

ORIGINAL CONTRIBUTIONS

ASSAY OF TESTOSTERONE, FSH AND LH IN SERUM AND SPERMOGRAM IN LEPROSY PATIENTS

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Testicular functions in the form of testosterone, FSH and LH levels in serum by radio-immuno-assays, complete semen examination and a few testicular biopsies were studied in 30 men with leprosy (LL-7, BL-6, BB-1, BT-12 and TT-4). Serum testosterone levels were lowered in all the groups. Serum FSH and LH levels were elevated in lepromatous and borderline lepromatous leprosy. Semen analysis showed oligospermia in LL and BL groups. Lepra bacilli in smears of semen were present in 2 LL cases. Leprous changes were seen in the testicular biopsies.

Key words : Serum testosterone, FSH, LH, Leprosy.

Abnormalities of testicular functions in leprosy have been recognised.^{1,2} Hormonal studies in relation to testicular involvement have been conducted mainly in lepromatous and borderline lepromatous leprosy.^{2-4,6} Decreased plasma testosterone levels have been reported in lepromatous, tuberculoid and borderline groups with raised basal plasma gonadotrophin levels in lepromatous leprosy.⁷

Testicular and epididymal involvement does occur in lepromatous leprosy. Both spermatogenic and androgenic functions of testis are affected. Disturbance of the first is rather earlier than the latter.⁸ Azospermia or oligospermia may occur in lepromatous or borderline lepromatous leprosy.^{9,10} Acid fast bacilli have been demonstrated in the semen,^{11,12} but their number and incidence is very small. Small, firm atrophic testis is present in advanced stages of lepromatous leprosy. Definite histopatho-

logical changes in the testis have been observed by various investigators.^{13,14}

The present study aims at focussing attention on changes in testicular functions in different types of leprosy.

Materials and Methods

Thirty men with leprosy (LL-7, BL-6, BB-1, BT-12, TT-4) were investigated. Their ages varied from 20-45 years. Duration of illness varied from 3 months to 10 years. There was no history of cryptorchism, direct or indirect surgical trauma, senility, mumps, hyperpyrexia or irradiation. Clinical examination of skin and testes was done.

Seminal fluid was collected by masturbation after an interval of not less than three days of abstinence. Sperm counts, motility and morphology were immediately determined. Seminal fluid smears were stained with Ziehl Neelsen stain for acid fast bacilli.

Radio-immuno-assay for testosterone was done by the method of Nieschlag and Loxiaux,¹⁷ and for FSH and LH by the double antibody technique.

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Open testicular biopsy was performed in four cases under local anaesthesia on one testis. Haematoxylin and eosin, and Ziehl Neelsen staining was done.

Results were compared with ten normal controls. None of the patient or control case was taking any hormonal preparation.

Results

Testicular pain and swelling were observed in 6 cases (LL-3, BL-2 and BT-1). Impotence and loss of libido was recorded in 10 patients (LL-5, BL-4 and BT-1). Sterility was present in one BT case. Alteration in secondary sex characters was noticed in 9 patients (LL-6, BL-2 and BT-1). Reduced testicular size was seen in 4 patients (LL-3, BL-1). Gynaecomastia was observed in one BL case.

Complete semen analysis in these cases showed oligospermia in 56.67% cases (LL-6, BL-5 and BT-6). Sperm counts were normal in BB and TT groups. Semen smears showed 1+ to 2+ lepra bacilli in 2 LL cases.

Serum testosterone levels in LL group were 2.19 ± 0.77 ng/ml (mean \pm SE), in BL group 2.54 ± 0.26 , BB 3.5 ng/ml, BT 2.81 ± 0.26 ng/ml and in TT 2.8 ± 0.17 ng/ml. These levels were definitely lower in all the groups than normal controls 5.86 ± 0.43 ng/ml.

Serum FSH levels in LL group were 24.00 ± 5.03 mU/ml (mean \pm SE), in BL 8.86 ± 5.56 mU/ml, in BB 14.00 mU/ml, in BT 1.96 ± 0.20 and in TT 3.31 ± 1.03 mU/ml. These values were significantly raised in lepromatous and borderline lepromatous leprosy than normal controls (5.24 ± 2.02).

Serum LH levels in various groups were : LL 27.31 ± 5.54 mU/ml (mean \pm SE), BL 10.80 ± 5.39 mU/ml, BB 4.15 mU/ml, BT 5.72 ± 0.88 and in TT 4.57 ± 0.46 mU/ml. Serum LH levels were significantly elevated in lepromatous and borderline lepromatous leprosy than normal controls 7.42 ± 2.08 mU/ml (mean \pm SE).

Testicular biopsy was done in four patients (LL-2, BL-1 and BT-1). Fibrosis, sclerosis of seminiferous tubules and lack of spermatogenesis were seen in 2 LL cases. Staining for AFB was positive in one case. Lack of spermatogenesis was seen in BL. There was marked decrease in germ cell population. Normal testicular tissue was present in one BT case.

Comments

Testicular involvement is a common feature of leprosy either frankly lepromatous or at the dimorphous spectrum, or in borderline leprosy in reaction. Significant testicular involvement in tuberculoid leprosy has not been reported.¹¹

Impotency, sterility, alteration in secondary sex characters and gynaecomastia are found in greater frequency in lepromatous leprosy as compared to other types.^{1,4,10} Incidence of oligo/azospermia is more common in lepromatous leprosy.^{7,10} Incidence of oligospermia 85.7% and 83.3% in LL and BL cases respectively corresponded to previous studies. Bacillaemia may occur in tuberculoid leprosy.¹⁶ Oligospermia in 50.0% BT cases can be explained on this basis.¹⁶

Although testes in lepromatous leprosy contain large number of organisms, it has not been shown that they are present in significant number in the semen.^{11,12} Lepra bacilli in semen smears were demonstrated in two LL cases. Histopathological changes in LL and BL cases correspond to previous studies.^{1,2,16}

Low serum testosterone levels in leprosy correspond to the earlier studies.^{3,5} Low levels of serum testosterone in tuberculoid group correspond to previous study.⁷ In tuberculoid group the reason for low serum testosterone levels is unclear. However, subtle Leydig cell dysfunction was evident in tuberculoid subjects without clinical evidence of overt androgen deficiency as shown by basal testosterone levels. This indicates compensated Leydig cell failure

similar to that seen in adult subfertile men with idiopathic testicular failure.⁷

Elevated serum gonadotrophin levels in lepromatous leprosy correspond to previous studies.^{1,5,7} Changes in gonadotrophin levels in BL, BB and BT are not well documented. In one study, normal basal mean plasma FSH levels and raised LH levels in dimorphic group has been reported.⁷ Raised serum FSH and LH levels in BL patients correspond to the changes in hormone profiles, similar to those of LL cases. Serum FSH and LH levels were normal in BT and TT groups. Oligospermia in BT cases without changes in serum FSH and LH levels shows that spermatogenic functions are affected earlier than the androgenic functions.⁸

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