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A 5 Year Prospective and Retrospective Study- Of Tumors and Tumor-Like Lesions of Testis

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Abstract:
Introduction: *Testicular tumors form an interesting group of malignant neoplasms with many exceptional and even unique epidemiological features.They occur mainly in young and middle aged adults and this suggests that their risk factors are different from those relevant to most epithelial cancers. Despite the major advances there is agap in the knowledge in understanding the origin,pathological process and therapeutics of testicular and paratesticulartumors and tumor like conditions. This is a prospective as well as retrospective study,undertaken in the department of pathology,Siddhartha Medical College,Vijayawada; during the period from March 2014 to March 2019.Testicular specimens sent to the Department of Pathology,during this period were included in the study.*
Materials and methods: *The source of data for both prospective and retrospective study are testicular specimens received in the department of pathology,SMC,Vijayawada during the period from March 2014 to March 2019 (5 years). The macroscopic and microscopic findings in these specimens were tabulated and analysed.In cases of retrospective study the macroscopic findings were collected from records and sections cut from blocks were analysed*
Results: *A total of 80 cases were studied in 5 years.Out of 80 cases, retrospective component study included 41 specimens and prospective component study included 39 specimens Testicular diseases were relatively rare.*
Age group most commonly involved was 21-40 years of age. Testicularlesions were rare at the extremes of age
Majority of the testicular lesions were non neoplastic comprising of 62cases (77.50%), out of total 80 casesNeoplastic lesions were found in 18 cases (22.50%), out of total 80cases.Germ cell tumors were the most common neoplastic lesions comprising of16 cases and forming 88.89% of all testicular neoplasms.
Conclusion: *Testicular diseases were relatively rare. Although testicular disease is usually only encountered by the pathologist,urologist and medical oncologist of large medical centres with a special interest and experience in this field,the great advances in treatment make it imperative to provide the exact diagnosis and to use the correct therapeutic approach when one encounters such patientsGerm cell tumors were the most common neoplastic lesions comprising of16 cases and forming 88.89% of all testicular neoplasms. Histopathological diagnosis of teratoma was made in three cases making 16.67% of all testicular neoplasms*
Mixed germ cell tumor diagnosis was made in 6 cases forming 33 .335% of all testicular neoplasms.
THE study was done to know the diverse histological structure and variation in the incidence of lesions in the different parts of the world,--

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I. Introduction

Testicular tumors form an interesting group of malignant neoplasms with many exceptional and even unique epidemiological features.They occur mainly in young and middle aged adults and this suggests that their risk factors are different from those relevant to most epithelial cancers.Morever it is believed that the origin of the great majority of testicular tumors is the germ cell.This may be of great importance,because possible environmental risk factors in testicular cancer are liable to influence future generation.

Although testicular disease is usually only encountered by the pathologist,urologist and medical oncologist of large medical centres with a special interest and experience in this field,the great advances in treatment make it imperative to provide the exact diagnosis and to use the correct therapeutic approach when one encounters such patients.Despite the major advances there is agap in the knowledge in understanding the origin,pathological process and therapeutics of testicular and paratesticulartumors and tumor like conditions.

The diverse histological structure and variation in the incidence of lesions in the different parts of the world,prompted us to undertake the present study.

Aims And Objectives

The present study deals with tumors and tumor like lesions of testis.Duration of study is 5 years comprising of three years retrospective study and subsequent 2 years prospective study.This study was undertaken with the following objectives :

1. To study the histomorphological features of various tumors and tumor-like lesion of testis.
2. To analyse available clinical data,for establishing clinic-pathological correlation.

Specimens received in the department of pathology,Siddhartha MedicalCollege,Vijayawada,during the past 3 years were included in the present study.

II. Materials and Methods

The present study emphasizes on the diagnostic utility of histopathology of tumors and tumor like lesions of testis.This is a prospective as well as retrospective study,undertaken in the department of pathology,Siddhartha Medical College,Vijayawada; during the period from March 2014 to March 2019.Testicular specimens sent to the Department of Pathology,during this period were included in the study.

