Evaluation of Rasburicase Utilization for Hyperuricemia

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Background

- Tumor lysis syndrome (TLS) is an oncologic emergency that occurs due to a rapid lysis of malignant cells that overwhelms the normal homeostatic mechanisms leading to hyperuricemia, hyperkalemia, hyperphosphatemia, hypocalcemia, and uremia
- Treatment of TLS involves hydration, correction of electrolyte abnormalities, administration of a xanthine oxidase inhibitor, administration of rasburicase, and possibly dialysis
- Rasburicase (Elitek®) is an Aspergillus-derived recombinant urate oxidase approved for treatment of hyperuricemia associated with malignancy
- Due to its significant cost, rasburicase should be reserved for patients who are at high risk for TLS, including high tumor burden, treatment with highly active cell-cycle specific chemotherapy agents, pre-existing renal dysfunction, or uric acid ≥ 8 mg/dL
- As a cost savings initiative, numerous studies have shown successful reduction of uric acid with single-dose rasburicase leading to dosing recommendations being expanded to include single-dose rasburicase of 3mg or 6mg

Objectives

Primary Objective

- Calculate percentage of patients who received rasburicase that met high-risk criteria for TLS

Secondary Objectives

- Calculate percentage of patients who received allopurinol prior to rasburicase
- Calculate percentage of patients who achieved uric acid ≤ 8 mg/dL 24 hours after a single dose of rasburicase stratified by rasburicase dose (3mg or 6mg)
- Evaluate cost savings of utilizing single-dose of rasburicase 3mg for patients that qualified for this dose

Methods

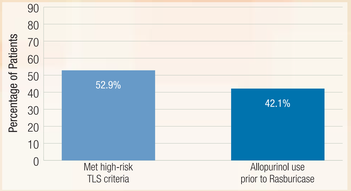
- A retrospective chart review was conducted for inpatients 18 years and older that received rasburicase at Lehigh Valley Hospital-Cedar Crest and Muhlenberg campuses from January 1, 2017 to August 19, 2019
- High-risk criteria for TLS was defined as patients with an oncology diagnosis and EITHER a lactate dehydrogenase (LD) > 2 times the upper limit of normal OR WBC > 25 K/uL, AND uric acid ≥ 8 mg/dL or 25% increase from baseline
- Statistical analysis included descriptive statistics for demographics and baseline characteristics, calculated frequencies and percentages for categorical variables, and calculated average with standard deviation for normally distributed continuous variables

Results

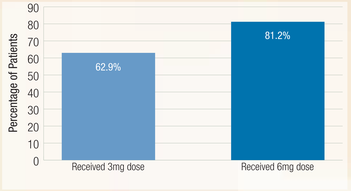
Patient Characteristics (N=121)	N(%)
Male	79 (65.3)
Oncology Diagnosis	115 (95.0)
Hematologic	87 (75.7)
Solid	16 (13.9)
Other	12 (10.4)
G6PD deficiency status	
Negative	8 (6.6)
Unknown	113 (93.4)
Hemodialysis Required	20 (16.5)
Rasburicase Dose (N=155)	
3mg Dose	53 (34.2)
6mg Dose	99 (63.9)
Other Dose*	3 (1.9)
	Average ± Standard Deviation
Age (years)	66.0 ± 12.1
Weight (kg)	90.5 ± 22.8
Laboratory Concentrations prior to Rasburicase	
WBC (K/uL)	41.2 ± 67.4
LD (unit/L)	1253.5 ± 1590.8
Potassium (mmol/L)	4.4 ± 0.8
Phosphorus (mg/dL)	4.6 ± 1.6
Calcium (mg/dL)	8.4 ± 1.1
Uric acid (mg/dL)	11.3 ± 4.2
Serum creatinine (mg/dL)	2.4 ± 1.8

* Other Doses: 1.5mg, 9mg, 12mg

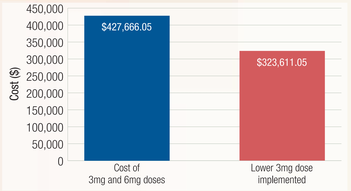
Patients Who Met High-Risk Criteria and Patients Who Received Allopurinol



Achievement of Uric Acid ≤ 8 mg/dL 24 Hours After a Single Dose of Rasburicase



Potential Cost Savings of Implementing Rasburicase 3mg Single Dose When Uric Acid ≤ 12 mg/dL



Conclusion

- Out of all patients that received rasburicase, 64 patients met high-risk criteria for TLS with 35.9% meeting WBC criteria and 84.4% meeting LD criteria
- Total of 75.2% of patients achieved uric acid ≤ 8 mg/dL 24 hours after a single dose of rasburicase
- There were 50 patients that received 6mg of rasburicase that qualified for a lower dose of 3mg due to a uric acid ≤ 12 mg/dL at time of confirmed TLS associated with a potential cost savings of $104,055
- Further discussion is warranted into implementing ordering criteria for rasburicase due to the potential cost savings of $207,069.45 for patients that did not meet the specified criteria

References

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Authors of this presentation have nothing to disclose related to the subject of this poster.

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