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Clinical and histopathological correlation of azoospermic person in infertility

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Abstract
Background: Infertility is one of the major problems in developed as well as many developing countries. Study of testicular histopathology in primary infertility to segregate the cases of NOA with purpose for identify patients are fit for TESE and ICSI or adoption.
Material and Methods: 46 cases of open biopsy of testis, selected between 2014 to 2019 subjected to Histopatologic examination.
Results: Only 4.3% cases are having normal testicular pathology and rest 95.7 % cases are having testicular pathology. All the 46 patients who were subjected for HPE, SCOS 52.2%, Hypospermatogenesis 17%, maturation arrest 10.8% and atrophy or fibrosis is 15.2 % and only 4.3% cases had normal histology**.**
Conclusion: We could identify patients fit for ART, TESE, ICSI and adoption.
Abbreviations: ART-Artificial reproductive technique**,** TESE-Testicular sperm extraction**,** SCOS-Sertoli cell only syndrome**,** HPE- Histopathological examination**,** NOA-Non obstructive azoospermia**,** ICSI-Intracytoplasmic sperm insemination.

Keywords: Azoospermic, infertility, oligospermia, sertoli cell only syndrome (SCOS)

Introduction
Absence of conception within a period of 24 months of regular unprotected intercourse is labeled as primary infertility, there is an incidence of range of infertility between 15-20% across diverse population. Out of these 20-50% cases attributed to male factor.
The ever increasing interest in the study of male infertility has stimulated the investigation of spermatozoal physiology, semen abnormality and the pituitary gonadal relationship and the microscopic study of the testicular tissue, making a bewildering array of diagnostic options available. The most basic and simple screening test for evaluation still remains the semen analysis and testicular biopsy. *"Give me a child darling or else I will hang myself"* many couples have felt anxiety and emotional disturbance as a result of failure to father a child. Hence we have taken up this study. Present study of testicular histopathology in primary infertility aimed to segregate the cases of NOA with purpose for identify patients are fit for TESE and ICSI or adoption.

Material and Method
Present study was conducted between 2014 to 2019 on cases of male infertility with azoospermia between 22 years to 45 years of age. Forty six cases of azoospermic persons having primary sterility over a period of five years (in between 2014 to 2019) in Balrampur hospital were studied under present study.
All these cases were with normal female partner. These patients were subjected to exhaustive history including family history, sexual history, history of past illness and surgeries e.g. Mumps orchitis, Hernia, hydrocele, any pelvic surgery, vasectomy, history of drug intake, alcohol or tobacco intoxication, clinical examination to exclude cryptorchidism, varicocele, poor development of secondary sexual characteristics, size of testis and its texture are specially noted. We had included only primary sterility cases. All patients are subjected to hormonal assay including FSH, LH, serum testosterone etc.
Testicular biopsy is taken under local anesthesia by open method, by making a small incision of 0.5 cm in tunica albuginea. A small pea size testicular sample taken and immediately transferred to Bouin's solution for fixation. Biopsy embedded in paraffin wax and stained in

hematoxillin and eosin.40-50 tubules in every case were examined.

Initial male infertility evaluation was done based on

- Two semen analysis in an abstinence of 4-7 days.
- Comprehensive history of past surgeries, past illness. Example;-childhood mumps, undescended testis, varicocele, surgeries for hydrocele and hernia
- General history-precocious puberty, infantile genitalia and hypogonadism.
- History of drug abuse and alcohol.
- Examination include general examination and local examination including longitudinal testis axis, vas deference, varicocele, cryptorchidism.
- Family history and hereditary disease.
- Sexual and reproductive history.

Results

Biopsy conducted in 46 cases

Sertoli cell only syndrome: In 24 cases, small seminiferous tubules, no germ cells, basement membrane is thickened. Normal interstitial tissue.

Hypospermatogenesis: 8 cases. Germ cells are reduced in number. Primary spermatocyte or late spermatids reduced in number. Testicular architecture is normal.

Spermatocytic arrest/Maturation arrest: 5 cases. No spermatozoa or spermatids seen. Normal stromal cells.

