Protocol
R-04

SECTION: R-04

PROTOCOL TITLE: TCA Overdose

REVISED: March 1, 2020

GENERAL COMMENTS: Tricyclic Antidepressants (TCA's) are a leading cause of death in intentional overdoses. Aggressive care at onset of S/S is essential, as the patient can decompensate quickly. Early s/s includes widening of the QRS, tachycardia, hypotension and altered LOC.

BLS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Trendelenburg for hypotension
- If pediatric patient, determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape)

AEMT/O.M. SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Aggressively treat hypotension with IV crystalloid solution

ALS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Continuous EKG monitoring is mandatory, 12 lead is recommended as stability permits.

Specific Pharmacological Therapy

- Sodium Bicarbonate for hypotension, arrhythmia, QRS >100 ms
    - IV: 1 meq/kg IV (min 50 mEq)
    - Re-bolus in 5-10 min at 1 meq/kg if s/s persist
    - OPTIONAL INFUSION: 50-100 mEq/1000 ml,
        - IV/IO: run at 150 ml/hr, titrated for effect

Anti-Arrhythmic

- Magnesium Sulfate *(for Torsades in conjunction with Sodium Bicarbonate)*
    - IV: 2 g given SLOWLY. Take 2 g (4ml), dilute to 20 ml to make 10% solution. Do not give faster than 1 g/minute.
- Lidocaine (Xylocaine) *for Ventricular Tachycardia REFRACTORY to Sodium Bicarbonate*
    - IV: 1-1.5 mg/kg every 3-5 minutes to a max of 3 mg/kg.
    - Maintenance Infusion 2-4 mg/minute titrated for effect, to be initiated if ectopy resolves. Must rebolus with lidocaine in 5-10 minutes after initiation of drip to reach therapeutic levels (unless max bolus dose has been reached)
    - Always give full initial dose, but reduce all subsequent doses by ½ for elderly (>70) or with impaired hepatic function

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Vasopressors: Titrated to maintain adequate HR, MAP>65 or SBP >100. A provider must choose the most appropriate vasopressor for the situation.

- Norepinephrine (Vasopressor of choice in TCA overdoses)
  - **IV/IO Infusion:** IV/IO: 0.01- 2 mcg/kg/min
  - Start at 0.1 mcg/kg/min
- Epinephrine
  - **IV/IO Infusion:** 0.05-1 mcg/kg/min
- Dopamine
  - **IV/IO Infusion:** 2-20 mcg/kg/min
  - Start at 5 mcg/kg/min

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PHYSICIAN PEARLS:

ALL TCA OVERDOSES SHOULD BE EVALUATED AT A HEALTHCARE FACILITY

Procainamide and Amiodarone are contraindicated, as are other drugs that widen the QRS.

Vasopressors: Due to dopamine blockade, as well as catecholamine depletion, Nor-epinephrine and epinephrine are considered a more effective vasopressors than dopamine, although fluids should be aggressively administered first.

Toxicity

In adults,

- 10-20 mg/kg is considered a moderate to serious exposure where coma and cardiovascular symptoms are expected
- Approximately 35 mg/kg is thought to be a lethal dose without medical intervention

In children,

- Doses of greater than 3.5 mg/kg seem to increase the risk of asymptomatic EKG changes
- Ingestions greater than 1.5 mg/kg should be referred to an Emergency Department

The drug overdose history correlates reasonably well with the clinical outcome. Generally, at less than 10 mg/kg, few fatalities are found; 35 mg/kg is the approximate LD50; and 50 mg/kg, death is likely (Spiker and Biggs 1976). Patients have survived ingestions of 10 g of amitriptyline (Burks et al 1974), but overdoses as small as 500 mg have been fatal. (Manoquerra Weaver 1977).

EKG screening: Boehnert and Lovejoy in NEJM, 1985 Studied 49 patients with known first generation cyclic antidepressant overdose and found that QRS widening was an excellent predictor of complications from elevated TCA levels.

- QRS>100 msec, 1/3 of patients had seizures
- QRS>160 msec, 1/2 of patients had ventricular dysrhythmia's
- Bundle branch blocks, usually right, are also common, appearing early and persisting late
- *Persistent tachycardia is usually the first sign of toxicity*

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