ALOPECIA LEPROSA IN THE UNITED STATES*

by

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Until recently, alopecia due to leprosy has generally been considered very rare or even non-existent. Danielson and Boeck reported that they found no lesions of leprosy in the scalp. Hansen and Looft also did not observe leprosy of the scalp in Norway. Leloir, having studied leprosy in several countries in both hemispheres, considered its involvement of the scalp as very exceptional. Jeanselme says *"La lepre ne fait pas de chauves"* (1).

It has been repeatedly stated by leprologists in this country that leprous alopecia is practically unknown in the United States. Indeed, it has frequently been observed at the National Leprosarium that leprous lesions of the face and neck almost invariably stop at the hair line and do not involve the scalp. Thus it is the rule at the National Leprosarium for patients with complete loss of eyebrows and eyelashes, scanty beards, and considerable diminution of hair of limbs and body to exhibit a thick head of hair.

Hopkins, Denney, and Johansen (2) in a paper dealing with exempt skin areas in leprosy report lesions of the scalp in only 2 out of 302 patients especially studied at the National Leprosarium. The two exceptions were Negroes, in whom the lesions, which were present in the occipital region, did not extend more than 2 inches above the hair line and seemed to have spread by extension of nodules and patches on the nape of the neck.

Therefore it appears that leprous alopecia did not begin to be recognized elsewhere until the Japanese leprologists called attention to this condition in Japan. Of these Mitsuda (3) in 1911 was the first. He found alopecia in 78.6 per cent of the inmates of the Zensei Leprosarium. Tayama and Ishizu (4) also confirmed the frequency of alopecia among Japanese leprosy patients, finding an incidence of 62 per cent among 499 cases. Hayashi (5) in 1933 made a tour of the principal leprosaria in the world and reported that alopecia leprosa existed in other countries but not on the same scale as in Japan, where more than half of the patients were baldheaded. Hayashi found that the condition varied greatly in different places: in the Philippines no cases were encountered among several thousand leprosy patients; in Hawaii there were none

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among 400 non-Japanese and only 1 among 50 Japanese patients; in China there was 1 case in 900; in Java, 11 cases among 321 patients; in Sumatra, 6 cases; in South Africa, 6; in Argentina, 3; and at Carville 5 out of 350 patients.

In their book on leprosy published in 1925 (6) Rogers and Muir said, "The scalp is practically never invaded by lepra bacilli." In the second edition of this book published in 1940 (7) they revise this statement by saying, "Leprous alopecia is not infrequent in China, Japan, and Africa, though it appears to be less common in India." In the third edition, 1946 (8), the opinion is almost completely reversed: "There was formerly an idea that the scalp is seldom afflicted in leprosy. This is owing to its anatomical structure and the fact that lesions tend to be hidden by the hair. Leprous lesions of both neural and lepromatous types are, however, much more common than was supposed."

Recently Urueña (9) observed alopecia due to leprosy in Mexico, and reported finding 18 cases among 380 inmates (4.7 per cent) of the Asilo de Zoquiapan Leprosarium near Mexico City. In 15 of these the denuded area of the scalp was of normal appearance and free from nodules or plaques. In the other 3 cases there was some leprous infiltration of the scalp. Anesthesia of the affected areas, accompanied by positive bacterioscopy and biopsy findings, was demonstrated in most cases.

Ishizu (10) reported the histopathology of alopecia leprosa in 1933. He found that the atrophic loss of hair was due to cellular infiltration of the hair follicles and obstruction of the neighboring capillaries and to the presence of lepra bacilli in such lesions. Mitsuda (3) had described a similar histopathology of the scalp in his cases.

Observation of the present inmates of the National Leprosarium reveals frank and definite alopecia in 10 out of 360 patients in whom the disease is active. In these patients the alopecia was mostly of the alopecia areata variety which is easily distinguished from the common alopecia senilis, and was located in either tempero-parietal region, or the vertex, or was scattered over the greater part of the scalp. Three degrees of baldness were distinguished: first grade (only partial)—3 cases, second grade—3 cases, and third grade (practically complete)—4 cases.

