

Leprosy and Female Reproductive Organs¹

Subhash Chander Sharma, Bhushan Kumar, Kamla Dhall,
Surrinder Kaur, Sarla Malhotra, and Meera Aikat²

Leprosy is a multi-system infection. Leprous granulomata have been demonstrated in internal organs like testis, liver, adrenals, lymph nodes, and bone marrow (⁴). Unlike the male reproductive system and studies of hormone levels (^{5,9,11}), the published literature regarding the involvement of the uterus, fallopian tubes, and ovaries and the effect of the disease on the normal physiological functions of the female reproductive system is scanty (^{1,7,8,13,14}). Leprosy has not been found to affect female reproductive physiology (^{7,13,14}), but gross menstrual abnormalities were reported by King and Marks (⁸). Prevention of menstrual dysfunction with early institution of therapy has been reported (³). The present study was undertaken to study the involvement of female genital organs in leprosy and its effect on menstruation, fertility, and menopause.

MATERIALS AND METHODS

Thirty-five female leprosy patients of all ages, irrespective of duration of the disease and treatment, were randomly selected from the leprosy clinic of Nehru Hospital, attached to the Postgraduate Institute of Medical Education and Research, Chandigarh, India. Endometrial biopsies were taken in 26 patients during the premenstrual phase. Biopsies were taken in postmenstrual patients as and when they reported. Paraffin sections were stained with hema-

toxylin and eosin for routine histology and by the Fite-Faraco method for demonstration of acid-fast bacilli. Part of the endometrial tissue was cultured on Löwenstein-Jensen medium to rule out the presence of *M. tuberculosis*. In two patients who had induced abortion at the fourth month of gestation, the products of conception were examined for histopathology.

In six lepromatous (LL) patients having bacillema in peripheral blood smears as demonstrated by the method of Saxena, *et al.* (¹²), menstrual blood was also examined for the presence of *M. leprae* by the same method.

RESULTS

Fifteen patients were of the LL type, nine of the borderline lepromatous (BL) variety, two each of the mid-borderline (BB) and the borderline tuberculoid (BT) types, and seven belonged to the polar tuberculoid (TT) group (¹⁰). Slit smears were positive in all LL and BL patients; the Bacteriological Index (BI) ranged from 6+ to 2+ and the Morphological Index (MI) from 82% to 17%.* The duration of the disease varied from 9 months to 20 years with an average of 6 years. Twenty out of 35 patients (57%) were in the reproductive age group (21–40 years), and nine had already attained menopause.

Menstrual history. All patients had attained menarche between the ages of 12 and 15 years, and the average age of menopause in the nine postmenopausal patients was 47 years. Twenty-seven (77%) patients had or had had regular periods with normal flow (this includes the nine postmenopausal women). Two patients with primary sterility had oligomenorrhea out of a total of four oli-

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² S. C. Sharma, M.D., Ex-Senior Resident in Dermatology; B. Kumar, M.D., Lecturer in Dermatology; K. Dhall, M.D., D.G.O., Assistant Professor of Obstetrics and Gynaecology; S. Kaur, M.D., M.A.M.S., Associate Professor of Dermatology; S. Malhotra, M.D., Lecturer in Obstetrics and Gynaecology; M. Aikat, M.B.B.S., D. Phil., M.A.M.S., Professor of Cytology, Postgraduate Institute of Medical Education and Research, Chandigarh, India. Dr. Sharma's present address is Registrar in Dermatology, Glasgow Royal Infirmary, 84 Castle Street, Glasgow G4 0SF, United Kingdom.

* MI values recorded by other authors are frequently lower. In our experience here and in the experience of one of the authors (S.K.) elsewhere, extraordinarily high MI values may be sometimes recorded in an occasional patient with untreated LL disease or during a relapse.

TABLE 1. *Menstrual cycle.*

Menstrual cycle	No. of cases	% of total
Eumenorrhea	27 ^a	77.2
Oligomenorrhea	4 ^b	11.4
Menorrhagia	4	11.4

^a Includes nine postmenopausal cases who had had eumenorrhea before menopause.

^b Includes two patients with primary sterility.

gomenorrheics, and four patients had excessive flow with irregular cycles (Table 1).

Obstetrical history. Twenty-five patients (68.5%) were multiparous, and five had one child each. Of the remaining six, one was unmarried, three were recently married, and two had primary sterility for the last 12 to 15 years. A gynecological checkup of one of the sterile patients revealed an infantile uterus while in the other no cause could be ascertained (Table 2).

Correlation of onset/exacerbation of the disease with obstetrical and gynecological events. In 21 patients (60%), there was no correlation between the first appearance of symptoms and any gynecological or obstetrical event. In nine patients (25.8%), there was a definite relationship with puerperium, in one each with menarche and menopause, and three (8.6%) had a relationship with pregnancy (Table 3).