SOURCE OF DATA:

The source of data for both prospective and retrospective study are testicular specimens received in the department of pathology,SMC,Vijayawada during the period from March 2014 to March 2019 (5 years).

METHOD OF COLLECTION OF DATA:

All the patients were subjected to detail clinical examination and routine laboratory tests.Wherever possible radiological imaging techniques were employed.In the cases collected during the retrospective study their clinical records were analysed.

Testicular specimens were fixed in 10% NBF and then routinely processed to have paraffin sections and stained with Haematoxylin & Eosin routinely.Multiple blocks were taken based on size,variability of gross features and adjacent areas and sections analysed.

The macroscopic and microscopic findings in these specimens were tabulated and analysed.In cases of retrospective study the macroscopic findings were collected from records and sections cut from blocks were analysed.

SAMPLE SIZE:

A total of 80 cases were studied in 5 years.Out of 80 cases, retrospective component study included 41 specimens and prospective component study included 39 specimens.

INCLUSION AND EXCLUSION CRITERIA:

All specimens with macroscopically and microscopically detected tumors and tumor like lesions of testis mentioned in the WHO classification were included and remaining lesions like scrotal lesions and congenital anomalies were excluded

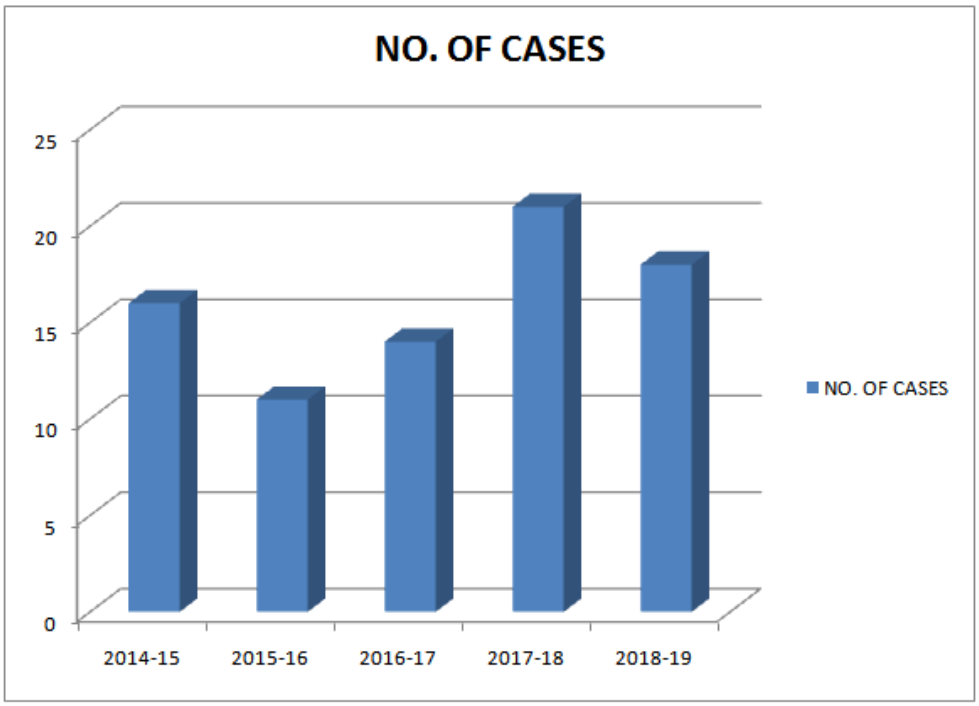
OBSERVATIONS

RESULTS:

Salient observations made in this study are as follows-

Table – 1 Number of cases in each year

SL.NO	YEARS	NO. OF CASES	PERCENTAGE
1.	2014-15	16	20%
2.	2015-16	11	13.75%
3.	2016-17	14	17.5%
4.	2017-18	21	26.25%
5	2018-19	18	22.5%
TOTAL		80	100%



AGE DISTRIBUTION:

Age group of patients ranged from 6 months to 85 years.Age group most commonly involved was 21-40 years of age.In the present study 36 cases(45%) were in the age group of 21-40 years.Testicular lesion were rare at the extremes of age.

