Tumor Lysis Syndrome: Inpatient Outcomes amongst Non-Hodgkin Lymphoma patients

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Introduction

-Tumor lysis syndrome (TLS) occurs when tumor cells release their contents into the bloodstream either spontaneously or in response to therapy.

-causes hyperuricemia, hyperkalemia, hyperphosphatemia, and hypocalcemia

-more frequent in high-grade Non-Hodgkin Lymphoma (NHL) and acute leukemia

-less frequent in chronic leukemia and multiple myeloma

-We analyze inpatient outcomes, utilizing National Inpatient Sample, among patients with NHL that have been affected by TLS.

Methods

•ICD-10 codes for TLS and NHL queried in National Inpatient Database for 2017 – 18.

•Multivariate logistic regression performed STATA MP 16.1

•Confounding variables included in analysis – chemotherapy, stem cell therapy, neutropenia

•Primary outcome was inpatient mortality. Secondary outcomes were hospital length of stay and cost utilization.

Table 1 - Mortality

Inpatient Mortality	Odds Ratio	P Value	95% Confidence	Interval
Tumor Lysis Syndrome	2.729	0.000	2.354	3.162
Charlson Comorbidity Index	1.122	0.000	1.102	1.141
Hx of Smoking	0.771	0.000	0.706	0.842
Hx of Stem Cell Transplant	1.415	0.000	1.178	1.701
Hx of Neutropenia	1.326	0.000	1.156	1.521
Hx of Chemotherapy	1.006	0.924	0.891	1.136
Age	1.022	0.000	1.020	1.025
Gender (Female)	0.842	0.000	0.782	0.908

Table 2 – Length of Stay

Length of Stay	Coef.	P Value	95% Confidence	Interval
Tumor Lysis Syndrome	4.558	0.000	3.826	5.290
Charlson Comorbidity Index	0.298	0.000	0.261	0.335
Hx of Smoking	-0.648	0.000	-0.763	-0.533
Hx of stem cell transplant	0.897	0.000	0.432	1.362
Hx of neutropenia	4.011	0.000	3.592	4.429
Hx of chemotherapy	-0.799	0.000	-0.971	-0.628
Age	-0.014	0.000	-0.020	-0.009
Hospital Teaching Status	1.249	0.000	1.099	1.398

Table 3 – Total Hospital Charge

Total Charge ($)	Coef.	P Value	95% Confidence	Interval
Tumor Lysis Syndrome	90427.000	0.000	76027.660	104826.300
Charlson Comorbidity Index	2588.639	0.000	1899.282	3277.995
Hx of Smoking	-9068.683	0.000	-11351.740	-6785.630
Hx of Stem Cell Transplant	32004.440	0.000	17369.260	46639.620
Hx of Neutropenia	58776.370	0.000	48610.330	68942.410
Hx of Chemotherapy	-11506.220	0.000	-15748.580	-7263.848
AGE	-569.181	0.000	-677.651	-460.711
Gender (Female)	-4268.410	0.000	-6219.687	-2317.134
Hospital Teaching Status	22917.710	0.000	18850.750	26984.670

Results

•Total NHL patients – 7540; 34% female; mean age for patients with TLS – 62.5 years and mean LOS – 13 days. Mean LOS in NHL without TLS – 7 days.

•NHL patient with TLS had higher odds of mortality – (Odds Ratio (OR) 2.73, 95% Confidence Intervals – 2.35 – 3.16) (Table 1).

•NHL patients with TLS had higher LOS by 5 days (4.6, 95% CI 4.39 – 5.20) (Table 2).

•NHL patients with TLS also had a higher total charge - $90,427 (95% CI 76027 – 104826) (Table 3).

Conclusions

- TLS affects outcomes in NHL patients admitted in the hospital.
- This includes an increase in inpatient mortality, hospital length of stay and total hospital charge.