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O0802 Infections in haematological patients receiving chimeric antigen receptor T cell immunotherapy

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Background: Chimeric Antigen Receptor T cell (CAR-T) therapy has recently been a major breakthrough in the treatment of relapsed/refractory hematological malignancies. This technology redirects through genetic editing the specificity of cytotoxic T cells to directly attack cancer cells. Promising results has been documented in the first trials. Even so, certain adverse effects such as cytokine release syndrome and infection's frequency and epidemiology following lymphodepletion chemotherapy, neutropenia and B cell aplasia due to this treatment remains scarce.

Here we detail infections in a real life cohort of patients with CD19+ hematologic malignancies treated with our own academic CAR-T called ARI-0001 composed of the A3B1 anti-CD19 linked to the CD3z and CD137 (4-1BB) co-stimulatory domains.

Materials/methods: Medical chart retrospective review of hematological patients receiving CD19 CAR-T cells in a phase 1 study at one university hospital in Spain, from May 2017, to November 2018. Descriptive study of all infections with positive microbiological results occurring from the initial treatment day to day 120.

Results: A total of 19 patients have been treated with our CD19 CAR-T. Median age was 28 years (IQR 21-44 years) and underlying haematological malignancies were acute lymphoblastic leukemia (n=14, 73.7%), non-Hodgkin lymphoma (n=4, 21%) and refractory CLL (n=1, 5.3%). Seven (37%) patients had 11 episodes of infection (6 bacterial and 5 viral): 6 within the first 30 days, and 5 between 31 and 105 days. Table 1 describes infections epidemiology. No fungal infections were documented. There was one infection-related death (5%) in a patient with severe *C. difficile* colitis.

Conclusions: The incidence of proven infection in CD19 CAR-T cell immunotherapy was 37%, similar to that of other haematological high-risk patients with intensive chemotherapy. Serious bacterial and viral infection occurred but infection related mortality rate was low.

Table 1. Infections epidemiology

Infections	Microbiology	N
Bacterial		
Bloodstream infection	*E. faecium*	1
	S. epidermidis	1
Colitis	*C. difficile*	2
Nosocomial pneumonia	*S. maltophilia*	1
Urinary Tract Infection	*E. coli*	1
Viral		
Respiratory virus	Virus parainfluenza 3	1
	Influenza A	1
	Rinovirus	2
Viremia	Human Herpes Virus 6	1