SL.NO	AGE(YEARS)	NO.OF CASES	PERCENTAGE
1.	0-10	05	6.25
2.	11-20	08	10
3.	21-30	18	22.5
4.	31-40	18	22.5
5.	41-50	16	20
6.	51-60	08	10
7.	61-70	03	3.75
8.	71-80	03	3.75
9.	81-90	01	1.25
TOTAL		80	100

GROSS:

1.NATURE OF SPECIMENS:

Two types of specimens were sent to the pathology department – orchidectomy and biopsy specimens.

Specimens received in our department showed variable sizes.Minimum size of 0.5x0.5 cms and maximum being 15x10x6 cms.Surface of all the orchidectomy specimens varied from smooth to bosselated to nodular.Biopsy specimens were grey white soft tissue bits.

SL.NO	SPECIMEN	NO.OF CASES	PERCENTAGE
1.	ORCHIDECTOMY	45	56.25%
2.	BIOPSY	35	43.75%

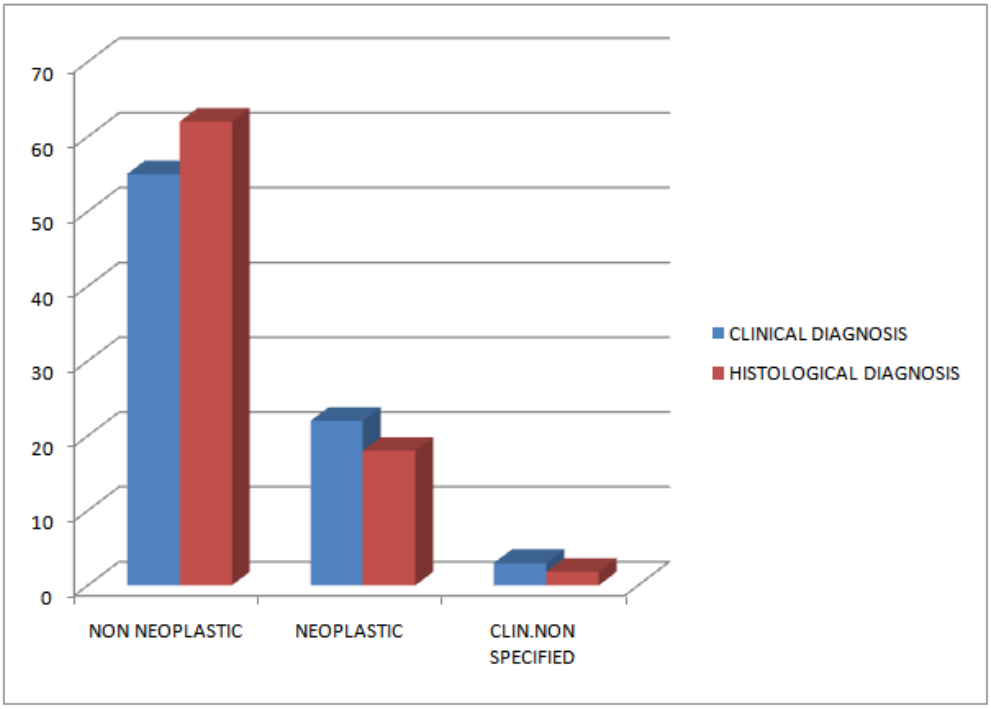
2.CUT SECTION:

Among 45 orchidectomy specimens studied,necrosis was the commonest finding seen in 20 cases(44.44%).Involvement of tunica was seen in 10 cases(22.22%)

CLINICO-HISTOLOGICAL CORRELATION:

