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Short Communication Open Access

Fertility of 25 year Cryostored Sperm of a Cancer Survivor

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Significant advances have been made regarding cancer treatment, and the ability to father children is becoming increasingly important to long term survivors. Since infertility is often the result of cancer treatment, semen cryopreservation prior to treatment is very practical, simple, relatively inexpensive, and highly recommended. Cryopreservation of semen is a well-established procedure since the birth of a baby from frozen thawed semen was first reported in early 1950's [1]. The cryopreservation procedures do affect the semen quality, especially if the semen quality is compromised, as is often observed with cancer patients. However, with the advent of intracytoplasmic sperm injection (ICSI) and within vitro fertilization embryo transfer (IVF-ET) procedure, cryostorage of compromised semen is feasible and should be considered. To our knowledge there is only one other report on fertility of 21 year cryostored semen of a cancer survivor [2]. At present many young cancer patients are requesting semen cryopreservation, and additional follow-up studies utilizing the cryostored semen are not only needed, but should be extended to cover many more years of cryostorage. This report describes a confirmed fertility of 25 year cryostored semen of a cancer survivor. A 17 year old was diagnosed with chronic granulocytic leukemia in March of 1985 and was treated with busulphan and thioguanine, which culminated in allogenic bone marrow transplant with cyclosporine. During treatment 5 different ejaculates obtained in June were cryopreserved in ampoules (Table 1). The patient remained cancer free with no evidence of recurrence, except for persistent azoospermia as confirmed following routine semen analyses performed in 1992, 2004 and 2010. Based on this finding an IVF-ET with ICSI procedure was initiated using the samples cryopreserved in 1985. Of the 13 mature eggs retrieved, 11 fertilized, yielding 5 blastocysts, 3 of which were cryopreserved for future use and 2 were transferred with a successful outcome, resulting in dizygotic twin boys. Paternity testing confirmed the identity of the boys. The germinal epithelium will be depleted by exposure to more than 600cGy radiation, and chemotherapeutic agents can often deplete germinal epithelium as well. Although it has been demonstrated in rodent mutation rates are high during and soon after therapy but in human it appears that the chromosomal aneuploidy is more frequent [3]. However, whether the observed DNA damage is reflected into a parallel increase in fetal malformation is not known. Only a relatively low number of men who store semen prior to cancer treatment utilize their semen within a few years. The reason may that the patients have restored their fertility, did not plan to have children or succumbed to death [4]. Fertility of long term cryostored semen has been previously documented. A sample obtained prior to vasectomy and cryostored for 28 years resulted in a successful birth following intra uterine insemination [5]. Also, a sample obtained from an individual and cryostored for 40 years resulted in birth of twins following IVF-ET with ICSI [6]. But the long term effect on fertility of compromised semen quality of cancer patients, especially if they were cryopreserved during, as in this case report or soon after treatment needs to be confirmed with many more studies. But it would not be surprising in the future with the remarkable survival following cancer treatment and significant advances in fertility treatment, that many of them will be utilizing their cryostored semen.

Semen Parameters	Semen 1	Semen 2	Semen 3	Semen 4	Semen 5
Volume (ml)	0.5	0.5	0.8	0.3	0.25
Sperm Concentration ($x10^6$/ml)	30	35	80	50	60
Sperm Motility (%)	72	72	72	54	72
Sperm Morphology (%)	80	80	80	70	80

Table 1: Semen analysis results obtained during treatment and prior to cryopreservation.

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