Generalised fibrosis (End stage testis): 7 cases. Thickened basement membrane, tubular and peritubular sclerosis. Absence of germ cells and sertoli cells are characteristic findings.

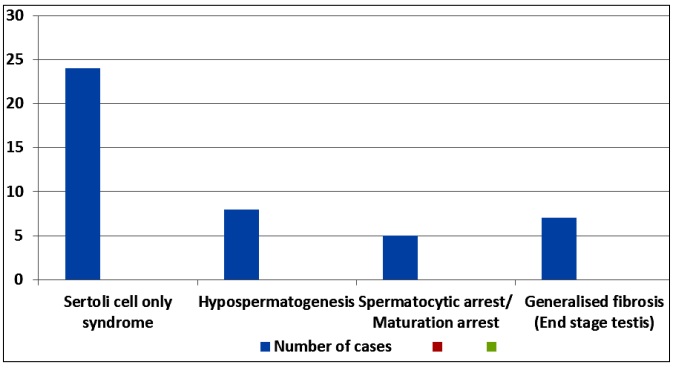
Normal: 2 cases

Table 1: Age distribution of subjects (n= 46)

S. No.	Age group (in years)	Number of cases	Percentage
1	20-25	12	26.086
2	26-30	20	43.47
3	31-35	10	21.73
4	36-40	3	6.52
5	41-45	1	2.17
Total		46	100

Table 2: Diagnosis of study subjects (n= 46)

S. No.	Diagnosis	Number of cases	Percentage
1	Sertoli cell only syndrome	24	52.17
2	Hypospermatogenesis	8	17.39
3	Spermatocytic arrest/Maturation arrest	5	10.87
4	Generalised fibrosis (End stage testis)	7	15.21
5	Normal	2	4.34



Graph 1: Bar diagram showing diagnosis of study subjects

Discussion

Azoospermia is present in approximately 1% of all men and up to 15% of infertile men. Defective spermatogenesis and genital tract obstruction are the main causes of azoospermia. Azoospermia resulting from testicular disorders is generally irreversible and is classified as non-obstructive azoospermia. It has been estimated that 5-10% of infertile men with azoospermia had a clinical diagnosis of varicoceles [9-12].

Various mechanisms have been proposed to explain testicular damage in infertile men with varicoceles, including testicular hypoxia, venous hypertension, elevated temperature, increase in spermatic vein catecholamines, and increased oxidative stress. The influence of varicoceles on testicular function is variable, leaving it apparently unaltered in some cases, and causing partial or total arrest of spermatogenesis in others. As a result, infertile men with varicoceles can exhibit abnormal semen quality ranging from oligozoospermia to complete azoospermia [13-15].

Out of 46 cases 24 cases are of sertoli cells only syndrome (52%), hypospermatogenesis in 8 cases (17%) and maturation arrest in 5 (10.8%), generalized fibrosis or atrophy in 7 (15.2%) and 2 (4.3%) are normal cases.

This study helped us in distinguishing non obstructive and obstructive type of male azoospermia. Majority of male infertility cases in this study were found to be having testicular origin of azoospermia (95.7%) and the purpose was to identify cases for assisted reproductive techniques (ART). Azoospermic cases having obstructive origin with normal testicular histopathological study were segregated for surgical correction (4.3%). Our findings and conclusions are based on our histopathlogical examination suggest predominance of sertoli cells only syndrome cases to the tune of 52.2%, followed by hypospermatogenesis cases 17% and of maturation arrest is 10.8%, end stage of testis(fibrosis and atrophy) in 15.2 % cases and 4.3% cases are having normal testicular study.

Based on the results of TB, azoospermic patients with complete spermatogenesis can benefit from varicocele repair after excluding obstruction. Future research is warranted to show whether azoospermic men with different testicular pathologies will benefit from varicocelectomy.

Conclusion

Infertility is a bane for couples in a society and is a social stigma. This study was conducted with an eye on medically and surgically non correctable cases of sterility mainly confined to testicular causes where medical, hormonal and surgical interventions are mostly futile. We have identified different categories of these NOA cases which may be

subjected to ART by TESE (testicular sperm extraction) or micro TESE, ICSI and adoption.

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Conflicts of interest
There are no conflicts of interest.

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