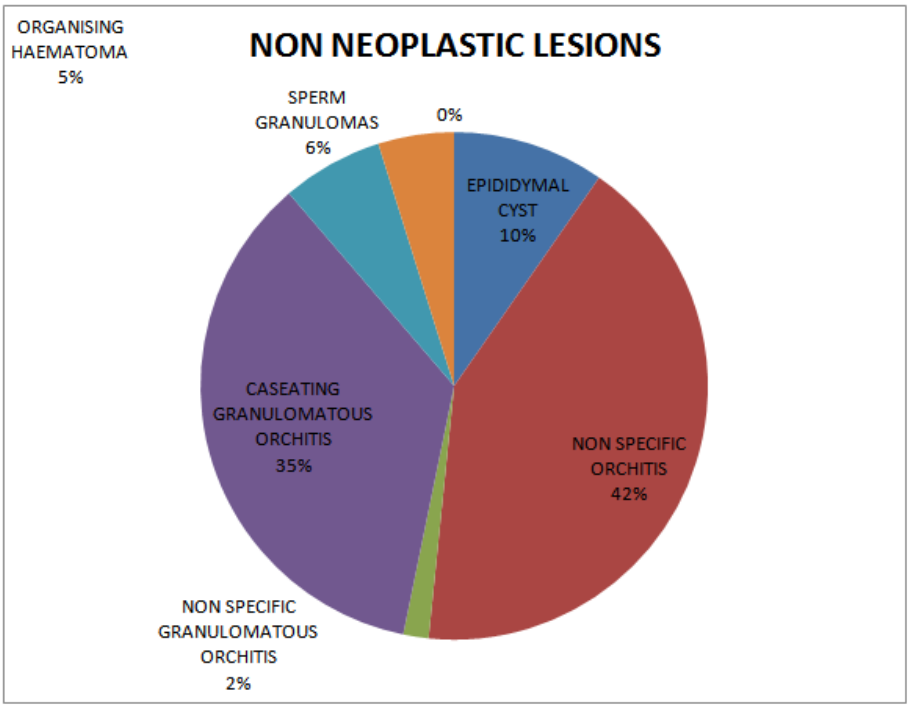
Present study showed that there was correlation between the clinical diagnosis and the histological diagnosis.

In this study,clinically 55 case were diagnosed as non neoplastic and 22 case as neoplastic,whereas histologically,62 case were diagnosed as non neoplastic and 18 case as neoplastic.



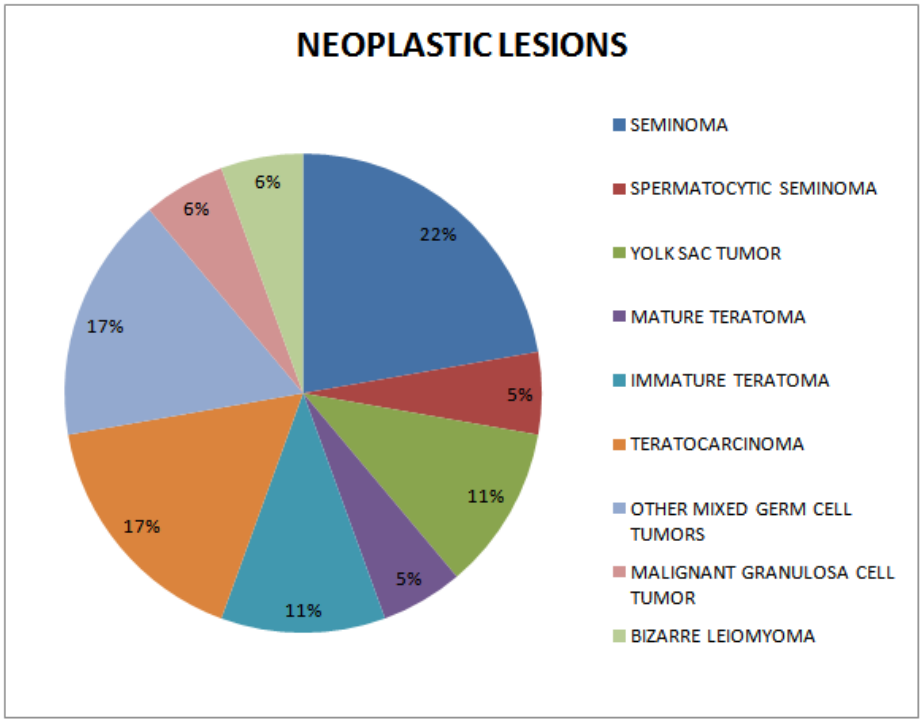
HISTOPATHOLOGICAL DIAGNOSIS OF NON NEOPLASTIC LESIONS:

