

Recognition & Management of Tumour Lysis Syndrome

Step 1: Categorise Risk of Tumour Lysis Syndrome (TLS)

N.B. unusual to develop TLS in other solid malignancies/HLH (no treatment required)

Low Risk Category

Leukaemia with WCC $< 20 \times 10^9/l$ in the absence of large tumour bulk

AND

Normal urine output/renal function

AND

No evidence of TLS

[*Low Risk protocol*](#)

Intermediate Risk Category

Leukaemia with WCC $20 - 100 \times 10^9/L$ in the absence of large tumour bulk

Non-bulky NHL/LPD/PTLD

AND

Normal urine output/renal function

AND

No evidence of TLS

[*Intermediate Risk protocol*](#)

High Risk Category

Bulky chemosensitive disease:

Leukaemia with WCC $> 100 \times 10^9/L$

Non-Hodgkin's lymphoma - B or T cell
(e.g. large anterior superior mediastinal mass)

Large tumour bulk

(e.g. large organomegaly)

OR

abnormal renal function/low urine output

OR

evidence of TLS

[*High Risk protocol*](#)

NHL=Non-Hodgkins Lymphoma
LPD= Lymphoproliferative Disease
PTLD = Post-transplant Lymphoproliferative Disease

Recognition & Management of Tumour Lysis

Tumour lysis bloods (TLS)

U&E (inc Potassium)

Calcium

Phosphate

Urate (initially but not helpful once on rasburicase)

Low risk for TLS

Normal U&E & urine output (UO)
No bulky disease
WCC < 20x10⁹/L

At diagnosis

- Maintenance fluids (oral/NG/IV)
- Start Allopurinol 100mg/m²/dose TDS orally
- Daily bloods (TLS & FBC)

12-24 hours prior to commencing treatment

- Start hyperhydration 0.9% Sodium Chloride +5% Dex 2.5-3L/m²/day, can be increased to 4L/m²/day if needed and there is no evidence of fluid overload.
- Maintain urine output >2ml/kg/hr
- Furosemide PRN

After commencing treatment

- Monitor: 8 - 12 hrly TLS bloods, FBC daily
- Strict fluid balance/UO
- Maintain urine output > 2ml/kg/hr
- Furosemide PRN

Any evidence of Tumour lysis

NO

- Wean off hyperhydration & frequency of blood after 48-72hrs
- Switch to Allopurinol if on Rasburicase, after 2-3 days
- Complete 5 - 7 days in total of allopurinol (+/- rasburicase)

Intermediate risk for TLS

Normal U&E & urine output (UO)
No bulky disease
WCC - 20-100x10⁹/L

At diagnosis

- Consider hyperhydration 0.9% NaCl + 5% Dex 2.5-3L/m²/day. No potassium added to fluids.
- Discuss with PTC
- Start Allopurinol 100mg/m²/dose TDS orally
- Daily bloods (TLS & FBC)

12-24 hours prior to commencing treatment

- If not already started, start hyperhydration 2.5-3L/m²/day, can be increased to 4L/m²/day if needed and there is no evidence of fluid overload.
- Maintain urine output >2ml/kg/hr
- Furosemide PRN

After commencing treatment

- Monitor: 6 - 8 hrly TLS bloods, FBC daily
- Strict fluid balance/UO
- Maintain urine output > 2ml/kg/hr
- Furosemide PRN

YES

[Follow High Risk flowchart](#)

Recognition & Management of Tumour Lysis

High risk for TLS

- High cell count leukaemia ($>100 \times 10^9/L$)
- Burkitts type lymphoma (BNHL)
- Large tumour bulk
- Bulky T Cell lymphoma (mediastinal mass)
- Bulky LPD/PTLD
- Evidence of renal infiltration with tumour
- Renal impairment with abnormal U&E

At diagnosis

- Hyperhydrate with 0.9% Sodium Chloride +5% Dex -3L/m²/day, can be increased to 4L/m²/day if there is no evidence of fluid overload.
- Maintain urine output $>2-3\text{ml/kg/hr}$. Furosemide PRN.
- Start IV Rasburicase 200mcg/kg OD (ideally document G6PD status) If Rasburicase is unavailable at POSCU, start Allopurinol 100mg/m²/dose TDS orally then switch to Rasburicase on arrival at PTC.
- If TLS bloods normal: repeat 8 hrly with FBC

After commencing treatment

- 4 - 6 hrly TLS & FBC
- Clinical review 4 hrly: review of fluid balance, UO & evidence of fluid overload.
- Ensure urine output $>2-3\text{ml/kg/hr}$
- Furosemide PRN.

- If urate remains high or rising despite 24 hours of Rasburicase, consider administering additional doses of Rasburicase at 200mcg/kg/dose minimum time interval 12 hrly (Discuss with PTC).
- If no evidence of fluid overload consider increasing hyperhydration to 4L/m²/day

Caution at diagnosis



Hyperhydration

In children with very low Hb & high WCC count (Risk of haemodilution and dropping Hb further).

Discuss with PTC for plan or hyperhydration

Furosemide

For patients at risk of leukostasis, discuss with PTC before giving furosemide.

Dehydration may worsen leukostasis

Rasburicase

Rasburicase can trigger haemolysis in G6PD deficiency



DETERIORATION

If concerns with deteriorating TLS bloods +/- UO +/- fluid overload despite furosemide, contact PTC consultant/renal team/PICU to consider haemofiltration or dialysis