IMMUNOGLOBULIN MONITORING AUDIT IN A PAEDIATRIC AUTOIMMUNE DISEASE COHORT TREATED WITH RITUXIMAB

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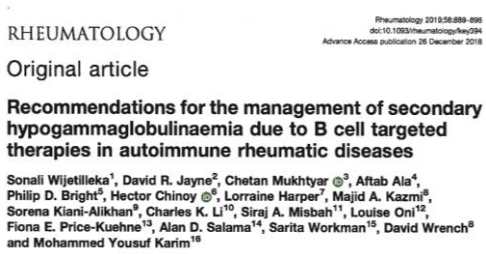
Background and Aims

Secondary antibody deficiency (hypogammaglobulinemia) requiring antibody (immunoglobulin) replacement therapy (IGRT) has been reported in 6.3% of children receiving B-cell targeted therapies (BCTT). In 2019, a task-force (adult practitioners and one pediatrician) provided recommendations for hypogammaglobulinemia in adult autoimmune patients receiving BCTT, but there are no pediatric-specific recommendations. In a US study, 85% of adults did not have baseline immunoglobulins (Ig's) tested prior to BCTT. We audited Ig monitoring in our pediatric cohort per the 2019 recommendations, acknowledging their primary construction for adults.

Audit standards

R3: "Immunoglobulin levels should be measured prior to commencement of BCTT and repeated every 6 to 12 months for the duration of BCTT and a minimum of one year after stopping treatment. In selected patients it may be appropriate to monitor for longer."


RHEUMATOLOGY

Original article

Recommendations for the management of secondary hypogammaglobulinaemia due to B cell targeted therapies in autoimmune rheumatic diseases

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Audit methods

Pharmacy records of BCTT patients at Sidra Medicine between 2018-21 were reviewed. Frequency of Ig testing and measurements were extracted from patients' electronic medical records. Findings were audited against the 2019 recommendations. Chart review of antibody deficient patients was undertaken to assess clinical outcome and need for IGRT.

Audit results

Thirty-three children were included; diagnoses are shown in Fig 1. Pre-BCTT Ig results were available in 30/33 patients (90.9%), of which 8/30 (27.7%) had low IgG. During follow-up, 2 of these 8 patients remained low, 4/8 normalized, and 2/8 did not have Ig's repeated. Overall 24/33 patients had Ig testing post-BCTT (Fig. 2), ranging between 1-10 Ig measurements per patient over a follow-up duration of 1-24 months. During the follow-up period, 3 patients developed low Ig's *de novo*, of which 2 were transient; one patient with SLE (patient X) developed persistently low Ig's after a single BCTT cycle, subsequent assessment suggesting common variable immunodeficiency (Fig. 3).

Fig. 1.

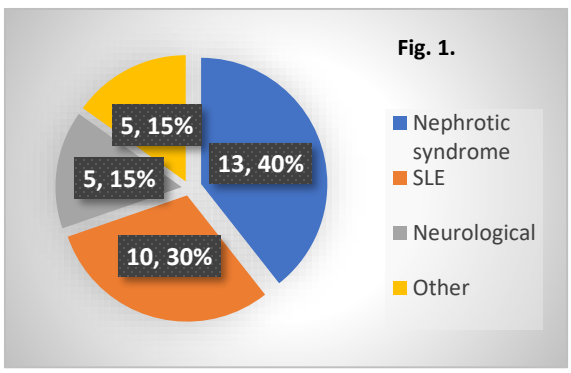


Fig. 3. Example of monitoring: shown for patient X

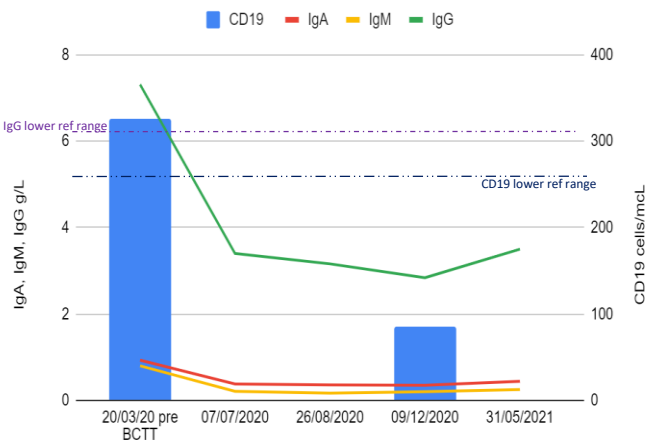
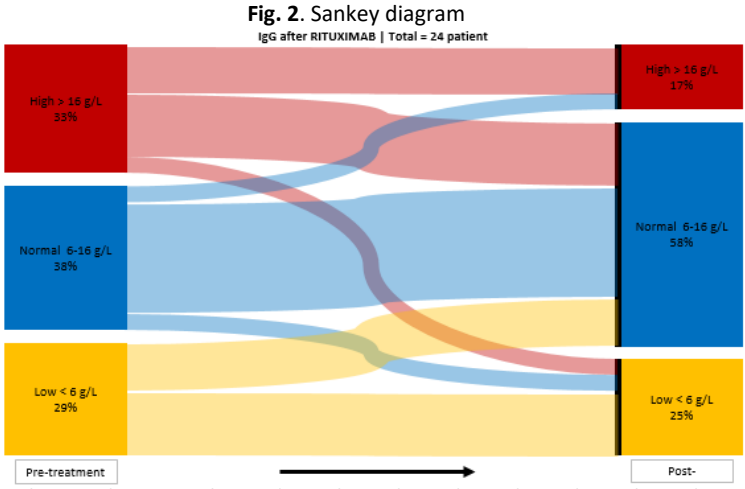


Fig. 2. Sankey diagram



Audit summary

Baseline Ig measurements were available in 90.9%. These results were abnormal in 27.7%, illustrating their importance, as otherwise low Ig's during monitoring might be falsely attributed to BCTT. Testing after BCTT initiation was less strictly followed, with some variation in frequency and timing of testing. The value of monitoring is illustrated by diagnosis of immunodeficiency in a patient after only a single BCTT cycle – in this case BCTT may have revealed an underlying genetic immunodeficiency disorder. No patients yet required IGRT, lower than expected from the literature.

Audit recommendations

1) Continue to monitor baseline Ig's – almost always performed as per the 2019 recommendations
2) Follow-up Ig testing: may consider the implementation of protocol-driven approaches to standardize collection timepoints in autoimmune disease patients
3) Consider specialist Immunology review if early/sustained antibody deficiency develops after BCTT

References

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