HISTOLOGICAL PATTERN OF TESTICULAR BIOPSIES IN NIGERIAN MEN

(Undergoing Investigation for Infertility in Jos, Nigeria)

By

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ABSTRACT

Objective:

To identify structural changes in the testis associated with infertility in men.

Material and Method:

One hundred and seventy-eight (178) biopsies from infertile men attending the infertility clinic in Jos. The specimens were sent to the Histopathology laboratory in bouine solutions. They were processed and stained with standard Haemtoxylin and Eosin stains. Insuficient tissue were excluded from the study.

Results:

Ninety-four (52.5%) had varied degree of hypospermatogenesis, forty (22.5%) had diffuse tubular atrophy with hyalinization and twenty-six (14.6%) showed non-specific orchitis.

Conclusion:

The cause of infertility in men in our environment is largely attributable to infection which is due to sexually transmitted agents. Therefore, it is suggested that a decrease in sexually transmitted disease might improve or eliminate the causes of most cases of infertility.

KEY WORD: Testicular biopsy, Male, Infertility, Jos.

Introduction

In the past the woman was always blamed for infertility, but in recent years it has been shown that the male partner is at fault in about 15-50%, while factors affecting both account for the 40-50% of cases[1,2,3]. The African socio-cultural setting, has however, focussed more attention on women, as the course of infertility, assuming normal marital coital atmosphere. The simplest determinant of male fertility is the quantity and quality of the spermatozoa ejaculated which routine count represents. Spermatozoan morphological defects, to a large extent are highly significant indicators of germinal epithelial function[2]. Testicular biopsy performed critically and with proper indication may be of considerable value in the management of infertile male, both prognostically and diagnostically[2,6].

This study was directed at identifying these abnormal germinal epithelial pattern and other abnormalities which might contribute to poor semen quality.

Materials and Methods

This retrospective study involved the review of testicular biopsies available in the Department of Pathology, Jos University Teaching Hospital from hundred and seventy eight biopsies represented infertility cases.

Specimens were obtained form the surgeons in bouine fluid for better histological preservations and processed by standard histological methods. The biopsies were examined without knowledge of clinical details or semen analysis of the patients. The histological features were grouped according to basic pathological processes and tissue changes as described by Thomas[2] as follows:

Histological Group:

1. Normal spermatogenesis was recorded when tubules were sized and germinal epithelium was of normal thickness with adequate number of spermatogonia undergoing spermatogenesis, the basement membrane and tunica propria in addition were thin.
2. Hypospermatogenesis was observed when the tubular epithelium was seen to contain all the stages of spermatogenesis in addition to varying degrees of thickening of basement membrane without interstitial fibrosis.
3. Diffuse tubular atrophy with hyalinization was seen when there was severe interstitial fibrosis and hyalinosis associated with germ cell loss[4]. The sertoli cell syndrome is diagnosed when only sertoli cells lined the seminiferous tubules.

Results:

Total of 178 testicular biopsies were received for investigation of fertility in the Department of Pathology, Jos University Teaching Hospital from 1985 to 1994. All of the biopsies were taken from adults patients aged between 26 to 40 years who presented with complaints of infertility in the surgical/gynaecological clinics of the hospital.

Table I: shows age distribution in years and frequency. The most common groups are between 26-35 years accounting for 58.8%. The table also shows decreasing number of patients with advancing age.

Table II: shows various histological groups encountered in the178 biopsies.Sixteen (8.9%) had normal spermatogenesis, 94 (52.5%) showed hypospermatogenesis and 40 (22.5%) had diffused tubular atrophy with hyalinization, 26 (14.6%) showed non-specific orchitis. One case each of sertoli cell only, and granulomatous orchitis were recorded.

Table III: shows comparison between the frequencies of different groups of testicular changes seen in this study and other centres in Nigeria. In this table various reports show that hypospermatogenesis is responsible for most of the cases of infertility followed by non-specific orchitis.

