

ONCOLOGIC EMERGENCIES

TUMOUR LYSIS SYNDROME (TLS)

(Last updated 01/16/2020; Reviewer: Bibek Karki, M.B.B.S.)

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
- **L_{pc}** ↑K⁺, ↓ Ca, ↑ PO₄³⁻, ↑ Uric acid
- **U_{pc}** Not pertinent

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

U_{pc} (point of care ultrasound) **L_{pc}** (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

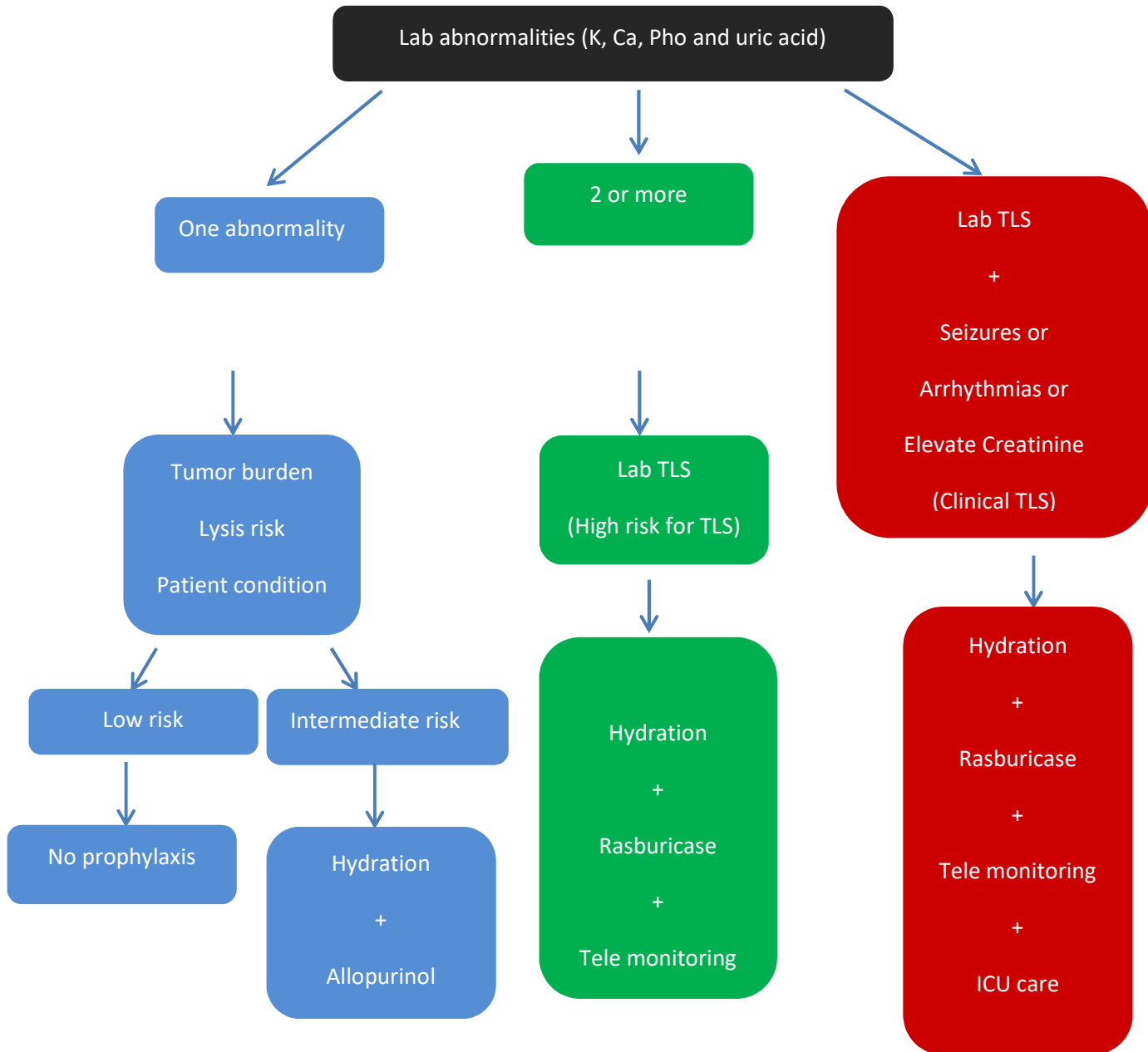
- Cardiac monitoring preferably in the ICU
- Serial electrolytes check every 4-6 hours.
- Fluid hydration.
- Diuretics to flush the uric acid from kidney tubules.
- Repeated doses of rasburicase as necessary.
- Potassium and phosphate lowering therapy.
- Replacement of calcium if the patient is symptomatic 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

Acknowledgment: *Hamza A. Rayes, M.B., B.Ch, Dr. Hemang Yadav, M.B.B.S*

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