Case Reports

Case No. 1, Reg. No. 173. White male, Greek, 61 years of age, hospitalized for 23 years. The disease is of 35 years' duration and is of a far advanced mixed type. The face shows much scarring and residual

infiltration and nodular lesions in addition to partial paralysis. The nose is deformed from crumbling of nasal cartilages. Vision in both eyes has been destroyed by lepromatous lesions. The eyebrows and eyelashes are missing, and there is practically no beard. Nerve involvement has produced extensive anesthesia, atrophy, and bone absorption of the extremities, with clawing of hands and trophic ulcers of the lower extremities.

The baldness is of relatively recent occurrence and is still of the first grade, involving only the tempero-parietal regions bilaterally. The denuded areas are anesthetic to touch, heat, cold, and pain, but the skin of the bald areas of the scalp is of normal appearance and smooth and elastic in texture. Nevertheless, smears taken in the upper part of the bald areas are positive for acid-fast bacilli.

CASE No. 2, Reg. No. 401. White male, Greek, 68 years of age, hospitalized 20 years. The disease is of 28 years' duration and is of a far advanced mixed type. There is some nodular infiltration of the face with some scarring from previous lepromatous lesions. The ears are nodular with pendulous lobes. Total blindness is due to ocular leprous lesions. There is complete loss of eyebrows and eyelashes while the beard is very scanty. The voice is husky from a leprous laryngitis. Anesthesia, clawing, bone absorption, and ulcerations of the extremities are present.

The alopecia has developed during the period of hospitalization and has gradually progressed. This fact is demonstrated by serial photography. At present alopecia is of the third grade, only a few strands of hair remaining in the temporal and occipital regions. All of the bald areas are anesthetic to heat and cold, touch, and pain sensations. The skin of the scalp is of normal appearance and texture, being freely movable and not unduly thickened. Scalp smears show a moderate number of acid-fast bacilli. Biopsy of the scalp shows an extensive cellular infiltration of lepromatous type with scattered acid-fast bacilli and globi. (See Figures 3 and 4.)

CASE No. 3, Reg. No. 689. White male, American, 51 years of age, hospitalized for 15 years. The disease is of a far advanced mixed type and of 20 years' duration. There are considerable scarring and infiltration of the face. The ears are deformed by scarring. Leprous nasal deformity is present and laryngeal involvement is revealed in the tone of the patient's voice. Complete loss of eyebrows and eyelashes has occurred. The beard is scanty and the hair of limbs and body is greatly diminished. There is loss of vision in one eye and greatly diminished vision in the other, the result of leprous keratitis and corneal opacities. Neurotrophic changes of leprous origin have resulted in anesthesia, atrophy, and bone absorption of extremities. One leg has been amputated because of gangrene of the foot, secondary to leprosy.

There is generalized alopecia involving almost the entire scalp. Few patches of hair remain in parietal and occipital regions. The skin of the denuded scalp is smooth and glistening, showing no clinical evidence of leprous involvement. Yet thermal anesthesia is found over the entire scalp, and anesthesia to touch is found over the vertex and in the frontal region. Analgesia for pin-prick is present over the frontal area. Smears taken over the vertex of the scalp are positive for acid-fast bacilli, although the bacteria are present in small numbers.

FIGURE 1 - Case 939

Low power x 100. Hematoxylin-eosin stain. Histopathology of scalp showing leprous granulomatous infiltration.

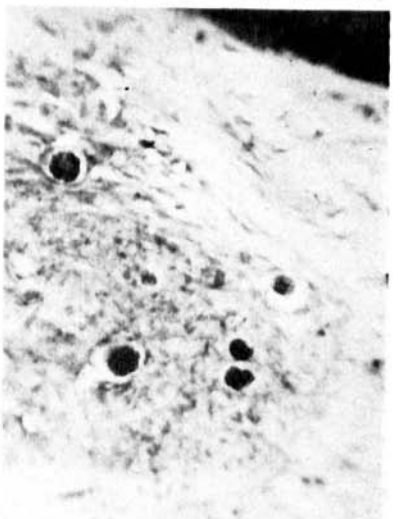

FIGURE 2 - Case 939

High power x 300. Ziehl-Neelsen stain. Same section showing acid-fast bacilli free and in globi.