SL.NO	HISTOPATHOLOGICAL DIAGNOSIS	NO.OF CASES	%
1.	EPIDIDYMAL CYST	6	9.67%
2.	NON SPECIFIC ORCHITIS	26	42%
3.	NON SPECIFIC GRANULOMATOUS ORCHITIS	1	1.6%
4.	CASEATING GRANULOMATOUS ORCHITIS	22	35.5%
5.	SPERM GRANULOMA	4	6.45%
6.	ORGANISING HEMATOMA	3	4.83%
TOTAL		62	100



HISTOPATHOLOGICAL DIAGNOSIS OF NEOPLASTIC LESIONS:

S.NO	HISTOPATHOLOGICAL DIAGNOSIS	CASES	%
1.	SEMINOMA	4	22.2%
2.	SPERMATOCYTIC SEMINOMA	1	5.5%
3.	YOLK SAC TUMOR	2	11.1%
4.	MATURE TERATOMA	1	5.5%
5.	IMMATURE TERATOMA	2	11.1%
6.	TERATO-CARCINOMA	3	16.67%
7.	OTHER MIXED GERM CELL TUMORS	3	16.67%
8.	MALIGNANT GRANULOSA CELL TUMOR	1	5.5%
9.	BIZARRE LEIOMYOMA	1	5.5%
TOTAL		18	100



GERM CELL TUMORS:

Among 18 neoplastic cases,16 cases were of germ cell origin,forming 88.89% of all testicular neoplasms.Out of 16 cases,10 cases were of single cell type and remaining cases were of mixed germ cell type. Seminoma was the most common germ cell tumor comprising of 4 cases, 22.22% of all testicular neoplasms.Average age of the patient was 50 years.

Teratoma comprised 16.67% of all testicular neoplasms.One case was of mature type and other two cases were of immature type.Teratoma component combined with other components were seen in another 5 cases making 27.78% of all testicular neoplasms.

III. Discussion

This study deals with tumors and tumor-like lesions of testis and based total 80 cases recieved in the Department of Pathology, Siddhartha Medical College,Vijayawada, during 5 years period (March 2014-march 2019).

Total number of cases received in each year are variable Rarity and variability of testicular lesions was observed by other authors also.In the present study age distribution of patients, ranges from six months to85 years, age group most commonly involved are 21-40 years of age. Testicularlesions are rarely seen at the extremes of age. These findings confirms wellwith observations of other authors.

In the present study, 45 orchidectomy specimens were sent forexamination, while biopsy was done in 35 cases. Orchidectomy was done in all cases, which were clinically diagnosed as testicular tumors. Both orchidectomyand biopsy procedures were done in clinically diagnosed non-neoplastic lesions .These finding are well correlated with Mostofi's observations that biopsy generally accepted from other sites, is absolutely contraindicated in testicular tumors If a tumor is suspected, the testis must be removed in toto

In the present study, 16 germ cell tumors were reported accounting for8. 89% of all testicular neoplasm Germ celltumors of testis have accounted for 94% of all testicular tumors in the literature of FK Mostofi. In the present study 10 cases, accounting to 62.50% were single cell type this incidence of single cell type is well correlated with FK Mostofi's observations, who madesingle cell type incidence as 60%.

