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Introduction:

CART cell therapy has revolutionized treatment for cancer patients. Primarily indicated for the treatment of relapsed large B cell lymphomas (DLBCL) and acute myeloid leukaemias (AML), but now the use of CART therapy been extended for use for other solid organ cancers. The use of CART is frequently associated with toxicities, such as cytokine release syndrome (CRS) and immune effector cell associated neurotoxicity syndrome (ICANS) necessitating critical care admission. We describe 2 years data of outcomes of patients receiving CART therapy from a cancer specialist centre in the United Kingdom.

Methods:

A retrospective analysis undertaken of all patients undergoing CART cell therapy at The Royal Marsden Hospital between February 2019 and May 2021.

Results:

We studied a total of 20 patients with a median age of 62 (IQR 46-72) years, 60% male, 95% with relapsed DLBCL and 5% with AML. 50% were admitted to the intensive care unit (ICU) with a median length of ICU stay of 5.5 (IQR 4-15.2) days. ICU admission rates reduced from 85.7% in 2020 to 25% in 2021 until May. 20% needed cardiovascular support, 15% needed intubation and 5% required high flow nasal oxygen. The median length of stay in hospital was 25.5 (IQR 18.5-32.7) days.

Table 1 illustrates the demographics of CART patients with neurotoxicity during hospital admission. Using outcome analysis, by day 28, 60% of patients were in complete remission and 15% of patients were refractory to treatment. In terms of patient survival, 95% were alive at day 28 and 66.6% at 12 months.

Conclusion:

CART cell therapy patients have high ICU requirements with relatively high rates of toxicities, but this is changing with novel therapies, better patient selection and greater confidence in management of these patients in the ward setting. Excellent communication between oncologists, critical care outreach team and the ICU team and education of ward staff is key in ensuring prompt identification and escalation of care in CART patients at risk of deterioration.

Table:

	Grade	Number of patients	% of cohort	Median day of onset (IQR)
CRS	≥1	19	95	1 (1-3)
	3 or 4	5	25	
ICANS	≥1	9	45	7 (4-8)
	3 or 4	5	25	

Table 1: The demographics of our cohort of CART patients who developed neurotoxicity. CRS and ICANS are graded between 1 and 4, where 4 is most severe.