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Human Spermatogonial Stem Cell (SSC) autotransplantation to preserve fertility in high risk patients: *Current situation and future implications*

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Abstract

Over the last three decades effective cancer treatments have improved the survival rates for many types of cancer. Especially in childhood cancer the 5-year event-free survival rates are now around 80%. It is currently estimated that 1 in 250 young adults between 20 and 29 years is a long term survivor of childhood cancer. This implies that adverse side effects including gonadal failure and subsequent poor long-term reproductive outcomes have now become important sequels of previous exposure to chemotherapy and/or radiotherapy. The ensuing sterility cannot be prevented or otherwise counteracted, and there are currently no means to preserve fertility prior to treatment in prepubertal boys. This is in contrast to adult men, for whom ejaculated sperm can be cryopreserved and in contrast to women and girls in whom cryopreservation of oocytes or ovarian cortical strips prior to the initiation of cancer treatment can be performed. Spermatogonial stem cell (SSC) technology may be an avenue to preserve fertility in these prepubertal boys. The quintessence of this new technology would be storage of testicular tissue before chemotherapy and propagation and autotransplantation of SSCs from this frozen/thawed tissue after cure for cancer.

Biography

Sadri-Ardekani is a Senior Research Fellow at Wake Forest Institute for Regenerative Medicine. Clinically he has been trained as an Andrologist. After seven years experience of infertile patients management and directing a reproductive medicine center (2000-2007), he decided to be trained as a reproductive biologist too which occurred by receiving a Ph.D. degree from university of Amsterdam in 2011. He has been established the first *in vitro* propagation system for human SSCs (JAMA November 2009) which has been called a milestone in autotransplantation of human SSCs (Nature Reviews Urology February 2010). In addition Dr. Sadri-Ardekani is a leading expert in the field of fertility preservation in high risk patients.