In the present study, seminoma is the commonest germ cell tumorcomprising of 4 cases, that is 22.22% of all testicular tumors. EK.Mostofireported the incidence of 35-71% depending on the type of hospital populationunder study, where as, Anderson's study accounts for 35-45% of all testicular tumor and Juan Rosai study accounts for 30-40%. In the present study, onepatient was 75 years old, another patient 45 years old, while other two patientswere 40 years of age. No case of seminoma was reported before puberty. Allthese clinical findings are comparable to other authors.Grossly in all cases,there was an enlargement of testis, and in one case there was total replacementof testis by tumor (In half the patients the entire testis is replaced by tumorEK.Mostofi).

Mostofi reported that necrosis is infrequent in seminoma, but inpresent study, two cases, 1.e. 50% were showing necrotic areas. The microscopic features of seminoma in present study are similar to the featuresreported in various literatures.

In the present study, only one case of spermatocytic seminoma wasreported. Age of the patient was 55 years. Tumor measures 7x6x5 cms replacing entire testis, and cut section was showing necrosis and haemorrhage.

Microscopic examination showed three types of tumour cell largeintermediate and small cells. Intermediate cells have spireme type of chromatinpattern. Haemorrhage and necrosis was present
Vascular invasion andspermatic cord invovlement was seen

All these features are comparable tothose described by F.K.Mostofi. Microscopic findings are also similar to thefindings discribed by other authors, A. Talerman in 1979, Marc H. Zuckman in1988, and E.K.Mostofi in 1973. Incidence of spermatocytic seminoma rangesfrom 1.7% to 12% of all seminoma in various literature. FK Mostofi in 1973reported 9%, Juan Rosai et al. in 1969 reported 7%, and A. Talerman in 1979reported 4.4%. In present study, the incidence of spermatocytic seminoma is20%, out of total five seminoma cases.

In present study, two cases of Yolk sac tumor were reported Age of boththe patients was two years .Grossly, both cases were showing multiple cysts .
Microscopically, perivascular schiller-duval bodies and hyaline droplets were present in both the cases. These finding are comparable to the findings describedG.Barry Pierce et al. in 1969, AleksanderTalerman and Lawrance M Bothin 1986, F.K. Mostofi in 1973 and Ivan Damjanov in 1978.

In the present study, out of three cases of teratoma, one case was matureTeratoma and two cases were immature teratoma. Gross and microscopicfindings in present study are also similar to as described in literature.

In the present study, incidence of teratoma of testis in pure form is 16.67% of allTesticular neoplasms, and in combination with other histologic type incidence is44.44% of all testicular neoplasms. In the literature, teratoma or less in pureform has accounted for 9% of all testicular neoplasms, and in combination withother histologic type teratoma has accounted for 40% of all testicular neoplasms.

In the present study, six cases, i.e., 33.33% of all testicular tumors werehistologically diagnosed as mixed germ cell tumors. Out of six cases, three caseswere teratocarcinoma, one case was mixed germcell tumor (Teratoma +chorio-carcinoma+Yolk-Sactumor), one case was mixed germ cell tumor(Embryonal carcinoma + Endodermal-sinus tumor), and one case was mixedgerm cell tumor (choriocarcinoma Endodermal sinus tumor). Present study isshowing that teratocarcinoma is the commonest mixed germ cell tumorconstituting 16 67 % of all testicular neoplasm where as, F.K. Mostofi's studyshowed 24% of testicular neoplasms.

In the present study one case, i.e., 5.55% was histologically diagnosed asgranulosa cell tumor, grossly,tumor measured 5x4x4cm with variableconsistency. On cut section tumor was well delineated Microscopically, tumor cells were large with scanty cytoplasm and large nucleus having nuclear groovesThese cells were arranged in sheets, cords and insular pattern Call-Exner bodieswere present. These gross and microscopic findings were also observed by otherauthors.

