OVARIAN TISSUE TRANSPLANTATION (OTT) FOR LEUKEMIA SURVIVORS

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Abstract Body

BACKGROUND: Leukemia is considered high risk for minimal residual disease (MRD) contamination in cryopreserved ovarian tissue. Many young survivors suffer from premature ovarian insufficiency post treatment and need fertility restoration. Most centers avoid OTT due to concern of re introducing malignancy.

AIM: Improving the safety of OTT in order to restore fertility in leukemia patients survivors

METHODS: Between 2005 and 2022 ovarian tissue cryopreservation was performed in 74 leukemia patients. Twenty one cured leukemic patients that considered OTT to restore fertility were evaluated for MRD in the ovarian tissue.

For each patient a piece of ovarian tissue was thawed and divided into 5 for MRD evaluation: One used for H&E and immunohistochemistry (IHC) to check for follicles presence and macroscopic malignancy evidence. One was used to check molecular markers by extracting DNA/RNA and performing PCR, RT-PCR and next generation sequencing (NGS). In patients without molecular markers at diagnosis, leukemia cells were evaluated using NGS to identify new markers. Three Pieces were xenotransplanted into 3 SCID mice for 6 months

RESULTS: Eight OTT were performed in 4 AML, 1 ALL, 1 CML patients presenting with negative MRD tests in all method used, resulting in 8 pregnancies and 6 live births. Long term follow up of up to 7 years showed no evidence of disease recurrence. In five patients evaluation showed evidence of MRD in at least one method and OTT was denied

CONCLUSIONS: Leukemia survivors, when indicated, can benefit safe and successful OTT

MRD assessment of both the original tumor and the ovarian tissue by multiple techniques, enables safe transplantation for majority cases of leukemia

For patients with proved contaminated ovarian tissue , future technique development needed for resourcing fertility potential