

Azoospermic patient's treatment: An experience of a PMA hospital unit and role of ultrasonography

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Summary *Introduction: Azoospermia causes about 10% of male infertility and the best therapeutic option is the retrieval of sperm from testis or epididymis.*

Material and methods: From January 2008 to June 2016, 92 men (median 36 years; range: 25-54 years) were submitted in 47 cases to TESE (testicular sperm extraction) and in 45 cases to PESA (percutaneous epididymal sperm aspiration) for secretory and obstructive azoospermia, respectively; moreover, all the patients previously underwent color Doppler ultrasound of the testis and transrectal ultrasound of the prostate.

Results: Serum FSH values were 9.4 ml/UI and 36.4 ml/UI (median 18.2 ml/UI) with an estimated volume of the testis equal to 5 ml; 40 men had the mutation for cystic fibrosis with bilateral agenesis of the deferentia vasa, 4 men had a cyst of the prostatic utricle, 1 man had retrograde ejaculation, 7 had an epididymis cyst and 2 had anejaculation secondary to traumatic neurologic spinal cord injury. The retrieval of sperm was performed in 39 (83%) and 36 (80%) of the patients submitted to TESE and PESA, respectively.

The pregnancy rate was equal to 28% and 33% in men with secretory and obstructive azoospermia, respectively.

Discussion: Assisted reproduction technology with a multidisciplinary team is provided of a pregnancy rate equal about 30% in men with azoospermia; ultrasound allows to evaluate abnormalities of the testis and prostate improving the percentage of pregnancy.

KEY WORDS: Azoospermia; Sperm retrieval techniques; Ultrasound of male genital tract; Treatment of azoospermia.

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INTRODUCTION

About 20% of the couples is unable to have a pregnancy. The obstructive and non obstructive azoospermia constitutes the 10% of male infertility; in these cases the ICSI (intracytoplasmic sperm injection) allows to have a pregnancy in about 30% of the cases (1). The sperm could be retrieval in the semen or directly in the testis or epididymis performing a percutaneous or open procedure (2-4). The role of color Doppler ultrasound (CDU) in the clinical evaluation of azoospermic men, has been reported (5).

MATERIAL AND METHODS

From January 2008 to June 2016, 92 men (median 36 years; range: 25-54 years) were submitted in 47 cases to

TESE (testicular sperm extraction) and in 45 cases to PESA (percutaneous epididymal sperm aspiration) for secretory and obstructive azoospermia, respectively; moreover, all the patients previously underwent CDU of the testis and prostate. The PESA was performed under local anesthesia (mepivacaine 2% without adrenaline) using a 21 gauge butterfly. All the patients underwent to general and genital physical examination, evaluation of two semen analysis, culture of semen performing PCR (amplification of DNA) for *Chlamydia trachomatis*, *Mycoplasma hominis* and *mycetes*. In addition, the karyotype with the evaluation of microdeletion for chromosome Y and mutation of fibrosis cystic genes was done. A GE Logiq E9 and P6 with small part and biplanar transrectal probes were used to perform CDU evaluation of testis and prostate; in detail, the ecopattern and the vessels maps of the testis were evaluated to improve the detection of sperm during biopsy procedure. All the patients underwent to blood evaluation for FSH, LH, testosterone, CMV, HBV, HCV e HIV. The biopsy testicular parenchyma was delivered to the biologists team to retrieve the sperm and perform in real time ICSI procedure; finally, testicular parenchyma underwent definitive histological evaluation.

