



IACH

Tumor lysis syndrome in adult ALL Philadelphia chromosome negative

A monocentric study

Ben Alaya Y, Achour M, kharrat R, Cherni R, Ben Neji H, Ben Lakhal R

Aziza Othmana Hospital, Adult clinical hematology department

INTRODUCTION

Tumor lysis syndrome (TLS) is a metabolic disorder due to extensive tumor cells lysis, consisting of hyperuricaemia, hyperkalemia, hyperphosphataemia, hypocalcaemia with or without renal insufficiency(1).

TLS complicates 3–10% of aggressive hematologic malignancies. It is a rare yet life-threatening complication in several high-grade hematologic malignancies in adults, such as acute lymphoblastic leukemia (ALL).

Our study aims to describe tumor lysis syndrome occurring in adults with ALL Phi negative in a tunisian center.

PATIENTS AND METHODS

It is A retrospective and descriptive study conducted in the clinical hematology department at Aziza Othmana Hospital including patients (>18 y.o) diagnosed ALL philadelphia chromosome- negative and treated according to the Group for Research on Adult Acute Lymphoblastic Leukemia 2005 protocol (GRAALL-2005) between January 2016 and December 2023.

RESULTS

Among 61 patients with Phi negative ALL, nine developed tumor lysis syndrome(TLS) (figure1).