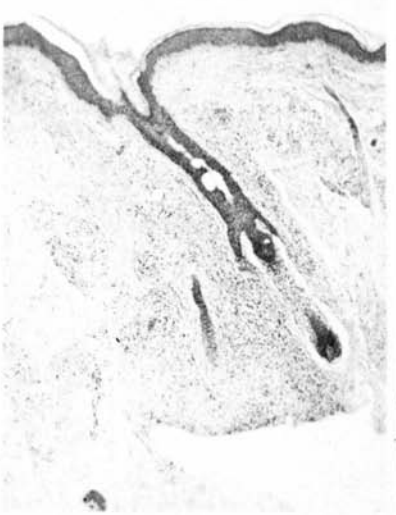

FIGURE 3 - Case 401

Low power x 100. Hematoxylin-eosin stain. Histopathology of scalp showing leprous granulomatous infiltration around hair follicle.

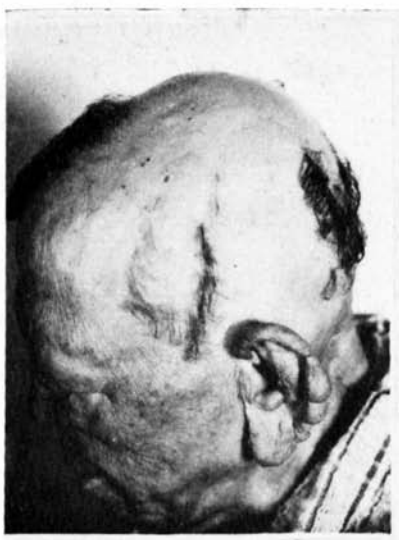

FIGURE 4 - Case 827
Second grade alopecia leprosa. Photograph on admission to hospital 13 years ago showed thick head of hair.

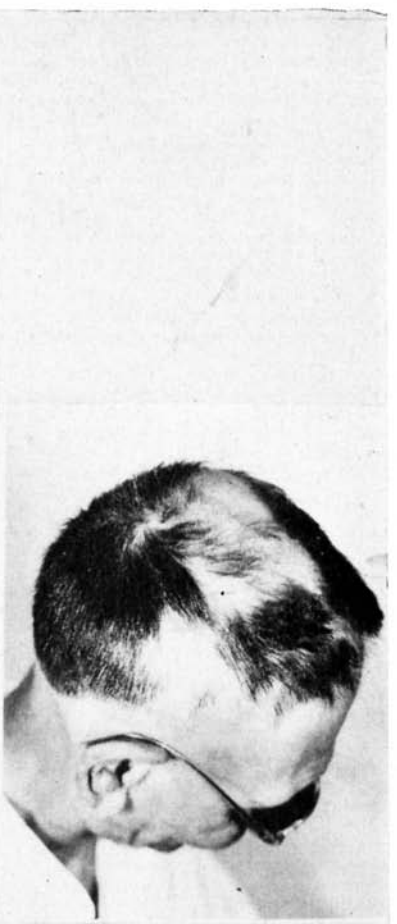

FIGURE 5 - Case 401
Third grade alopecia leprosa.

CASE No. 4, Reg. No. 795. White male, Greek, 53 years of age, has had leprosy for 15 years. He has been hospitalized for 14 years, and the disease is far advanced and of a mixed type. There is residual infiltration of the face and some scarring. Total blindness has resulted from ocular leprosy. The voice indicates a leprous laryngitis. Nasal and buccal leprosy is also present. There is complete loss of eyebrows and eyelashes and almost complete loss of beard. Anesthesia, clawing, and bone absorption have occurred in the extremities.

