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Original Article

Histopathological Pattern of Testicular Biopsy in Male Azoospermics.

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Abstract

Background: To find out the histological pattern of testicular biopsies in male azoospermics

Methods: In this descriptive study testicular tru-cut biopsies (n=42), taken for the purpose of infertility, were included.Haematoxylin and Eosin staining as wells special stain like PAS where required was used for reporting. Exclusion criteria was insufficient, autolysed and unilateral testicular biopsy specimen. The slides were labeled and reported by Histopathologist as per WHO scoring criteria used for infertility purposes.

Results: The age range was from 26 to 45 years with mean age of 28±17.22 years. The common age group was from 26 to 35 years (76.2%) followed by 36 to 45 years (23.8%). Azoospermic males of both Primary azzoseprmia was seen in 69.05% and secondary azoospermia was found in 30.95%. Normal spermatogenesis was noted in 28.57%,followed by spermatogenic arrest in 23.80%, reduced spermatogenesis in 21.42%, testicular atrophy in 18.04% and sertoli cell only in 7.14%.

Conclusion: Normal or reduced spermatogenesis which were the commonest findings may suggest an obstruction in path of sperm motility, where surgical intervention may be curative.

Key Words: Testicular biopsy, Male infertility, Testicular atrophy, Hypospermatogenesis,

Introduction

Histological findings in testicular biopsies are of great significance in the management of male infertility. Male contributes about 20% in cases of couple infertility. Testicular biopy is the final gold standard in diagnosis of variety of testicular pathologies.Azospermia causes infertility but may be curable in some cases. Azospermia is present in about 1% of the male population and may be the cause of infertility in 20% of male infertility. Azospermia is classified as pre-testicular, testicular and post testicular.[1-4] Pre-testicular azoospermia is due to low follicular stimulating hormone,with normal testis leading to inadequate stimulation of testis.[5,6] . Causes may be hypopituitarism, hyperprolactinemia and exogenous testosterone. Also chemotherapy may suppress spermatogenesis.[7,8]

In cases of testicular causes of aozspermia the testis are either congenitally absent or atrophic and there is no spermatogenesis. Other causes may be congenital syndrome like Klinefelter syndrome, cryptorchidism or sertoli only syndrome as well as acquired causes like orchitis, surgery,trauma, carcinoma, radiation etc.[9-11]

In post testicular cases the sperm produced are not ejaculated, this may affect about 7-50% of males. The cause is physical obstruction in the genital tract like vasectomy, congenitally absent vas deferns, cystic fibrosis or infection causing fibrosis of vas deferens.[12]

Other causes are ejaculation disorder like reterograde ejaculation. In idiopathic azospermia no cause is known.[12] Another cause of infertility may be arrest in spermatogenesis, which is a complex process in the differentiation or maturation of active sperm formation. The causes may be genetic, hormonal, thermic or use of toxic drugs.[13]

Still another cause of infertility is reduced spermatogenesis. In such cases some mixed pattern of seminiferous tubules are present, some reveal Sertoli cells only, other sclerosis and some with normal spermatogenesis. The causes of hypospermatogenesis are partial fibrosis of seminiferous tubules, diabetes mellitus, use of toxic drugs, varicocele, hypothyroidism, radiation and excess of heat .[14]

Patients and Methods

This study was conducted in Pathology Department Bannu Medical College Bannu KPK. Pakistan. The duration of this study was five years (January, 2013 To December, 2017). All testicular tru-cut biopsies (n=42) taken for the purpose of infertility investigation were

received in 10% formal saline, registered, labeled, overnight fixed in formal saline, whole specimen embedded and tissues processed for histopathological examination. H&E staining as Wells special stain like PAS where required was used for reporting. The inclusion criteria was all bilateral tru-cut testicular biopsy specimens of any age, exclusion criteria was insufficient, autolysed and unilateral testicular biopsy specimen. A minimum of two and maximum of four slides were prepared form each specimen and stained. The slides were labeled and reported by Histopathologist as per WHO scoring criteria used for infertility purposes. The data collected was analysed for frequency with percentages and mean with standard deviation by using Statistical Package for Social Sciences (SPSS) version 18

Results

Age range was from 26 to 45 years with mean age of 28±17.22 years. The common age group was from 26 to 35 years (76.2%) followed by 36 to 45 years (23.8%). Primary azoospermia was seen in 69.05% (Table 1).Normal spermatogenesis was noted in 28.57% cases, followed by spermatogenic arrest in 23.80% (Table 2).

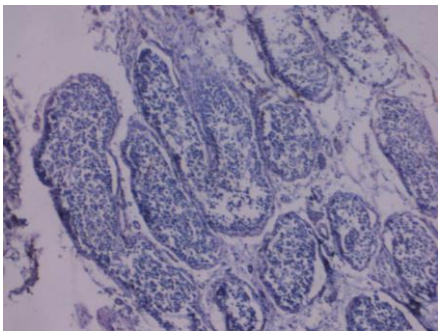

Figure- I: Normal Spermatogenesis. Normal seminiferous tubules of variable sizes with lumen containing all forms of spermatozoa.

Table 1: Frequency of azoospermia in primary and secondary infertility (n=42).

Type of infertility	No(%)
Primary infertility	26(61.90%)
Secondary infertility	12(28.57%)
Infertility not specified	4(9.52%)
Total	42(100%)

Table 2: Pattern of testicular biopsies in infertility patients(n=42)

Histologic pattern	No. of cases	Percentage
Normal spermatogenesis	12	28.57%
Reduced spermatogenesis	10	23.80%
Spermatogenic arrest	09	21.42%
Testicular atrophy	08	18.04%
Sertoli cell only	03	7.14%
Total	42	100%

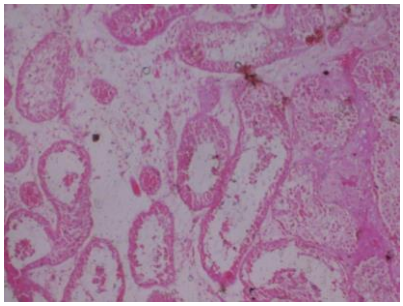

Figure 2: Reduced Spermatogenesis. Seminiferous tubules containing reduced number of spermatozoa.

