LETTER TO THE EDITOR
Autologous Cord Blood Cells Infusion as Salvage Therapy for Engraftment Failure After Haploidentical Hematopoietic Stem Cell Transplantation in Acute Myeloid Leukemia

INTRODUCTION

Umbilical cord blood (UCB) transplantation has been proven useful in pediatric oncology.[1] The autologous application of UCB infusion in hematologic malignancies has been historically avoided because of fear of contamination by malignant clones.[2,3] Graft failure still remains an important contributor to morbidity and mortality after allogeneic hematopoietic stem cell transplantation (HSCT), adding to the poor prognosis of high-risk leukemias. The optimal management remains unclear, although retransplantation with a different donor is one of the most widely employed approaches.[4] If available, autologous cord blood is also a viable source in these patients.

CASE DESCRIPTION

We present a 7-year-old female diagnosed of M5 acute myeloid leukemia (AML). Bone marrow karyotype was 46XX, t(9,11)(p22;q23); FISH: t(9,11), MLL/AF9 rearrangement. The patient was treated with the Spanish SHOP-LMA 2007 chemotherapy regimen.[5] Evaluation on day 21 revealed first complete remission. Attending to its high-risk stratification (given by the cytogenetic features), haploidentical HSCT was performed 5 months after diagnosis. This was done within the context of an institutional program for haploidentical transplants.[6] The patient's father was the donor and the source was peripheral blood, manipulated with CD3/CD19 depletion and with infusion of 10.5×10^6 $CD34^+$ per kilogram. Peripheral blood analysis on day 13 showed 90% donor chimerism. However, chimerism study on day 23 revealed engraftment failure (100% receptor). A second haploidentical transplantation was performed 5 weeks after the first one (same donor; 10.3×10^6 $CD34^+$ per kilogram). Bone marrow aspirate on day 18 showed 99% receptor chimerism, assessing primary engraftment failure.

Facing an increasingly poor clinical situation due to several severe infections, and having dismissed the possibility of a third haploidentical transplant, a UCB transplant was considered. There were no signs of autologous recovery since the bone marrow biopsy showed severe hypoplasia. The patient had an available autologous source and 4 weeks after the second haploidentical transplant, she was rescued by infusion of autologous cryopreserved UCB stem cells (1×10^5 $CD34^+$ per kilogram). A thorough cytogenetic and molecular analysis of the selected UCB was carried out, ruling out the presence of malignant clones.

On day 75 after UCB infusion, the patient was released. Last follow-up was 14 months after UCB infusion and 21 months after AML diagnosis. She remains in first complete remission so far.

DISCUSSION

To summarize, our patient had suffered two consecutive engraftment failures and several life-threatening complications. The optimal management of graft failure remains unclear. A widely employed approach is retransplantation from another or the same donor, as was harnessed unsuccessful in the presented case.[7,8] We want to stand out the rescue accomplished by autologous UCB transplantation. Although the possibility of autologous recovery cannot be ruled out, there have been no signs of recovery so far, neither in peripheral blood nor in the bone marrow biopsy performed prior to UCB infusion. Few cases have been reported using autologous cord blood for hematologic malignancies.[9,10] This case suggests that autologous UCB transplant is a viable and safe alternative in the salvage strategies of engraftment failure. Actually, it could be considered as a first-line treatment option in diverse graft failure scenarios.

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Conflict of interest: Nothing to declare.

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