Mortality after Rasburicase versus Allopurinol Anti-Hyperuricaemia Monotherapy in Patients with Liquid Tumours

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BACKGROUND

• Tumour lysis syndrome (TLS) is the most common oncological, potentially life-threatening condition in children and adults with haematological malignancies.1

• The incidence of TLS appears to be increasing, and data on TLS mortality are understudied.2

• Rasburicase and allopurinol are commonly used to prevent or treat TLS, but comparisons of their mortalities following anti-Hyperuricaemia (HU) monotherapy in patients with haematological malignancy and at-risk for TLS are limited.

• Treatment outcome comparisons in randomised control trials versus (vs.) observational studies can yield different results.

OBJECTIVE

This first, real-world, retrospective study in the United States (US) was conducted to determine whether a statistically significant difference exists in the proportion of TLS-associated mortalities following anti-Hyperuricaemia (HU) monotherapy in patients with haematological malignancy and at-risk for TLS.

METHODS

• In 2021, 266 oncologists from US physician practices, academic and non-academic hospitals, and outpatient clinics provided anonymised data for 715 liquid tumour patients treated in previous year for HU risk and TLS potential.

• A total of 282 patients (n = 141 rasburicase and n = 141 allopurinol) were included in this analysis. Patients without spontaneous TLS or TLS before anti-HU treatment were propensity score (PS) matched for TLS risk using 11 predictive covariates: acute renal failure, age, anti-cancer regimen, elevated creatinine, gender, elevated lactate dehydrogenase, perceived risk, renal disease, tumour type, uric acid (UA) level, and elevated white blood cell count. (Figure 1)

• Matched patients met 1.1 nearest neighbour, and caliper matching requirements (width = 0.2) of the standard deviation of logit of the PS (d score) on covariates, regardless of whether they later developed TLS post-HU treatment. Assessments include mean UA levels, anti-cancer treatment, and, as feasible, the timing of death relative to HU treatment.3

RESULTS

• The overall PS was almost 0.6 before matching but near 0 afterwards.

• No covariate exhibited a large imbalance (|d|>0.25), or the overall relative imbalance difference of the groups (0.077) before and after matching. There was significant improvement in the density of overall standardised differences before and after. (Figure 2)

• Of 63 patients subset who developed TLS after HU treatment, TLS-associated mortalities were 15% (n = 41) and 7% (n = 22) in the rasburicase and allopurinol groups, respectively.

DISCUSSION

• The potential for vital advancements in understanding medical therapeutics based on observational studies is almost unimaginable, partly because of the explosive growth of individual patient health data and other developing metrics.

• The arrival of methods such as observational real-world PS matching to minimise the distorting effects of study confounders, the Achilles heel of observational studies, is an important step forward.

• This presentation alerts and attempts to enhance the understanding on the use of this important methodology.

• In the initial presentation of these data, the focus was on comparing two therapeutics with the methodology described only as a tool for analysis.

• This presentation focuses on the usefulness of the methodology, with the comparison used as a demonstration. We believe that any readers/attendees of both presentations will be well served.

CONCLUSIONS

• PS matching successfully corrects overall covariate and individual baseline covariate imbalances before and after comparing mortality.

• Rasburicase, when compared with allopurinol, significantly reduces TLS-associated mortality.

REFERENCE


