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Original Article

Cytological Findings in Testicular FNAC in Azoospermia Patient: A Study of 395 Cases

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Abstract

Background: *In the age of assisted reproduction, search for the cause of male infertility is increasing in numbers. As finding of obstructive azoospermia give the male a hope there are increased requisition to the cytopathologist to evaluate the spermatogenesis status of a male. The aim of the study was to see the cytomorphological pattern in azoospermia patients and to determine the procedure's safety.*

Materials and methods: *From January 2015 to June 2022, in Chattogram, Bangladesh, 395 patients with azoospermia were taken in this descriptive study. After all aseptic precautions and local anesthetization aspiration was done from both testes. Cytomorphological analysis was done in the following classes i) Positive for spermatogenesis ii) Hypo-spermatogenesis iii) Early maturation arrest iv) Late maturation arrest v) Sertoli cell only vi) Atrophic.*

Results: *Cytological diagnosis yielded 161 (40.76%) positive for spermatogenesis, indicating obstructive azoospermia, seconded by 'Sertoli cell only' in 115 (29.11%) patients. Both conditions were highest in the age group of 31-40, 93(57.76%) and 72 (62.6%). Hematoma was seen in 04(1.01%) cases and extended period of pain was experienced by 05 (1.26%) patients.*

Conclusion: *FNA of the testis is a much simpler and easily accessible procedure to assess the spermatogenesis status of an azoospermia patient.*

Key words: Azoospermia; Male infertility; Testicular FNAC.

INTRODUCTION

The unfortunate male who failed to leave his heir or to keep part of his soul as a remembrance of him due to his own factors attributable to a range of 20-70% with the percentage of infertile males varied from 2.5-12% globally.[1] In Bangladesh, Anwar et al in 2012 found 3% only male factor infertility with a combined male-female factor in 25%.[2]

FNA has an established track record of use in the testes and is considered a reliable and informative procedure for defying male infertility conditions.[3] Many have claimed that FNA is superior to biopsy.[4,5,6] As ICSI has become more available in our country, FNAC of testes to assess the state of spermatogenesis is now increasingly asked and practiced. This study aimed to see the cytomorphological pattern in azoospermic patients presented in this area and to determine the procedure's safety.

MATERIALS AND METHODS

In the period of January 2015 to June 2022 in a private setup in Chittagong, Bangladesh, 395 patients with azoospermia were taken in this descriptive study. Patients who showed azoospermia in their semen analysis on at least 02 occasions in one month were included in this study. Patients were explained and counseled about the outcome and the use of the procedure results for them. And the complications were explained. After all aseptic precautions, local anesthetization was done by injecting 2% Lidocaine, 02 ml, on each side. Aspiration was done with a 21 G needle attached to a 10 cc disposable syringe from both testes. Aspirates were immediately transferred onto glass slides, smears were made gently and put into 95% alcohol and stained by Haematoxylin and eosin stain. Two slides were created from each testis. During the procedure, about 99% complied with no immediate complications. Cytomorphological analysis was done in the following classes i) Positive for spermatogenesis ii) Hypo-spermatogenesis iii) Early maturation arrest iv) Late maturation arrest v) Sertoli cell only, vi) Atrophic.[7]

RESULTS

A total of 395 patients were investigated in the previously mentioned time. They were between the ages of 22 and 47, with a mean of 32.6 years of age. Among them, the 31-40 age group comprised the highest number of patients, 226 (57.22%), followed by 114(28.86%) in the age group of 21-30 years.

Cytological diagnosis yielded 161 (40.76%) positive for spermatogenesis, indicating obstructive azoospermia, seconded by 'Sertoli cell only' in 115 (29.11%) patients. Both 'positive for spermatogenesis' and 'Sertoli cell only' were highest in the age group of 31-40, 93(57.76%) and 72 (62.6%), respectively, followed by the age group of 21-30, 46 (28.57%) and 34 (29.57%).

Only three cases were patients of secondary Infertility and yielded positive for spermatogenesis. Nine patients presented with only one testis, two had a history of orchidectomy due to malignancy, and the other had rudimentary from childhood. Four of them showed 'positive for spermatogenesis .'Six patients yielded 'hypo-spermatogenesis' in one testis and 'Sertoli cells only' in the other. Two patients with 'Sertoli cells only' showed maturation arrest in the other.

During aspiration, 04(1.01%) cases developed a hematoma in one testis, treated with analgesia and rest, all recovered within 03-05 days without any sequelae. An extended period of pain was experienced by 05 (1.26%) patients and was managed with analgesia and rest.