Alopecia is almost total. Only a rim of hair surrounds both ears. The skin of the scalp is thin, smooth, and elastic. Complete anesthesia is demonstrable for tactile, thermal, and pain stimuli. Scalp smears taken in the occipito-vertex region show a few scattered acid-fast bacilli.

CASE No. 5, Reg. No. 796. Negro male, Jamaican, 52 years of age, hospitalized 9 years. The disease is of 10 years' duration and is far advanced and of the mixed type.

There is a nodular, leonine countenance with nodular ears and saddleback nose. Leprous keratitis has greatly impaired the sight of both eyes. A husky voice indicates leprous laryngitis. Eyebrows and eyelashes are missing, and the hair of the beard is very sparse. Anesthesia, atrophy, bone absorption, and ulcerations involve upper and lower extremities.

Alopecia of areata type is present in tempero-parietal, occipital, and frontal regions. It has occurred gradually during the period of hospitalization. There is visible infiltration of the scalp in the form of brownish, elevated, macular lesions. Anesthesia to tactile, thermal, and pain sensations is demonstrable. Skin smears of the scalp in denuded areas show numerous acid-fast bacilli with a moderate number of globi.

CASE No. 6, Reg. No. 827. White male, American (Louisiana Acadian), 61 years of age. The disease is far advanced and lepromatous, and is of 19 years' duration. The period of hospitalization is 13 years. There is marked nodular infiltration of the face of the preleonine type with large nodular ears. Early leprous keratitis has diminished vision. There is almost complete loss of eyebrows and eyelashes and the beard is scanty. Alopecia is patchy, of the second grade type, and located mainly in the tempero-parietal and frontal regions. Photographs show that onset of alopecia post-dates admission to the hospital.

Clinically the scalp is of normal appearance, and no anesthesia is demonstrated for either thermal, tactile, or pain stimuli. However, smears of alopecia areas show acid-fast bacilli. (See Figure 5.)

CASE No. 7, Reg. No. 862. White male, Jugoslavian, 60 years of age, has far advanced lepromatous leprosy. The disease is of 23 years' duration and the patient has been hospitalized for 13 years. There is generalized infiltration of the skin of the face, body, and limbs, and nodular ear lobes. Leprous rhinitis and leprous laryngitis are of a severe grade.

There is almost complete loss of eyebrows and eyelashes. The beard is scanty and the hair of limbs and body greatly diminished.

Baldness of second grade has developed over the vertex, parietal, and occipital regions. There is no anesthesia to touch, pain, or thermal sensations in these areas. The denuded scalp appears slightly thickened and infiltrated and is brownish in color.

Smears of the alopecia area show numerous acid-fast bacilli and globi.

CASE No. 8, Reg. No. 872. White female, 51 years old, a native of the British West Indies. She has been hospitalized for 13 years for leprosy of 16 years' duration. The disease has reached an advanced stage and is of the mixed type. There is much infiltration and scarring of the face. The nose has caved in, and the ears are nodular. Leprous keratitis with corneal opacities has almost completely destroyed the vision of both eyes. Leprous laryngitis announces itself in the patient's husky voice and spasmodic attacks of asphyxia.

There is complete loss of eyebrows and eyelashes, and hair on limbs and body is scanty. Neural lesions have produced anesthesia, atrophy, clawing, and bone absorption of hands and feet.

Early alopecia areata of bilateral occipito-parietal distribution has developed during the period of hospitalization. The skin of the scalp in the involved areas is of normal appearance, but there is complete anesthesia to touch, pain, and heat and cold. Scalp smears show scattered acid-fast bacilli.

CASE No. 9, Reg. No. 939. White male, Mexican, 55 years old, hospitalized 12 years for leprosy of 14 years' duration. The disease is of the far advanced lepromatous type.

There is gross nodulation and infiltration of the face, producing leonine features. Laryngeal involvement is suggested by the husky voice. There is almost complete loss of eyebrows and eyelashes and partial loss of beard.