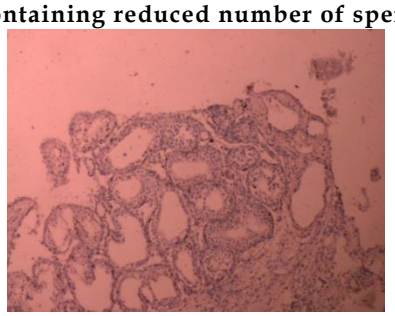

Figure 3: Maturation arrest. Seminiferous tubules containing containing increased number of spermatids.

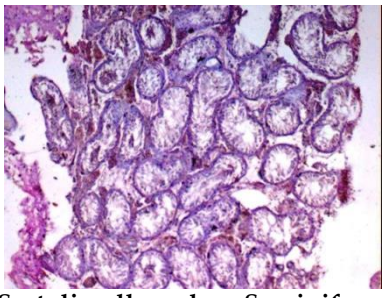

Figure 4: Sertoli cells only . Seminiferous tubules are completely lined by Sertoli cell. No spermatozoa are present.

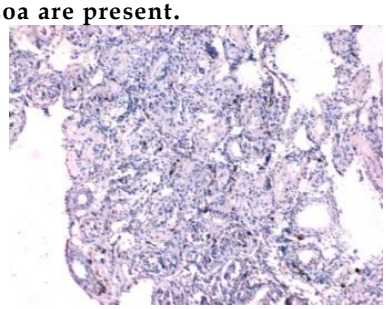

Figure 5: Testicular Atrophy. Distorted seminiferous tubules revealing thick basement membrane and interstitial fibrosis.

Discussion

Male contributes about 20% cases of infertility among couples. In our social setup female partner is usually labeled responsible and stigmatized in cases of infertility. It is estimated that about 1% of general male population and 10% of male seeking advice regarding

infertility are affected by testicular failure.[15] Regarding investigation females are more targeted as compared to male, although male preliminary investigation are more easy to perform as compared to females investigation, hence the underlying cause of infertility in male partner remains obscured and untreated.[16] To investigate male infertility a complete history, physical examination semen analysis, hormone assay, antisperm antibody are required. Testicular biopsy in cases of azoospermia and oligospermia provide useful information regarding spermatogenesis for further management and follow up of patients.[17]

In this study the age range was from 26 to 45 years with mean age of 28.4 years. In study conducted by Ikuerowo et al in 2010 in Nigeria the age range was from 25-46 years with mean age of 30 years. [18] Another study conducted by Deen et al in 2012 the age range was from 22-50 years with mean age of 33 years. In a study conducted by Malhan et al in Saudi Arabia in 2000 the age range was from 16-60 years, still other studies conducted by Khalifa et al in 2014 in Egypt and Mushtaq et al in 2013 in Islamabad showed age range from 22-60 years and 24-56 years respectively. [19-22] These studies show almost the same range in lower age limit, where as upper age limit is different. The reason may be difference in concept regarding family norms. In the study of Ikuerowo et al primary infertility was present in 49.01% of cases and secondary infertility was present in 21.56% of cases, where as in 29.41% infertility whether primary or secondary was not specified. [18] Ikuerowo et al found normal spermatogenesis was present in 9.8%, maturation arrest in 27.5%, reduced spermatogenesis in 3.9% and testicular atrophy in 58.8% cases. [18] In a study conducted by Deen et al normal spermatogenesis was present in 17.9%, maturation arrest in 58.2%, reduced spermatogenesis in 5.9% and testicular atrophy in 7.4% and sertoli cell only in 10.4% cases. [19] Another study conducted by Melhan et al normal spermatogenesis was present in 31%, maturation arrest in 11%, reduced spermatogenesis in 13% and testicular atrophy in 5% cases. [20] Still another study conducted by Khalifa et al showed normal spermatogenesis in 12.90%, maturation arrest in 38.02%, reduced spermatogenesis in 19.71% and testicular atrophy in 0.7% and sertoli cell only in 10.56% cases. [21] In a study conducted by Mushtaq et al in Islamabad in 2013 normal spermatogenesis was present in 16.98%, maturation arrest in 15.09%, reduced spermatogenesis in 18.86%, testicular atrophy in 7.54% and sertoli scell only in 30.18% cases. [22] In a study conducted by Siadati et al[23] in Iran in 2017 normal spermatogenesis was present in 20.3%, maturation arrest in 16.6%, reduced spermatogenesis in 16.7% and testicular atrophy in 6.5% and sertoli cell only in 38.7% cases. Mahajan et al in India showed normal spermatogenesis was present in 13.33%, maturation arrest in 10.0%, reduced spermatogenesis in 16.66%, testicular atrophy in 6.66% and sertoli cells only in 10.0% cases. [24] All these studies show variation in frequency of different histological causes of infertility. The reason may be demographic variation in causes of infertility or differences in social customs and norms at different location of population.

Conclusion

1. Testicular biopsy is helpful in the diagnosis as well as in treatment of azospermic males.
2. Normal or reduced spermatogenesis were the commonest findings and may suggest an obstruction in path of sperm motility, where surgical intervention may be curative.
3. Testicular biopsy is helpful in differentiating curable from non-curable cause of infertility

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