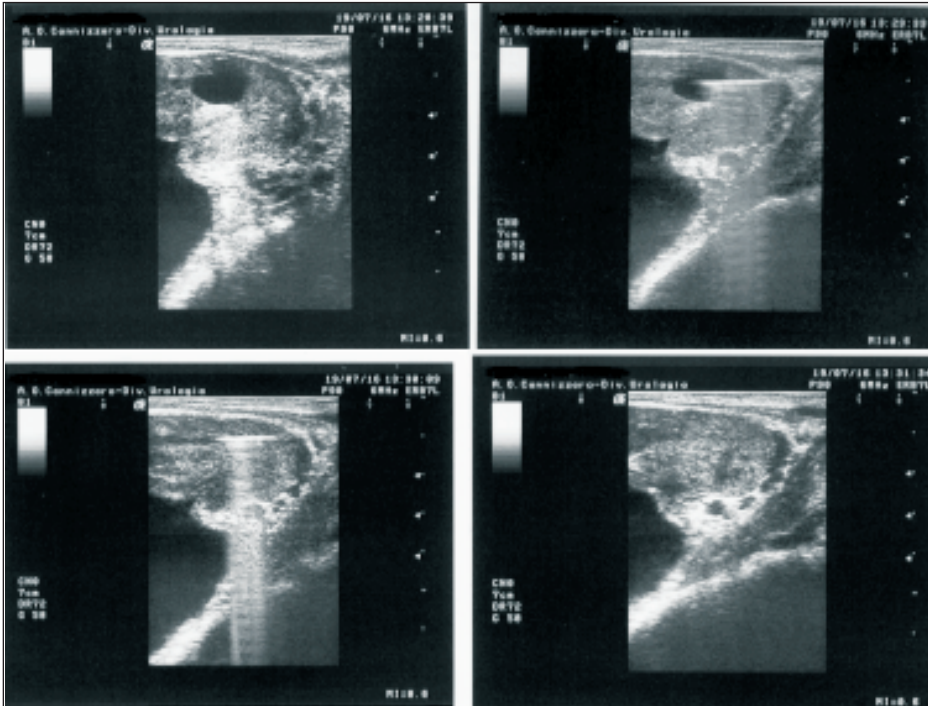
RESULTS

Serum FSH values were 9.4 ml/UI and 36.4 ml/UI (median 18.2 ml/UI) with an estimated volume of the testis equal to 5 ml; 40 men had the mutation for cystic fibrosis with bilateral agenesis of the deferentia vasa, 4 men had a cyst of the prostatic utricle, 1 man had retrograde ejaculation, 7 had and epididymis cyst and 2 had anejaculation secondary to traumatic neurologic spinal cord injury. The recovery of sperm was performed in 39 (83%) and 36 (80%) of the patients submitted, respectively, to TESE and PESA. The pregnancy rate was equal to 28% in men with secretory azoospermia and to 33% in those with obstructive azoospermia. The culture of semen was negative in all patients. Four men underwent transperineal ultrasound guided prostatic cyst aspiration before testis biopsy (Figure 1); none had abnormal ultrasound suspicious area of the testis. Three patients had hematocele and orchiepididymitis following biopsy those did not required hospitalization. Definitive specimens did not found neoplastic lesions of the testis.

No conflict of interest declared.

Figure 1.

Transperineal percutaneous aspiration of prostatic cyst.



DISCUSSION

Assisted reproduction technology (ART) is the treatment used to achieve pregnancy in procedures such as fertility medication, artificial insemination, in vitro fertilization and surrogacy. It mainly belongs to the field of reproductive endocrinology and infertility, and may also ICSI and cryopreservation (6, 7). Some forms of ART are also used with regard to fertile couples for genetic reasons (preimplantation genetic diagnosis). Transvaginal ovum retrieval is the process whereby a small needle is inserted through the back of the vagina and guided via ultrasound into the ovarian follicles to collect the fluid that contains the egg cells. The ICSI is beneficial in the case of male factor infertility where sperm counts are very low, in the presence of azoospermia or failed fertilization occurred with previous IVF attempt. The ICSI procedure involves a single sperm carefully injected into the center of an egg cell using a microneedle (8, 9). Before performing ART clinical evaluation of the couple is mandatory; in this respect, CDU of the testis and prostate improve sperm retrieval rate guiding testis biopsy in the areas with better parenchymal microcirculation (10, 11). In addition, transrectal ultrasound detect seminal obstruction secondary to cysts or stenosis of ejaculatory ducts those could be successfully cured (12, 13).

The PESA is a technique used to determine sperm counts in the event of a possible blockage of the deferentia vasa; it is an alternative to microepididymal sperm aspiration (MESA), and aims to address the technical difficulty and cost of MESA. A small needle (butterfly 23 o 21 G) is inserted through the skin of the scrotum to collect sperm from the epididymis or testis (TeFNA "testicular fine needle aspiration - TESA "testicular sperm aspiration"). The TESE is the process of removing a small portion of tissue

from the testicle, under local anesthesia, and extracting the few viable sperm cells present in that tissue for ICSI (Figure 2). MESA refers to retrieval of sperm-containing fluid from optimal areas of the epididymis that are selected and sampled using high-power optical magnification provided by an operating microscope (14).

The percutaneous approach is less invasive than surgical techniques and could be performed under local anesthesia; TESE and microTESE procedures allows to reach a sperm retrieval rates equal to 30-70% and 80% per cycle, respectively. In our series, we obtained a sperm retrieval rate equal to 78% with a pregnancy rate of 28% (15). In conclusion, assisted reproductive department needs a multidisciplinary team to

improve the clinical couple evaluation and the pregnancy rate; CDU of testis and prostate allows to improve the percentage of pregnancy.



Figure 2.
Testicular sperm extraction.

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