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| **Case Title** | TCA Intoxication – Tachyarrhythmia |
| **Scenario Name** | TCA Intoxication – Tachyarrhythmia |

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| **Learning Objectives -** [**Use action words**](http://ubccpd.ca/sites/ubccpd.ca/files/Accreditation_Learning%20Objectives_%20Verbs.pdf) | |
| **Knowledge:**   1. Identify symptoms and signs of TCA intoxication 2. Identify tachyarrhythmia secondary to TCA intoxication | |
| **Skills:**   1. Demonstrate effective management of TCA intoxication with appropriate supportive and therapeutic interventions | |
| **Attitude/Behaviours:**   1. Demonstrate Team skills 2. Demonstrate Situational awareness 3. Demonstrate Graded Assertiveness | |
| **Scenario Environment** | |
| **Location** | ED |
| **Monitors** | Bedside |
| **Props/Equipment** | * Cardiopulmonary monitor with tracing of tachycardia with prolonged QRS segments * ECG: QRS prolongation with sinus tachycardia, with progressive QRS widening * ECG: Ventricular tachycardia * CXR : post intubation |
| **Make-up/Moulage** |  |
| **Potential Distractors** |  |

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| **Case Introduction:** |
| 3 yr old boy brought by parents. Found extremely sleepy after dinner, slumped over on couch, minimally responsive. No fever, no antecedent illness; previously well. No allergies, no medication needs. “He looked warm, and his heart was beating fast – does he have meningitis?” Upon arrival in the ED, you are asked to see the child immediately. |

| **Patient Parameters** | **Effective Management** | **Notes** |
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| **Phase 1: Presentation**  **Condition:** Appears flushed  **Initial Assessment**   * **Heart Rhythm:** sinus * **HR:** 150 * **BP:** 85/50 * **RR:** 24 * **SP02:** 98% RA * **T:** 37.5 oral * **CNS:** PERL 5 mm sluggish/eyes closed/open intermittently with stimulation, moans and vocalizes with stimulation, Localizes to painful stimuli/no spontaneous movement * **Chest:** spontaneous respirations, no abnormal air entry or breath sounds * **CVS:** palpable pulses, slightly cool extremities, normal heart sounds, tachycardia * **GI:** No BS * **GU:** Palpable full bladder * **Integ:** No rashes * **Weight:** 15 kg | 1. **Take a focused history** (see Notes column) 2. **Medical Management**  * Talk to patient * Expose the patient to assess * Identify abnormality of monitor tracing – order 12 lead * Order BW   **Airway**   * Talk to the patient – moans a bit with being shouted at * Optimize airway position – doesn’t resist chin lift, moans with oral airway, but doesn’t spit it out   **Breathing**   * Check oxygen saturation * Apply monitors – “funny looking tracing, doc” * Provide oxygen delivery – no change in clinical appearance * Auscultate chest - no findings   **Circulation**   * Monitors (if not done yet) * Check pulse, cap refill, BP – HR 150 (tachycardia identified), skin feels warm and dry, slightly diminished pulse filling * Show strange looking ECG tracing * Start IV | 1. **Focused history**  * No sick contacts * No prior history of seizure * No family history of seizure * No indications of trauma, no prior trauma * Supervised by mother all day * Grandparents arrived from England just before dinner * Not sure if there are prescription medications in the home   **PMHx**   * Healthy   **Meds**   * Nil   **Allergies**   * None |
| **Phase 2: Worsening LOC**  **Condition:** Declining LOc, still flushed  **Physical Examination**   * **Heart Rhythm:** sinus * **HR:** 150 * **BP:** 85/50 * **RR:** 24 * **SP02:** 98% RA * **T:** 37.5 | 1. **Patient Reassessment** (see Notes column) 2. **Medical Management**  * Sodium bicarbonate, 1-2 mEq/kg IV bolus – narrows QRS interval, BP 90/55 * Aim for arterial pH 7.45-7.55 * Glucometer: 6.0 * CBC, differential * Electrolytes, BUN, Cr * Urine toxicology screen * Serum TCA level * Serum APAP, ASA levels * Need arterial line for monitoring * Continuous ECG monitoring * Call for ICU | 1. **Patient Reassessment**  * Few twitches of right, then left arm, in flexion at the elbow * LOC worsening, eyes completely closed, less verbalization, moans only to painful stimuli * No other change in examination * Parent calls on telephone – grandmother has 20-30 missing antidepressant pills from her medication cabinet   **Airway**   * Prepare equipment for intubation * Prepares medication for RSI   **Breathing**   * Reassessment breathing, auscultation – no change * Apply 100% oxygen – no change in clinical appearance   **Circulation**   * Reassess HR, pulse, BP * Consider giving fluid bolus 20 cc/kg NS – no change in vital signs |
| **Phase 3: Rapid Deterioration**  **Condition:** rapid deterioration – more twitches, rhythm changed to ventricular tachycardia. Seizure activity  **Physical Examination**   * **Heart Rhythm:** VTach (pulse) * **HR:** 150 * **BP:** 85/40 * **RR:** 24 * **SP02:** 98% RA * **T:** 37.5 * **CVS:** cap refill 2 sec | 1. **Patient Reassessment** (see Notes column) 2. **Medical Management**  * Amidarone 5mg /kg IV over 20-60min * Consider Cardio version:o.5-1J/Kg * If no response increase to 2J/kg * Consult Cardiology * Treat seizure (diazepam,Phenytoin) | 1. **Patient Reassessment**  * Flushed * Few more twitches of arms, now with legs involved * No other change in examination   **Airway**   * Position airway * OP airway - still in place   **Breathing**   * Reassess auscultation, breathing, RR – no change * Prepares intubation equipment * Orders RSI medication:   + etomidate 0.3 mg/kg OR ketamine 1 mg/kg   + succinylcholine 2 mg/kg   + ETT size: 4.5 cuffed   + Easy intubation, easily bagged   **Circulation**   * Reassess HR, pulse, BP, Cap refill * Repeat bolus NS 20 cc/kg – no change * ECG – Ventricular tachycardia |
| **Phase 4: Intubated and Ventilated**  **Condition:** intubated and sedated; hypotension. No movement; still flushed  **Physical Examination**   * **Heart Rhythm:** VTach (pulse) * **HR:** 150 * **BP:** 75/50 * **RR:** 24 - ventilator * **SP02:** 98% RA * **T:** 37.5 | 1. **Patient Reassessment** (see Notes column) 2. **Medical Management**  * Cardioversion for Vtach * Check blood sugar * Call ICU (if not done already) * Prepare for transport after stabilized | 1. **Patient Reassessment**   **Airway**   * Ensure proper position is maintained   **Breathing**   * Intubated   **Circulation**   * Give more fluid to 60-80 cc/kg |

**Insert more lines if more phases required.**

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| **Expected Patient Management** | **Debriefing Points** |
| 1. **Student** 2. **R1** 3. **Senior IM resident** |  |

**References:**