In present study, six cases were histologically diagnosed as epididymal cysts. All cases were clinically also diagnosed as epididymal cyst, so there is100% corelation between clinical diagnosis and histological diagnosis Nomalignancy was detected in any case These findings are well correlated with other authors

In the present study histopathological diagnosis of non-specific orchitiswas made in 26 cases, i.e, 32.5% of all testicular lesions It was thecommonest histopathological diagnosis made in the study. Microscopically, allcases were showing moderate to dense infiltration of inflammatory cells

Inchronic non-specific orchitis, inflammatory cells were predominantlylymphocytes, whereas in acute non-specific orchitis, predominant inflammatorycells were neutrophils. Abscess formation was seen in some cases of acuteepididymo-orchitis According to the study of GregorMikuz and IvanDamjanov, since, "The inflammation is often asymptomatic and subclinical", thereal incidence and prevalence of non-specific orchitis

are unknown. Descriptivefeatures as mentioned in the present study are perfectly correlated with thedescription mentioned by other authors.

One case was histologically diagnosed as non-specific granulomatousorchitis. Clinical diagnosis of this case was testicular tumorOrchidectomy wasdone in this case. GregorMikuz and Ivan Damjanov in their review studyobserved that 5.1% of presumptive diagnosis of neoplasia turned out to be nonspecific granulomatous orchitis.

Microscopically, there was a diffuse inflammatory infiltrate composed of lymphocytes and macrophages. There weregranulomas composed of epithelial cells, lymphocytes and fibroblasts atperiphery. These findings were also observed by other authors.

Histopathological diagnosis of caseating granulomatous orchitis was made22 cases forming 27.75% of all testicular lesions Microscopically, all thecases were showing presence of granulomas with central caseation bordered byepithelioid cells and in few cases langhans type of giant cells were seenSurrounding this, there was inflammatory infiltrate mainly consisting oflymphocytes, and few neutrophils and plasma cells. Tubercular epididymoorchitis occurs most often in midlle life and is rare in children, as reported byGregorMikuz and Ivan Damjanov These microscopic findings and ageincidence findings well correlates with our present study except in two caseswhere one patient was 6 years old and another 10 years old

In the present study, four cases, 5% of sperm granuloma werediagnosed. Microscopic examination of sperm granuloma was showinggranuloma formation with dense, chronic inflammatory infiltrate in all cases. Inthe center of these granulomas few neutrophils and sperms were seen Kuffer andBuschmann have examined 250 autopsies and found sperm granulomas in 2.6%where as in present study diagnosis of sperm granulomas was made in 5

In the present study, three casesof organising haematoma washistologically diagnosed. All these cases were clinically diagnosed as nonneoplastic lesion Microscopic examination shows blood clot and fatty tissuewith inflammatory cell infiltrate in all three cases. This entity was included inthe tumor like lesions classified according to the WHO classification.

In the present study varieties of neoplastic diseases involving the testis andparatesticular tissue were seen and results are compared with the studies of others.

IV. Conclusion

A prospective and retrospective study of tumors and tumor-like lesionsof testis was undertaken during the period of March 2014-March 2019 (5 years), toevaluate histopathological features of various tumors and tumor-like lesions ofthe testis.

Testicular diseases were relatively rare.Age group most commonly involved was 21-40 years of age. Testicularlesions were rare at the extremes of age .Orchidectomy was done in all cases which were clinically diagnosed astesticular tumors, whereas orchiectomy and biopsy was done inclinically diagnosed non neoplastic lesions.Majority of the testicular lesions were non neoplastic comprising of 62cases (77.50%), out of total 80 cases. Neoplastic lesions were found in 18 cases (22.50%), out of total 80cases. Testicular tumors form an interesting group of malignant neoplasms with many exceptional and even unique epidemiological features.They occur mainly in young and middle aged adults and this suggests that their risk factors are different from those relevant to most epithelial cancers. Despite the major advances there is agap in the knowledge in understanding the origin,pathological process and therapeutics of testicular and paratesticulartumors and tumor like conditions.

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