The alopecia is of second grade involvement, occupying the vertex of the scalp and extending in bands down the frontal region. This baldness has developed during the period of hospitalization. The involved scalp is strewn with small nodular lesions and seems otherwise thickened. There is no definite anesthesia to touch, pain, or thermal sensations. Smears of the vertex of the scalp show numerous acid-fast bacilli and many large and small globi. Biopsy of the scalp shows a lepromatous type of cellular infiltration and the presence of lepra bacilli free and in large and small globus formation. (See Figures 1 and 2.)

CASE No. 10, Reg. No. 1448. White male, Mexican, 45 years of age. He has far advanced leprosy of the Lazarine type. Duration of the disease is 11 years, and period of hospitalization 4 years. There is partial facial paralysis and some scarring and small ulcerations of the face. The tip of the nose is sunken from leprous destruction of nasal cartilages. Small necrotic lesions, producing ulcers and healing by deep cicatrices, are scattered over the four extremities. Anesthesia, atrophy, and contractures of extremities are present.

Eyebrows and eyelashes are completely missing, and only a few scattered hairs of beard and mustache remain. Baldness was present on admission but has become more extensive. At present it is almost complete, with patches of hair persisting only in occipital region. The skin of the scalp is entirely normal in appearance, and anesthesia to pain, touch, and thermal stimuli cannot be demonstrated.

Skin smears of the scalp are, nevertheless, positive for acid-fast bacilli, although these bacilli are rare.

Comments

Ten cases of alopecia leprosa among 360 patients (2.86 per cent) at the National Leprosarium show that this condition is not uncommon. In 9 of these cases the disease was found to be of the lepromatous type and of a far advanced stage. The majority of these cases showed definite neural involvement with resultant deformities and disabilities and so could be classified as mixed leprosy according to the latest Cairo Conference classification. One patient exhibited the clinical manifestations of the so-called Lazarine leprosy. The writer recalls two similar cases of Lazarine leprosy in patients who recently died at the National Leprosarium, in whom almost complete alopecia was a conspicuous feature.

In 7 of the 10 cases at the National Leprosarium the scalp was clinically of normal appearance. In the other 3 cases leprous lesions of the scalp were found, nodules in one and diffuse infiltration in the other two.

In every case it was found that the alopecia either developed during the period of hospitalization or became more extensive during that time. The disease was of more than 10 years duration in every case, and the patients had been hospitalized from 4 to 23 years for an average period of 13½ years.

Anesthesia to touch, heat, cold, and pin-prick was encountered in 5 of the 10 cases. Paradoxically two of the three cases showing clinical manifestations of leprosy of the scalp presented no neurological abnormality of the involved area. It was generally found that the neurological changes occurred in cases of alopecia of longer duration and were absent in the recent ones.

Bacteriology was positive in all cases, 3 showing numerous bacilli and globi, 3 moderate numbers of bacilli, and 4 rare bacilli.

Racial distribution showed 3 Greeks, 2 Mexicans, 2 Americans, 2 British West Indians (one white and one negro), and 1 Jugoslav. The sex distribution was 9 males and one female. The patients' ages varied from 45 to 68 years.

There was more or less complete loss of eyebrows and eyelashes in every case. Total blindness occurred in 3 patients, and 3 others had diminished vision as a result of leprous keratitis. Leprous laryngitis was present in 7 patients. Five had nasal deformities.

Bone absorption, clawing, atrophy, and other neurotrophic deformities of extremities were present in 7 cases. Ulceration, leprotic or trophic in nature, occurred in 7 patients.

From the above data the extent and severity of the disease is evident in the patients who developed alopecia leprosa.

Conclusions

Alopecia is not a rare complication of leprosy in the United States. The presence of 10 definite cases among 360 patients (an incidence of 2.86 per cent) demonstrates this fact.

Alopecia leprosa occurs mostly in far advanced lepromatous disease of long duration.

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