Feasibility of rapid rituximab infusions in a paediatric tertiary cancer centre

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Introduction

•Rituximab, an anti-CD20 monoclonal antibody, is indicated for B-cell oncological malignancy treatment[1]

•Rituximab can be associated with hypersensitivity infusion related reactions (IRR), commonly occurring with the first administration[1]

•Following the introduction of a rapid 90-minute infusion rate guideline in adult patients[2,3], a paediatric rapid rituximab administration guideline was developed for eligible patients and introduced in 2021[4,5]

Aim

To compare patient response and length of administration between standard and rapid Rituximab infusions following implementation of the rapid Rituximab guideline

Methods

•A retrospective audit of electronic medical records (EMR) from 01/07/2018 to 30/6/2023

•The pre-guideline period was defined as 01/07/2018 to 31/12/2020 while the post-guideline period was defined as 01/01/2021 to 30/06/2023.

•Patient demographics, number of doses, length of infusions and presence of IRRs were reviewed.

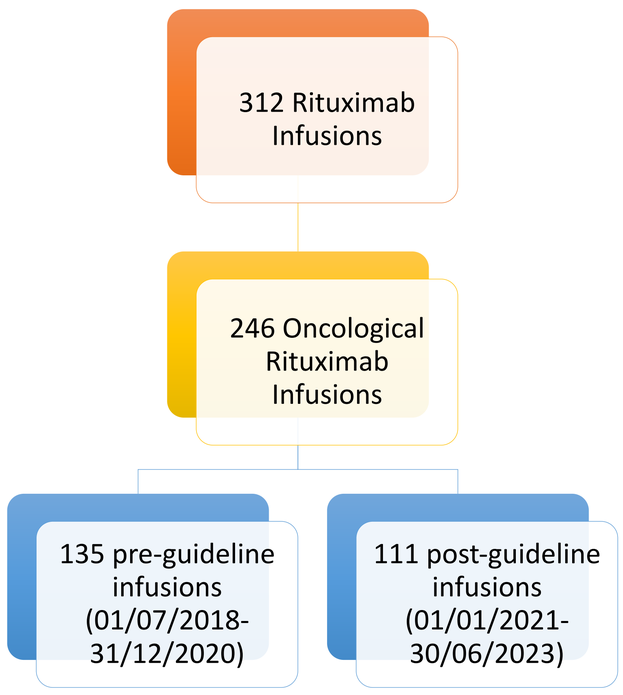

Figure 1: Method used to determine how many Rituximab infusions fit within study period

Results

There were 49 children eligible:

Pre-guideline: 28 children (135 infusions),

Post-guideline: 21 children (111 infusions - 51 rapid and 60 standard infusions).

Table 1: Patient Demographics (n=49)

Patient Demographics	Pre-guideline	Post Guideline
Number of Patients	28	21
Median Age (yrs)	8.5 (range: 1-16)	12 (range: 0-17)
Median Number of Doses	6 (range: 2-8)	6 (range: 2-12)
HSCT (haematopoietic stem cell transplantation) Recipient	8	9

Table 2: Patient Background Diagnosis (n=49)

Patient Background Diagnosis	Pre-guideline (N = 28)	Post-guideline (N=21)
Hematological Malignancy	17 (61%)	9 (43%)
HSCT	3 (11%)	2 (10%)
PTLD (Post Transplant Lymphoproliferative Disease)	4 (14%)	7 (33%)
Solid Malignancy	4 (14%)	3 (14%)

