Role of liver transplantation for sinusoidal obstruction syndrome following hematopoietic stem cell transplantation

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Rational:
Sinusoidal obstruction syndrome (SOS) is a rare but dismal complication of high-dose chemotherapy with or without hematopoietic stem cell transplantation (HSCT), with a survival of 20% for the very severe form of the disease, despite defibrotide and modern intensive care (*Debureaux et al. TCT 2021*). Data on liver transplantation for SOS in this setting are limited. The only available study is a review article gathering 20 cases, including 5 from an American transplantation database and 15 derived from 15 case reports published in the literature. This review indicates a survival rate of 40% after a median follow-up of 1.5 years (*Membreno et al. Clin Transplant 2008*). Also, a sub-analysis of the EBMT registry about solid organ transplantation associated with case reports published showed a survival rate of 33% at 1 year for liver transplant for SOS (n=18) between 1990 and 2015 (*Brockman et al. BMT 2018*). The lack of solid and updated data has prevented international societies from providing a recommendation on the role of liver transplantation in SOS management (*Mohty et al. BMT 2015 & Cairo et al. BJH 2020*).

Objectives:
The goal of this study is to evaluate the outcome of patients with very severe SOS following high-dose chemotherapy for a blood disease, with or without HSCT, who received or did not receive liver transplantation.

Inclusion criteria:
- Adults (age > 18 years) with a malignant hematological disorder treated with chemotherapy with or without autologous HSCT or allogeneic HSCT between 2004 and 2023
- Diagnosis of sinusoidal obstruction syndrome (SOS) according to 2016 EBMT criteria *(Mohty et al. BMT 2016*).
- Very severe form of SOS according to 2016 EBMT criteria *(Mohty et al. BMT 2016*):
    - Dialysis needed
    - Or Mechanical ventilation needed
    - Or Catecholamines needed
    - Or Two of the following: bilirubin > 136 µmol/L or AST/ALT > 8 times the normal limit or weight increase > 10% or creatinine > 2 times the basal level
- For whom an indication for liver transplantation has been considered (performed or not in the end) in the three months following the last hematological treatment

Preliminary data:
We identified 15 patients fulfilling the inclusion criteria: 9 patients who underwent liver transplantation for SOS and 6 with liver transplantation discussed but not performed. After a median follow-up of 4 years, 5 out of the 9 patients who underwent liver transplantation (55%) were alive vs. 20% (1 of 6) for patients with SOS who did not undergo liver transplantation. The main cause of death for transplanted patients was infection, followed by bleeding. One patient (cumulative incidence: 25%) had a hematologic relapse of lymphoma (one year after liver transplantation).