Endometrial tissue. Endometrial tissue was available for study in only 17 out of the 26 patients (48.6%) in whom the biopsy was attempted. In all nine postmenopausal women, either no tissue could be obtained or it was not sufficient to be commented upon. In 13, the specimen obtained was in the secretory phase and in four in the proliferative phase. None of the biopsy specimens revealed leprosy granulomata or the

TABLE 3. *Onset or exacerbation of symptoms of leprosy.*

Onset/exacerbation at	No. of cases	% of total
Menarche	1	2.8
During pregnancy	3	8.6
Puerperium	9	25.8
Menopause	1	2.8
No correlation	21	60.0

presence of *M. leprae*. Six weeks' incubation of the endometrial tissue on Löwenstein-Jensen medium did not grow tubercle bacilli. Endometrial washings from the menopausal women revealed no *M. leprae* on smear nor grew tubercle bacilli. Products of conception in the two multiparous patients did not reveal *M. leprae* or leprosy granulomata. Menstrual blood examined in six cases with bacillema failed to show *M. leprae*.

DISCUSSION

The widely prevalent belief that during pregnancy and puerperium lesions of leprosy either appear for the first time or the disease tends to show greater activity has been confirmed by many observers (4, 7, 8, 13, 14). In the present study there was a significant correlation in 14 out of 35 patients (40%) in the first appearance or exacerbation of symptoms of leprosy with menarche, pregnancy, puerperium, or menopause. This can perhaps be attributed to a further fall in the immunity of the patients on account of the added stress of pregnancy and confinement. A high incidence of sterility (56%) and of irregular and scanty menses (35%) have been reported by Fleger, *et al.* (6). On the other hand, in the present study sterility or menstrual disturbances were not found more often than has been previously reported (7, 13) in the population at large.

Leprosy bacilli seem to cross the placental barrier and have been demonstrated in the placenta, in cord blood (14), and in the products of conception (2). On the other hand, histopathological studies on aborted products of conception from two of our patients did not reveal any granulomata or leprosy bacilli. The study reiterates the findings of previous authors (7, 13) in record-

TABLE 2. *Fertility status.*

No. of children	LL	BL	BB	BT	TT	Total
1	1	2	1	—	1	5
2-3	1	3	—	—	—	4
3-10	9	4	1	1	5	20
None	3	—	—	1	1	5
Unmarried	1	—	—	—	—	1

ing normal menarche, menstrual cycles, and fertility in patients with leprosy.

SUMMARY

Thirty-five adult female patients with bacillary positive leprosy were studied to determine its effect on menarche, menstrual cycle, fertility, and menopause. Endometrial biopsies studied in 26 patients showed no evidence of leprosy bacilli granuloma or tubercle bacilli on culture. Menstrual blood examined in six patients with bacillemia did not reveal leprosy bacilli. Products of conception examined from two patients were negative for granulomata or leprosy bacilli. Leprosy was found to have no direct effect on menarche, menstruation, fertility, and menopause.

RESUMEN

Se estudiaron 35 mujeres adultas con lepra y con baciloscopia positiva, para determinar el efecto de la infección en la menarca, ciclo menstrual, fertilidad y menopausia. Las biopsias endometriales estudiadas en 26 pacientes no mostraron evidencias de granulomas bacilares leproso, ni de bacilos de la tuberculosis por cultivo. El examen de la sangre menstrual en 6 pacientes con bacilemia no reveló la presencia de bacilos de la lepra. El examen de los productos de la concepción de dos pacientes tampoco reveló la presencia de granulomas o bacilos de la lepra. No se encontró que la lepra tuviera un efecto directo sobre la menarca, menstruación, fertilidad y menopausia.

RÉSUMÉ

Trente-cinq malades adultes de sexe féminin, présentant une lèpre bactériologiquement positive, ont été étudiés afin de déterminer l'effet de la lèpre sur la ménarqué, le cycle menstruel, la fertilité, et la ménopause. Des biopsies de l'endomètre ont été étudiées chez 26 malades. Ces biopsies n'ont révélé aucun signe de granulomes bacillaires lépreux ou de bacilles tuberculeux à la culture. Le sang menstruel examiné chez 6 malades présentant une bacillémie n'a pas révélé de bacilles de la lèpre. Les produits de la conception examinés chez 2 malades étaient négatifs en ce qui concerne les granulomes ou les bacilles de la lèpre. On en conclut que la lèpre n'a aucun effet direct sur la ménarqué, la menstruation, la fertilité, ou la ménopause.

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