

Testicular Sperm Retrieval in the Management of Chemotherapy Induced Azoospermia

Androlog Summary

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Note: Postings to *Androlog* have been lightly edited before publication.

Although the advent of effective chemotherapy for the treatment of testis cancer and other malignancies has improved the prognosis of patients suffering from these disorders, such therapy may result in impaired semen quality or azoospermia. The use of testicular sperm extraction combined with intracytoplasmic sperm injection (ICSI) in the management of nonobstructive azoospermia has gained widespread acceptance. The *From Androlog* discussion that follows revolves around the use of testicular sperm extraction combined with ICSI for the treatment of patients who are azoospermic secondary to chemotherapy.

Randall Meacham of Denver, Colo, posed the following question to the *Androlog* group:

I am currently treating a patient who underwent orchiectomy for embryonal carcinoma of the testis performed in 1987, which was followed by retroperitoneal lymph node dissection (RPLND) and 2 rounds of chemotherapy. He currently ejaculates but is azoospermic. His physical examination is unremarkable other than the surgically absent testis. His laboratory studies disclosed the following values: serum testosterone, 454 ng/dL; luteinizing hormone, 9.8; and follicle-stimulating hormone, 13.6. It seems likely that this patient suffers from impaired spermatogenesis, probably secondary to the chemotherapy. He was noted to have sperm in a specimen collected (but not frozen) after the lymph node dissection and before the chemotherapy. My question pertains to the likelihood of being able to retrieve sperm from a testis biopsy specimen in this setting. I would be very interested in the experience of the group in the performance of testicular sperm extraction (TESE) under similar circumstances.

Peter Schlegel provided the following reply, discussing the extensive experience that his group has accumulated in this area as well as the excellent results achieved. He also makes the important point that the first step in the management of such patients is to make certain that they

do not suffer from ejaculatory dysfunction rather than spermatogenic failure:

Dr Meacham has recently inquired about the feasibility of sperm retrieval from men with azoospermia after chemotherapy for germ cell tumors. Obviously, the first question is whether treatment (RPLND) affected antegrade sperm transport. This issue is cleared if a normal volume ejaculate (or azoospermic specimen from an electroejaculation method) is obtained. For men who have no sperm in antegrade or postejaculate urine/retrograde specimens and are at least 6 years postchemotherapy, we have performed testicular sperm retrieval on 34 occasions in conjunction with a simultaneous in vitro fertilization (IVF)/ICSI attempt. For men previously treated for germ cell tumors, despite the presence of a solitary testis, sperm were found with microdissection TESE in 67% of these men. All were rechecked on the day of TESE with analysis of antegrade semen specimens and/or electroejaculation to confirm azoospermia before proceeding with TESE. Several of these men had multiple successful attempts at TESE (separated by 1 year or more), with no permanent change or trend in serum testosterone levels.

Aaron Spitz related his clinical experience, gained under similar circumstances:

Regarding sperm retrieval after chemotherapy: I had a similar patient for whom I was able to obtain sperm from a single testicular biopsy. Histologically, the specimen was consistent with hypospermatogenesis. The patient and his wife had a successful IVF/ICSI cycle. The testicular sperm extraction was performed contemporaneously with the patient's wife's egg retrieval.

Robert Oates described the results of ICSI among 12 azoospermic patients following chemotherapy, also indicating that the prognosis is good among this population:

With regard to the question posed by Andy Meacham, the chance of finding sperm is quite good. Paul Turek and I reported our combined experience in patients following chemotherapy who remained azoospermic and subsequently underwent TESE (Damani M, Master V, Meng MV, Burgess C, Turek P, Oates RD. Post-chemotherapy azoospermia: fatherhood with sperm from testis tissue using intracytoplasmic sperm injection. *J Clin Oncol.* 2002;2:930-936). In the group of patients with testis cancer, 9 of 12 had retrievable sperm. The sperm also appears to work in terms of fertilization, embryo development, and pregnancy.