TABLE I: AGE DISTRIBUTION OF 178 INFERTILE MEN

Age Group(Years)	*No of Cases*	*% of Total Cases*
21 - 25	32	(17.9%)
26 - 30	54	(30.3%)
31 - 35	49	(27.5%)
36 - 40	27	(15.2%)
41 - 46	16	(8.9%)
Total	178	(100%)

TABLE II: FREQUENCY OF HISTOLOGICAL TYPES OF TESTICULAR LESION OF INFERTILE MEN

	No of Cases		Percentage of Cases
Normal spermatogene		16	8.9%
Hypospermatogenesis			
Mild hypospermatogenesis	15)		
Moderate	37)	94	52.8%
Severe	42)		
Diffuse tubular atrophy with hyalinization		40	22.47%
Granulomatous Orchitis		1	0.56%
Non-specific orchitis		26	14.6%
Sertoli cell only		1	0.56%
TOTAL		178	100/%
NB: Total No. of Testicular biopsies- 214			
Total No. of testicular biopsies for infertility		178	(83.17%)

TABLE III: COMPARISON OF DISTRIBUTION FREQUENCY OF HISTOLOGICAL PATTERN OF TESTICULAR BIOPSIES IN INFERTILE MEN IN JOS

	JUTH	%	IBADAN	%	LUTH	%
Normal spermatogenesis	16	8.9	59	38.2	36	20
Hypospermatogenesis	94	52.8	29	19.1	86	49
Diffuse tubular atrophy with Hyalinization	40	22.47	35	23.1	-	-
Non-specific orchitis	26	14.0	-	-	33	19
Granulomatous orchitis	1	0.56	14	-	2	1
Sertoli cell only	1	0.56	-	-	5	3

Discussion

Testicular biopsies from patients investigated showed that infertility is prevalent amongst our male population. About nine percent reviewed are normal, implying that the Infertility is not due to primary testicular defect. The causes of male infertility falls into three categories; Prestesticular, testicular and post testicular. The low level of normal cases in this study is attributable to meticulous screening of patients. Other factors responsible for infertility could be attributed to antisperm activity and hostile cervical Mucosa. Obanfuwa et al, and Thomas reported that hypospermatogenesis account for 49%, and 19.1% respectively[1,2]. In this study, hypospermatogenesis unaccompanied by interstitial fibrosis constituted 52.8% of 178 cases. This figure is in agreement with other findings in both Lagos and Ibadan[1,2].

Similar findings in Europe and America shows that hypospermatogenesis and diffuse tubular atrophy are common. This has been attributed to sexually transmitted diseases especially in males less than 35 years of age[7,8]. While tuberculosis is rare in developed countries, in the tropics it continues to be a source of chronic epididymo-orchitis often resulting in infertility[6,7,8].

Various environmental agents both chemical and physical have been suggested as possible aetiological factors for hypospermatogenesis[1-5]. Amongst the chemical agents that are implicated include lead, various toxic industrial fumes, particularly gasoline vapours and drugs. Hypospermatogenesis and diffuse tubular atrophy with hyalinization represent the two most common abnormalities in this study. Majority of cases that presented with problem of infertility were seen between 2nd and 4th decades. This period coincide with that of maximal sexual activity. Gonorrhea, and non gonococcal urethritis may be responsible. Osoba in his studies (as contained in studies done by Obafunwa et al)[1] reported a high incidence of chlamydia, trachomatis and mycoplasma as causes of non-gonococcal urethritis in male in sub-Sahara region which contribute to infertility.

Spermatogenesis is known to be temperature dependent and high scrotal temperature is said to affect spermatogenic activity, wearing of tight under-wear and insultating clothing may also contribute to hypospermatogenesis[6,7].

Mumps orchitis is however singled out as the infection which leads to infertility although other factors may be contributory[7,8].

Histological abnormalities with poor prognosis include non-specific orchitis, severe hypospermatogenesis, tuberculous orchitis and genetic disorders. The age range of majority of the cases were between 21-45 years and this tends to exclude the effect of senile changes that is usually seen in elderly adults.

In a nut-shell, the study shows that the commonest cause of male infertility is testicular lesions. Prompt treatment of sexually transmitted diseases will reduce the incidence of male infertility. Therefore recent campaign by the Federal Government of Nigeria on AIDS and other sexually transmitted diseases is commendable.

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