

# Successful autologous stem cell therapy in premature ovarian failure

## Editorial

Edessy stem cells score (ESS) is the objective method for the evaluation of the stem cell expression, while the Edessy ovarian reserve score (EORS) is an objective way for evaluating the ovarian reserve (Table 1) & (Table 2).

Stem cells are the foundation cells for every organ, tissue and cell in the body. They are self renewable undifferentiated cells capable of differentiation and divide into specialized cells. Through the asymmetric mitosis the new cell differentiates into two daughter cells. Adult stem cells, also called somatic stem cells, maintain and repair the tissue in which they are found. Both children and adults are sources for stem cells. The umbilical cord and the adult tissue may contain the rare pluripotent stem cells in small amounts. End stage heart diseases, liver cirrhosis, spinal cord injuries and other conditions may be treated by stem cell transplantation using the adult bone marrow stem cells. The quantity of bone marrow stem cells declines with age and is greater in males than females during reproductive years. Many adult stem cell researches aimed to characterize their potency and self-renewal capabilities. Mesenchymal stem cells (MSC) are multipotent stem cells.

**Table 1** Edessy stem cell score (ESS)

Score factor	0	1	2
Intensity of sc Marker	Negative to Mild	Moderate	Strong
Percentage of SC.	0	0-50%	>50-100%
Focality	None	Focal	Diffuse
Distribution	None	Epithelial or Mesenchymal	Epithelial and Mesenchymal
Site of SC	None	Cytoplasmic or Nuclear	Cytoplasmic and Nuclear

**Table 2** Edessy ovarian reserve score (EORS)

Score Variable	0	1	2
AMH (ng/ml)	<1	1-5	>5
FSH (mIU/ml)	>10	5-10	<5
E <sub>2</sub> (pg/ml)	<20	20-50	>50
AFC (no)	<3	3-9	>9
MOV (cm <sup>3</sup> )	<6	6-10	>10

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Leukemia has been treated since many years by stem cell transplantation. Destruction of the embryo makes the use of embryonic stem cells in research and treatment not accepted which is not case for adult stem cells. Amenorrhea and elevated gonadotrophins associated with loss of ovarian function in patients below forty years is the premature ovarian failure (POF). POF occurs in 1% of the female population by the age 40, of whom 2.5% are adolescents, and is most often a non-reversible pathology leading to infertility. POF occurs in 1/10,000 at the age of 20 and 1/1000 at the age of 30 with normal karyotyp. Primary amenorrhea with ovarian failure occurs in 1/10,000 women. There is family history in about 25% of POF cases. Gonadal dysgenesis and Turner syndrome are the commonest causes of early POF which occurs below the age of 20 and the cause is unknown in POF cases with normal karyotyp and above 20years. 10–28% of primary amenorrhea cases and 4–18% of secondary amenorrhea cases are due to POF. POF occurs in 0.1%, 0.5%, 1% and 1.4% of Japanese, Chinese, Caucasian and African-American and Hispanic women respectively. No etiology was accounted for about 90% of the idiopathic POF. Hormone replacement till the age of 50 was considered the main treatment. We evaluated the therapeutic potential of autologous MSC transplantation in women suffering from POF. Out of 112 high risk patients for POF, diagnosis was confirmed in 10 cases. MSC prepared from the bone marrow of the iliac crest was laparoscopically injected into the ovaries of the POF patients.

Endometrial fractional biopsy was histopathologically (HP) and Immunohistochemically (IH) stained and evaluated according to ESS. Ovarian reserve was evaluated according to EORS. After transplantation two cases (20%) resumed menstruation after 3 months. Ten months after transplantation, EORS of one of the tow patient was found to be 7 after being 0 before therapy. She got pregnant one month later and delivered a healthy full term baby (Zeinab). ESS of that patient was found to be 6. EORS of the other menstruating case was found to be 5 after being 0. The 2 menstruating cases showed focal secretory changes after being atrophic endometrium in the pregnant case and distorted proliferative endometrium in the other menstruating case.

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## Conflict of interest

The author declares no conflict of interest.