

## FEATURE ARTICLE

# Semen Preservation in Male Adolescents and Young Adults With Cancer: One Institution's Experience

Lisa Bashore, MS, RN, CPNP, CPON®

Semen preservation is a feasible procedure for male adolescents and young adults who may become infertile as a result of cancer therapy. Treatment for several pediatric malignancies puts adolescents and young adults at a significant risk for fertility dysfunction. Eligible male adolescents and young adults (N = 32) treated from January 2004 to June 2005 at Cook Children's Medical Center were offered semen preservation at the time of diagnosis or presentation to the center for treatment. Fifteen (47%) young men were successful in semen preservation. Two (6%) adolescents did not participate because of parental refusal. Seven (22%) were too ill, and eight (25%) failed to produce an adequate sample. Several patients were not successful because of time constraints, lack of counseling, and parental anxiety. Efforts for success in semen preservation should include private discussions between nurses and adolescents. In addition, information on infertility needs to be given to families early in the diagnostic phase to provide them with an opportunity to ask questions.

Approximately 77% of children diagnosed with cancer will become long-term survivors of the disease (Mertens et al., 2001; Ries et al., 2005). Many children may experience late effects of cancer and cancer treatment because of significant advances in treatment, including combination chemotherapy and radiation, which have led to increased survival rates. The effects of treatment often depend on the type and dose of chemotherapy, radiation fields, and dose of radiation.

Endocrine dysfunction comprises almost 40% of the total late complications of cancer therapy (Sklar, 1999). The testes are highly sensitive to effects of cancer therapy (Thomson, Critchley, Kelnar, & Wallace, 2002). As a result, semen cryopreservation is an option to preserve fertility in male patients with cancer who would otherwise not be able to father biologic children (Oktay, 2005; Pfeifer & Coutifaris, 1999; Wallace, Anderson, & Irvine, 2005). Efforts are being implemented in several pediatric institutions to preserve semen in male adolescents diagnosed with cancer. The purpose of this article is to briefly describe the treatments for childhood cancer that may result in infertility and the experience of one institution in semen cryopreservation for a 15-month period.

## Literature Review

The effects of chemotherapy on male fertility depend on the chemotherapy agent, dose, length of exposure, and age of patients (Thomson, Wallace, & Sklar, 2004). Multiple chemotherapy agents often are used in treating pediatric cancers, which makes determining the gonadotoxic effects of drugs more diffi-

### At a Glance

- ◆ Cancer therapy may result in infertility for male adolescents and young adults.
- ◆ Early discussions with young men and their families are vital to successful semen preservation.
- ◆ Ethical dilemmas may exist when attempting to discuss semen preservation with male adolescents.

cult (Thomson et al., 2002). Chemotherapy administered to men affects testicular function by damaging somatic (i.e., Sertoli and Leydig cells) and germ cells, resulting in reduced sperm production (i.e., spermatogenesis) (Wallace et al., 2005). Combination chemotherapy commonly is used in treating childhood cancers and results in gonadotoxic effects in male patients (see Figure 1). Alkylating agents (i.e., busulfan, cyclophosphamide, ifosfamide, and melphalan) destroy rapidly dividing cells, including hair, digestive tract cells, and cells in the testes. Cyclophosphamide is used to treat malignancies, as well as nephrotic syndrome (Saha & Singh, 2006). Mechlorethamine and procarbazine,

Lisa Bashore, MS, RN, CPNP, CPON®, is a coordinator in the Life After Cancer Program at Cook Children's Medical Center in Fort Worth, TX. No financial relationships to disclose. (Submitted January 2006. Accepted for publication June 25, 2006.)

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