

Predictors of positive sperm retrieval in azoospermic men

Study question (25): To determine reliable factors able to predict the sperm retrieval rate (SRR) after conventional testicular sperm extraction (c-TESE) and therefore the role of diagnostic TESE.

Summary answer (25):

What is known already (100): Azoospermia occurs in 1% of men and in 10-15% of the infertile males. Non-obstructive azoospermia (NOA) is caused by testicular failure, while obstructive azoospermia (OA) is caused by a blockage in the genital tract of ejaculatory dysfunction.

Obtaining sperm from the testis in combination with ICSI has become a routine in the assisted reproduction technology. However, it is still controversial which is the most effective sperm retrieval technology, the accuracy of different factors in predicting the SRR and if uncoupled TESE/oocyte pick-up (OPU) should be considered to prevent possible unnecessary ovarian stimulation and OPU when no sperm cells are detected.

Study design, size, duration (75): This is a retrospective cohort study which includes 96 consecutive azoospermic patients (17 with OA and 79 with NOA) who underwent c-TESE between 2004 and 2017.

Participants/materials, setting, methods (75): All patients, whose azoospermia was confirmed by two semen analyses, underwent c-TESE by the same surgeon. The specimens were examined by an embryologist, where all the tubules were teased and analysed for the presence of sperm. A histopathology specimen was sent for analysis. Factors such as male age, months of infertility, FSH level, body mass index (BMI), testicular volume, etiology of the azoospermia and the histopathological diagnosis were correlated with the presence of sperm.

Main results and the role of chance (200): Patients with OA were older than the NOA males (39.53 ± 8.28 vs. 36.03 ± 4.41 , $p=0.015$), although both the duration of infertility (27.47 ± 13.45 vs. 32.35 ± 22.88 , $p=0.028$) and levels of FSH (5.65 ± 4.25 vs. 16.83 ± 12.74 , $p=0.001$) were lower.

The SRR after c-TESE was 100% in the OA patients and 29.11% in the NOA group. No complications related to TESE procedure were seen in the patients.

In the NOA group, the area under the summary receiver operating characteristic curve (AUSROC) of male age, months of infertility, FSH level body mass index respect the chance of finding sperm after c-TESE were 0.59, 0.51, 0.36, 0.45, respectively.

Volume of the biopsied testicle of the NOA patients was diminished ($< 14\text{ml}$) in 45.57% of the cases. The chance positive SRR was higher in normal vs. low volume testicles (26.1% vs. 73.9%, $p=0.03$).

According to the histopathological findings, NOA patients with negative SRR were classified into hypospermatogenesis (reduced number of normal spermatogenic cells), MA (maturation arrest, only spermatogonia, spermatocytes and spermatids were detected), SCO (Sertoli cell only) and tubular sclerosis. The incidence of each pattern was 7.14%, 39.29%, 44.64% and 9.26%, respectively.

Limitations, reasons for caution (50): The low number of patients analyzed in this study is a limitation. Many of our patients come from abroad, and the diagnostic TESE is performed in their country.

Wider implications of the findings (50): According to our results, normal testicular volume is positively correlated with successful TESE. On the other hand, knowing the exact histopathological diagnosis can avoid unnecessary surgical trauma.

Study funding/competing interest(s): Nothing to declare

Trial registration number: Not available