

Ovarian Reserve after Stem Cell Transplantation in Childhood and a chance for fertility preservation

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Objective: Anti-Müllerian hormone (AMH) is a relatively novel tool in the assessment of ovarian reserve. It enables screening for early ovarian failure after cancer treatment.

Materials and methods: 45 young females underwent a haematopoietic stem cell transplantation (HSCT) at median age 13.4 years (range 4.2-18.1), of them 40 received Busulphan (16mg/kg) or total body irradiation (TBI) (≥ 12 Gy) as a part of conditioning regimen. Ovarian function and serum AMH level were evaluated at median age 18.3 years (range 12.2-36.5). AMH was measured using enzymatic immunoassay (EIA) Immunotech (normal range 14.28-48.55 pmol/l).

Results: Low or undetectable level of AMH was found in 43/45 (95.6%) women, only 2 (both without Busulphan or TBI) maintained normal AMH concentration and had normal ovarian function. 5/19 patients (transplanted in prepubertal age) had low but detectable AMH, normal FSH level and regular menstrual cycle without HRT. In those subjects residual ovarian activity is anticipated. 21/24 patients (transplanted later) had undetectable AMH and high FSH levels and received hormone replacement therapy.

Conclusions: Severe ovarian damage with low or undetectable levels of AMH was found in the majority of females who underwent HSCT after use of high-dose Busulphan or TBI. Fertility preservation through cryopreservation of ovarian tissue or oocytes should be offered prior to HSCT. Chance for successful cryopreservation of ovarian tissue or oocytes after HSCT in cases with residual ovarian activity (normal FSH, regular menstrual cycle but low AMH level) must be assessed at the centre for reproductive medicine.