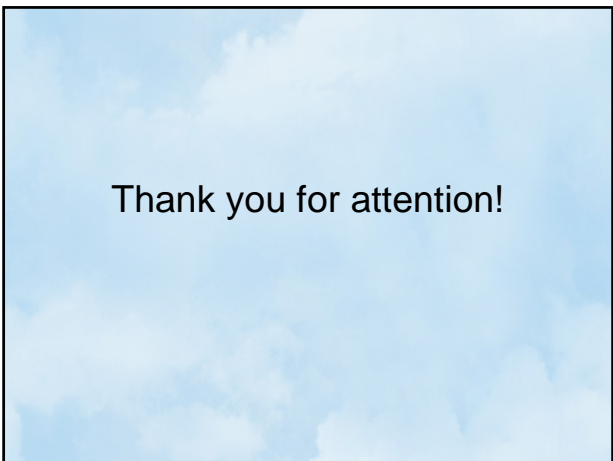
- Gastric lavage and activated charcoal within 60 minutes
- Hypertonic sodium
 - Hypotension and a wide QRS interval with ventricular ectopy
 - Dopamine and norepinephrine for hypotension (α 1-agonist effect)

Treatment for neurologic complications of TCA poisoning

- Coma
 - early intubation with mechanical ventilation
- Agitation
 - BZD
- Seizure
 - Status epilepsy or prolonged seizure account for 20 ~ 30% of the seizures caused by TCA
 - BZD
 - Phenobarbital (20mg/kg)
 - Propofol (2.5mg/kg)
 - Phenytoin → **contraindication**
 - Longer episodes of ventricular tachycardia

Serotonin syndrome





Thank you for attention!