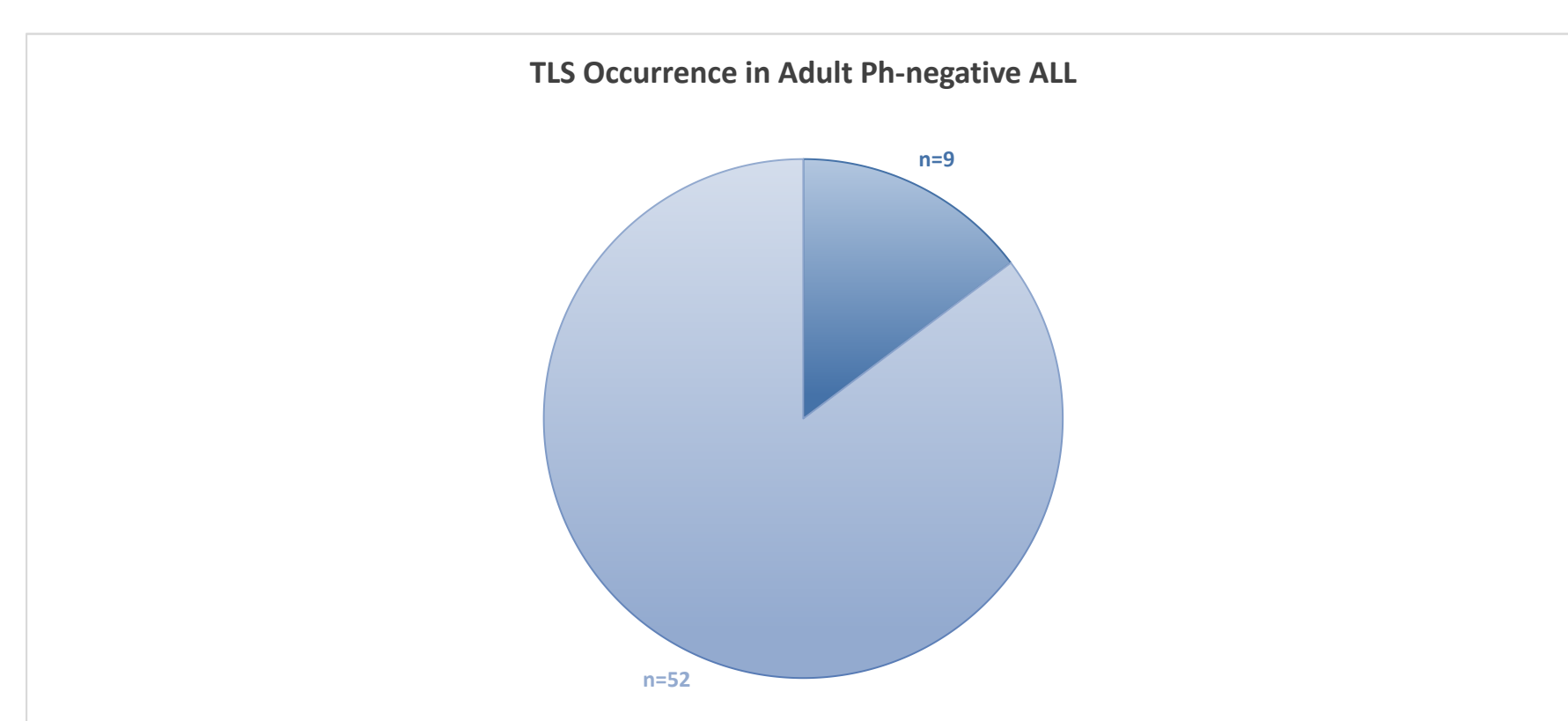


Figure 1 : TLS Occurrence in Adult Ph-negative ALL

We noted a male predominance (8 /1). The median age was 35 y.o (19-49 y.o).

The BMI distribution was as follows : one underweight, four healthy weight and four overweight. (figure2)

