ONCOLOGIC EMERGENCIES

TUMOUR LYSIS SYNDROME (TLS)

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PRESENTING COMPLAINTS: Fatigue, Nausea, vomiting, muscle cramps, seizure

FINDINGS

- **A**  Check airway
- **B**  ↑/N RR, stridor
- **C**  ↓/N BP
- **D**  chest pain, distress
- **E**  Cyanosis, swelling over the extremities
- **Lpc**  ↑K⁺, ↓ Ca, ↑ PO₄³⁻, ↑ Uric acid
- **Uₚc**  Not pertinent

*V (verbal), P (pain), U (unconsciousness), D (delirious)

**Uₚc** (point of care ultrasound)  **Lₚc** (point of care labs)

DEFINITION

Cairo-Bishop definition:
- Laboratory TLS:
  ≥2 abnormal serum values (K⁺ ≥6 mEq/L, Ca ≤7 mg/dL, PO₄³⁻ ≥6.5 mg/dL for children or ≥4.5 mg/dL for adults, Uric acid ≥8 mg/dL or increase in 25% from their respective baseline value) within 3 days before or 7 days after chemotherapy in the setting of adequate hydration (± alkalization) and a hypouricemic agent(s)
  - Clinical TLS: Laboratory TLS + one of the following features: Serum Creatinine: ≥ 1.5 x upper limit of normal (not attributable to the rise in Cr after drugs administration like, Amphotericin), cardiac arrhythmia/sudden death, seizure

OTHER HISTORY

Diarrhea, anorexia, arrhythmia, heart failure, tetany, hematuria

**Predisposing Conditions:** Hematologic malignancies and solid tumors especially those with high rates of proliferation and/or following initiation of chemotherapy, renal insufficiency, dehydration or use of nephrotoxic drugs: Increases the risk of development of tumor lysis syndrome

DIFFERENTIAL DIAGNOSIS

Rhabdomyolysis: Can present with hyperphosphatemia and hyperkalemia. However, etiology and underlying disease can differentiate it from tumor lysis syndrome.
OTHER INVESTIGATIONS
- **Monitor:** Urine output, electrolytes, uric acid, tele monitoring if there is significant electrolyte abnormalities.
- **Labs:** Elevated serum potassium, uric acid, phosphorus and low calcium.

The Cairo-Bishop scoring system can be used to define the exact level of abnormalities needed for diagnosis and also grade the severity of disease which aids in guiding therapy.

THERAPEUTIC INTERVENTIONS
- Cardiac monitoring preferably in the ICU
- Serial electrolytes check every 4-6 hours.
- Fluid hydration.
- Diuretics to flush the uric acid from kidney tubules.
- Repeated doses of rasburicase as necessary.
- Potassium and phosphate lowering therapy.
- Replacement of calcium if the patient is symptomatic from hypocalcemia (ex. Tetany).
- Nephrology consultation and renal replacement therapy if there is anuria, persistent hyperkalemia and/or fluid overload.

ONGOING TREATMENT
- Hydration
- Uricosuric agents
  - In asymptomatic disease
  - Approach depends on the severity of laboratory abnormalities, tumor burden, lysis risk and patient condition (renal dysfunction, dehydration, hypotension, lactic acid level)

CAUTIONS
Rasburicase is contraindicated in patients with glucose 6 phosphate dehydrogenase deficiency and can also cause severe methemoglobinemia and anaphylaxis.
REFERENCES & ACKNOWLEDGMENTS

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