Persistent cytopenia after CAR-T cells: treatment with eltrombopag a case report.

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Scaldaferri M., Traina S., Cavallo F., Castellana E., Chiappetta M.R., Cattel F.
A.O.U. Città della Salute e della Scienza di Torino, Hospital Pharmacy
Torino (Italy)

L01-antineoplastic agents

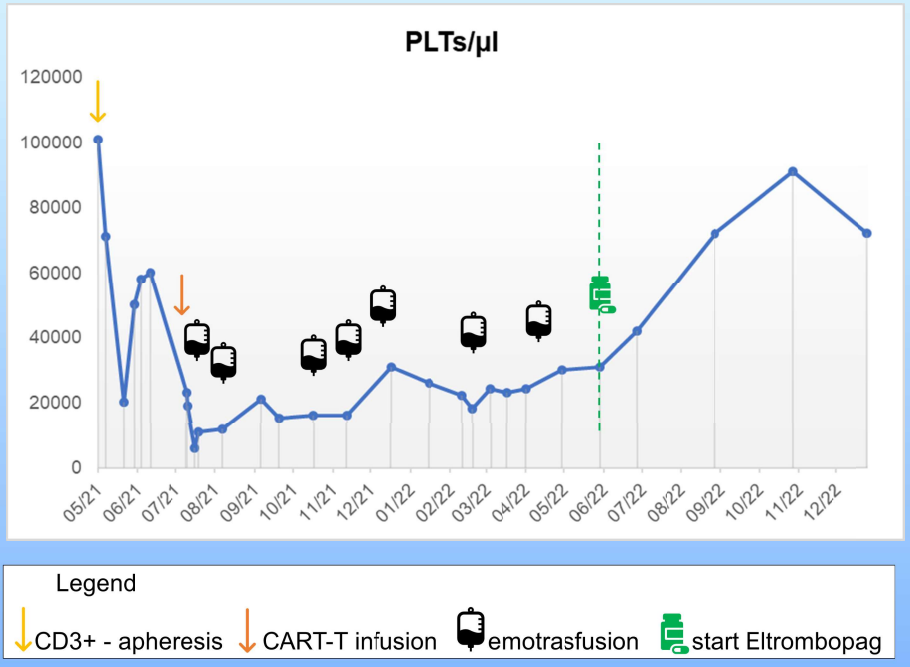
Background and importance

Impaired hematopoietic recovery is observed in about 30-50% of patients treated with **anti-CD19 CAR-T cells**, with prolonged cytopenia appearing as an unmet need for optimal treatment.
Generally, treatment consists in the use of **erythropoietin** and **G-CSF** (Granulocyte Colony Stimulating Factor). Thrompopoietyn receptor agonists (**TPOa**) can be on option too, on the basis of their consolidated use in refractory poor graft function, following allogeneic stem cell transplantation and aplastic anemia.

We present a **72y old patient** who received commercial tisagenlecleucel treatment for a Diffuse Large B-Cell Lymphoma (DLBCL) in July 2021. Complete molecular response at one month from infusion was obtained but persistent cytopenia was developed, requiring transfusional support.

Materials and methods

At **28** days from CAR-T infusion, the patient showed **pancytopenia**, which persisted in the following months and required transfusions of both platelets and erythrocytes. No clinical response to erythropoietin nor G-CSF was obtained.
In March 2022, bone marrow examination allowed to exclude the myelodysplastyc syndrome diagnosis and showed relative myeloid hyperplasia and altered distribution of megakaryocytes.
In June 2022, patient was receiving monthly transfusion of erythrocytes and fortnightly transfusion of platelet, despite supportive care. Complete molecular response of lymphoma was confirmed.
Treatment with eltrombopag was started at 50mg/day.



Results

Hematologic recovery was progressively obtained, achieving:
- independence from transfusion as 40 days since starting the eltrombopag therapy;
- the interruption of the treatment with erythropoietin at 60 days and the G-CSF administration frequency was progressively reduced to 1 G-CSF dose per week too.

Eltrombopag dose was maintained at 50mg/day

During the treatment with eltrombopag, minor cutaneous side effects were encountered but were successfully handled with oral steroids

Conclusion and relevance

The mechanism for late-onset cytopenia following CAR-T cells is still not clear, but it could be related to the sustained role of cytokines secreted by CAR-T cells during their expansion phase and during the following persistence phase.
A series of 6 patients treated with eltrombopag and one patient treated wit romiplostim are reported, with positive results in terms of hematological recovery.
Though, further data on the role of TPOa in post-CAR-T bone marrow toxicity are needed as a few reports are available.

Reference
Ofrat Beyar-Katz et al. Annals of Hematology (2022) 101:1769–1776

Contact data
Francesco Cattel – fcattel@cittadellasalute.to.it