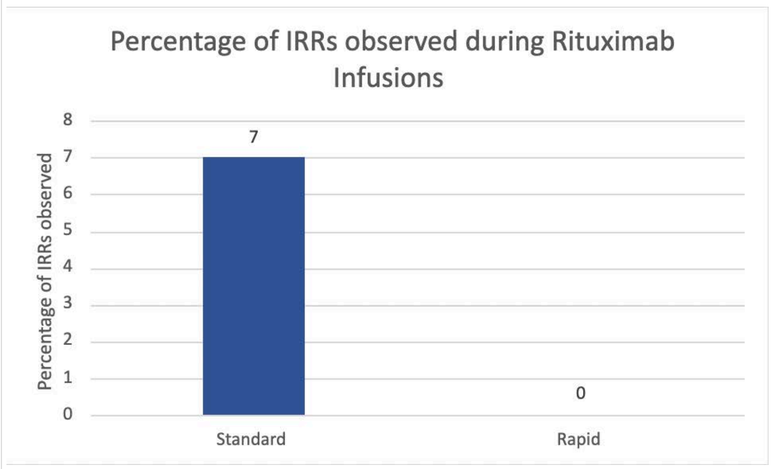

Figure 2: Percentage of IRRs observed during the subsequent Rituximab Infusions

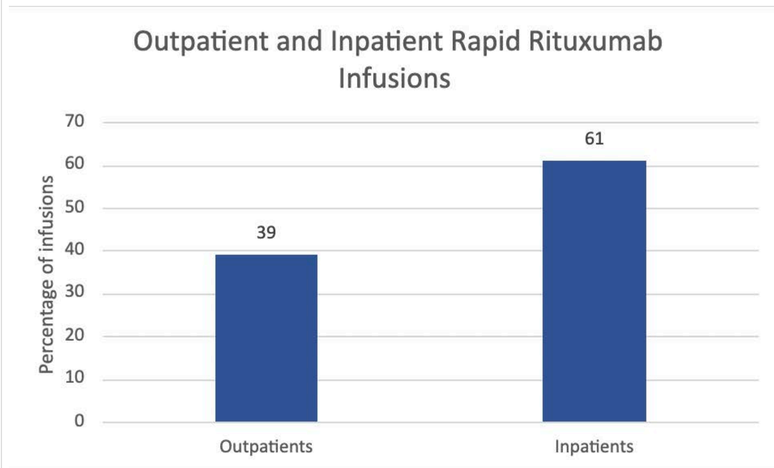

Figure 3: Percentage of Rapid Rituximab patients who received infusions as an outpatient vs inpatient

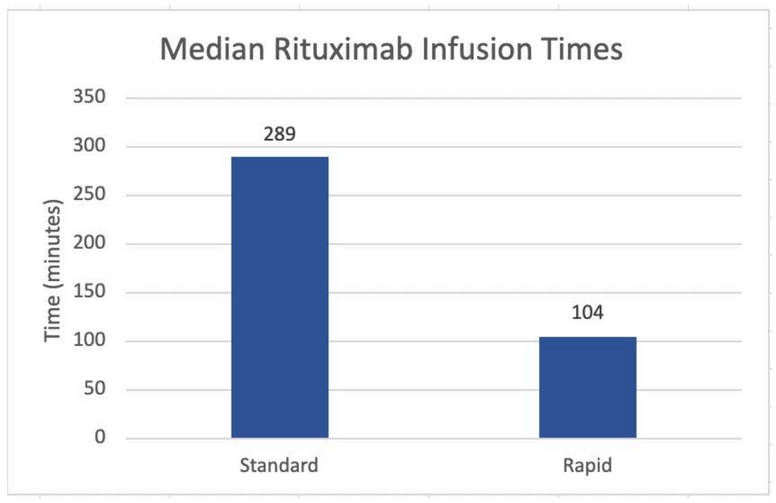

Figure 4: Median infusion times for Rituximab infusions

Discussion

•There were no IRRs observed in patients who received the rapid infusion rate

•Of the standard infusions, IRRS were observed in 7% of the infusions (both pre- and post-guideline) (Figure 2).

•Patients eligible for rapid rituximab (clinically stable and had previously tolerated standard infusion) tolerated the administration of the rapid infusion.

•The rapid administration reduced by a median of 197 minutes which is favourable to both patients and the hospital (Figure 4).

•The results of this research align with the other studies investigating rapid Rituximab in the adult population for better patient outcomes

Limitations

•As a retrospective review, reporting of all data including IRR may have not been documented

•Limited rapid rituximab patients as patients had to meet a criteria as well as prescribing was at consultant discretion

Implications

•The study supported the benefits of implementing the rapid Rituximab guideline, i.e. low risk of IRR and shorter duration for administration.

•The use of rapid infusions can have a positive impact on the patient and hospital with reduced time spent in hospital for the patients and reduced costs and additional beds available for non Rituximab patients for the hospital.

Conclusion

The administration of rituximab as a rapid infusion did not elevate the risk of IRRs compared to standard administration.

Overall, the impact rapid infusions have on administration times and hypersensitivity reactions is favourable to both patients and the hospital.

References

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