Table I Cytological pattern of testicular FNAC of different studies comparing with the present study

Author/year	Total no of patient	Normal spermatogenesis	Hypo-Spermatogenesis	Maturation arrest	Sertoli cell only	Atrophic	Inadequate
Kurien et al, 2003[7]	57	50.5%	15.3%	11.7%	3.6%	12.6%	6.3%
Madhu S et al,2004[16]	155	34.8%	23.9%	11.6%	21.3%	6.4%	-
Sahab U et al,2014[8]	54	22.22%	12.96%	55.56%	9.26%	-	-
Khan et al,2017[14]	144	18.8%	32.1%	19.6%	26.8%	-	2.7%
M. Sridevi & P. Karkuzhali, 2017[17]	35	22.9%	22.9%	34.2%	14.3%	5.7%	-
Rane SR et al, 2018 [15]	50	38%	06%	22%	24%	-	10%
Alam et al, 2018[11]	62	16.12%	9.6%	40.32%	33.87%		
Present study,	395	40.76%	13.42%	10.38%	29.11%	6.33%	-

DISCUSSION

The patient's age range was 22 to 47 years, with a mean of 34.6 years of age, similar to reported by others.[8,9,10,11] Among the service seekers, 57.22% were in the age group of 31-40 years and 28.86% in 21-30 years. This finding was near to the report of Rahaman et al in 2016 as they found 63% of their respondent, male infertile, was in the age group of 31-40 years[12]. In contrast with our findings, Uma and Khan from India and Pakistan respectively showed that 64% and 50% of their patients were in the 21-30 age group, which may reflect the tradition of early marriage in their region.[13,14]

This study found 40.76% with normal spermatogenesis, indicating obstructive azoospermia as a major cause of azoospermia, as shown by others.[7,15,16] But few other studies showed much lower cases of obstructive azoospermia ranging from 16.12% to 28%.[11,13] A large population-based study needs to be carried out to determine the prevalence of obstructive azoospermia. "Sertoli cell only" were seen in 29.11% of the patient in the present study. Literature showed a wide range of variations of this condition as the studies showed 3.6%, 14.3%, 21.3%, and 33.8% of “Sertoli cell only” cases.[7,11,16,17]

We learned late, and early maturation arrests comprised 7.09% and 3.29% of our studied population, with 10.38% as maturation arrest cases. This finding was much the same as reported by another investigator.[7,13,16] Few other studies showed too high a percentage comparing our survey, as they reported 34.2%, 40.32%, and 55.56% of patients with maturation arrest.[8,11,17] Hypo-spermatogenesis was seen in 13.42% of patients in the present study, similar to the findings of Kurien et aland Ahmad et al.[7,8] Whether three different studies showed a much higher level.[14,16,17]

Comparing the available studies, we could see a wide range of variations in the same category of cytomorphological classification. Sperm production in males with testicular failure can be patchy or focal.[18] On this basis, Gottschall-sabage et al showed collection of the sample by FNA from different

locations of the testis yielded better results in finding spermatozoa which led them to develop the concept of "Mapping".[19] Turek et al used the advantage of increased sampling size and did FNA systemically and geographically with a compound map of >4 aspirations per testis to locate spermatozoa.[20] One study showed a 35.7% sperm detection rate using 3 FNA sites per testis compared to 30% in a single FNA site.[21] Turek and others showed up to 47% to 52% detection by 7 or 14 FNA/sites per testis.[18,22] It was also seen in 58.8% of spermatogenesis cases in 15 FNA sites per testis by Lewin et al.[23] All the studies discussed early in this manuscript were done by a single point aspiration which reduced the probability of finding the mature spermatozoa to identify spermatogenesis-positive cases. If multiple sites were marked systematically and then aspirated, the material would give different results culminating in a wide range of variation and other positive results for the patients.

Regarding complications, this study found that only 04(1.01%) cases developed hematoma during anesthesia injection, which might have pierced any vessels. Though Ahmad et al and Alam et al found no hematoma but Adhikari et al found hematoma in 2.97% cases.[8,11,24] We found prolonged pain in 05(1.26%) cases though Ahmad et al showed severe pain in 1.85% of cases.[8]

CONCLUSION

FNA of the testis is a much simpler and easily accessible procedure to assess the spermatogenesis status of an azoospermia patient. Most of the patients presented with obstructive azoospermia. Multiple site punctures would yield higher positive results.

DISCLOSURE

All the authors declared no competing interest.

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