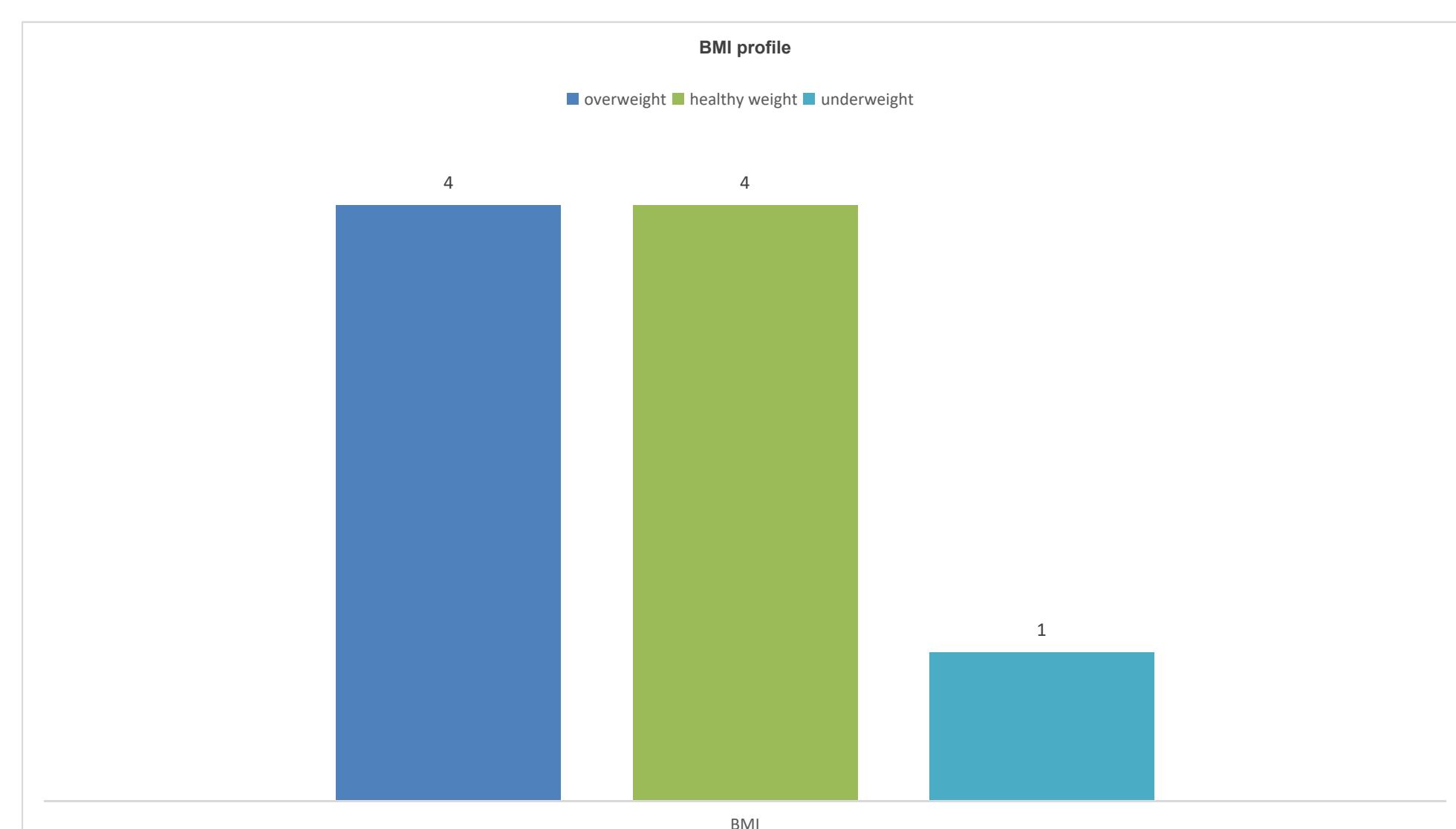


Figure 2 : BMI profile

Based on the EGIL classification, TLS was more frequently observed in T-ALL (n=6) than in B-ALL (n=3).

Hyperleukocytosis was observed in six patients at diagnosis ; WBC count above $30 \times 10^9/L$ for B-ALL or $100 \times 10^9/L$ for T-ALL ; (T-ALL (n=5), B-ALL (n=1)).

A mediastinal widening was present among two patients with T-ALL.

Tumor lysis syndrome occurred in ; 6 patients at diagnosis, 2 patients on day 4 of corticosteroid therapy, and 1 patient on the second day of corticosteroid therapy.

The LDH levels ranged from 1080 to 8160 U/L, with a median of 4338.14 U/L. The normal upper limit for LDH in our center was 180 U/L. Uric acid levels ranged from 495 to 1810 $\mu\text{mol/L}$, with a mean of 937.6 $\mu\text{mol/L}$.

Serum creatinine levels ranged from 38 to 739 $\mu\text{mol/L}$, with a median value of 109 $\mu\text{mol/L}$.

Serum ion levels showed the following ranges : potassium (3.3-6.2 mmol/L with a mean of 4.9 mmol/L), calcium (1.8-2.78 mmol/L with a mean of 2.26 mmol/L) and phosphate (1.6-4.8 mmol/L with a mean of 2.59mmol/L. (Table 1)

Table 1 : Biochemical Parameters in Patients with Tumor Lysis Syndrome

	Uric acid ($\mu\text{mol/L}$)	Serum Potassium (mmol/L)	Serum Calcium (mmol/L)	Serum Phosphate (mmol/L)	Serum creatinine ($\mu\text{mol/L}$)
Mean	937.6	4.9	2.26	2.59	109.5
Range	495-1810	3.3-6.2	1.8-2.78	1.6-4.8	38-739

All patients received curative rasburicase at a dose of 0.2 mg/kg/day combined with hyperhydration and allopurinol. No one received prophylactic rasburicase.

Three patients were diagnosed with clinical TLS, developing acute kidney injury requiring dialysis. None of the patients had seizures or cardiac arrhythmias.

The median follow-up duration was 5 months (range: 1 to 58 months) among the 9 patients.

Six patients died from TLS and only 3 patients were still alive.

CONCLUSION

Tumor lysis syndrome (TLS) is a particularly concerning complication in adults with ALL, requiring prompt hydration, electrolyte management, and rasburicase administration. Early recognition and preventive strategies are key to improving outcomes.

REFERENCES

1.Cairo MS, Bishop M. Tumour lysis syndrome: new therapeutic strategies and classification. British Journal of Haematology, 127(1):3-11, 2004.

ACKNOWLEDGEMENTS

We gratefully acknowledge the contributions of our colleagues, laboratory staff, and clinical team for their support throughout this work. We also thank the Adult clinical hematology departement in Aziza Othmana Hospital for providing facilities and resources.