

THE RELATION BETWEEN THE LUCIO PHENOMENON AND CUTANEOUS ALLERGIC VASCULITIS (RUITER)

REPORT OF TWO IMPORTED CASES OF NECROTIZING VASCULITIS IN LEPROMATOUS
PATIENTS SEEN IN THE NETHERLANDS

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Pure diffuse lepromatous leprosy is a clinical variety of lepromatous leprosy, first described by Lucio and Alvarado (¹³). This variety is common in Mexico, although there are regional differences in frequency. Most of these patients show, within 3 to 4 years after onset of the disease, peculiar reactions called the Lucio phenomenon. This phenomenon is characterized by the appearance of crops of purpura, some of which spots show a central, superficial necrosis or bullae, followed by ulceration. The ulcers heal quickly with irregular shaped, "cigarette paper tissue" scars ("onion-skin scars").

The Lucio phenomenon has been studied extensively by Latapi and Chevez Zamora (^{10,11}) in Mexico, where pure lepromatous leprosy is common (²⁰). They concluded that the lesions are produced by a necrotizing vasculitis, caused by synergic sensitization to *M. leprae* and some microorganism of secondary infection. The histology of the Lucio phenomenon has also been studied by Martinez Baez (¹⁵).

Cases of Lucio's diffuse leprosy have also been reported from certain other Latin-American countries, especially Costa Rica (Romero *et al.* (¹⁷)). Individual cases have been recorded from Brazil (Furtado (⁶)), and from Argentina (Fiol and Jonquieres (⁴)).

The first case reported outside Latin America was in a Mexican born in the United States, described by Obermayer *et al.* (¹⁶). Arnold and Sloan (¹), in Hawaii, reported a case in a Portuguese-Hawaiian girl. Garcia Perez *et al.* (⁷) described a case which resembled the Lucio phenomenon in a patient in Spain. Derbes *et al.* (²) have published a case in a North American Negro.

According to Dharmendra (³), "diffuse" leprosy occurs in India, but the Lucio phenomenon is not seen. However, Job and Gault (⁹) have recently described from there a case with bullous reactions resembling the Lucio phenomenon.

Ross Innes (⁸) states that some cases which resemble the Lucio phenomenon are being studied at Sungei Buloh, in Malaya, and also

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that diffuse lepromatous leprosy is common in Sarawak and examples of the Lucio phenomenon "are not wanting." Confirmation of this opinion is lacking; it is possible that severe cases of erythema nodosum leprosum may be mistaken for the Lucio condition.

In Netherlands New Guinea, pure diffuse lepromatous leprosy is not common. Leiker saw only a few cases which were clinically and histologically of the pure diffuse variety, but the Lucio phenomenon was never seen. At a recent visit to Nigeria, on which occasion several thousands of patients were examined, Leiker did not find a single case of pure, primary diffuse lepromatous leprosy, and failed to obtain positive information about Lucio cases from local physicians. The Lucio phenomenon is said not to be restricted to pure primary diffuse leprosy, but is common also in other diffuse lepromatous cases⁽¹⁰⁾.

In recent dermatology literature much attention is paid to clinico-pathologic entities with cutaneous manifestations caused by vasculitis. Ruiter⁽¹⁸⁾ suggested the name "allergic cutaneous vasculitis" for a group of these entities in which the pathologic changes are predominantly limited to the skin, and characteristic histopathologic vascular changes are found. These cutaneous eruptions have been described under various names, as Finkelstein's acute hemorrhagic edema, purpura rheumatica, purpura abdominalis Henoch, "trismus de Gougerot," and Miescher's leucocytic hemorrhagic microbids. Cases of parapsoriasis guttata acuta varioliformis (Much-Habermann) may also belong to this group.

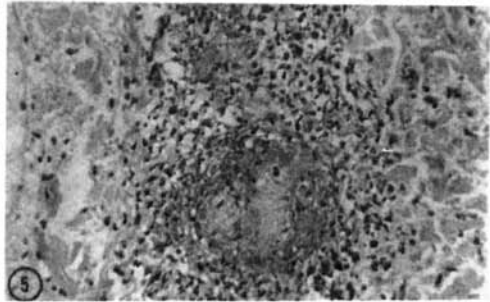
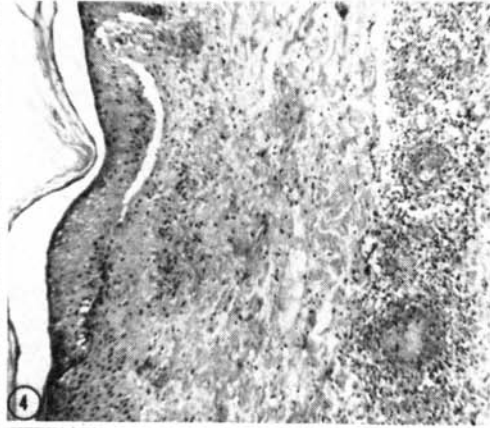
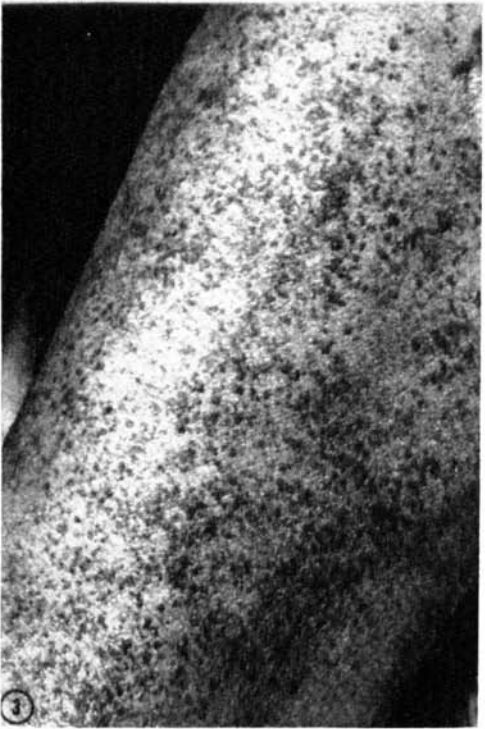
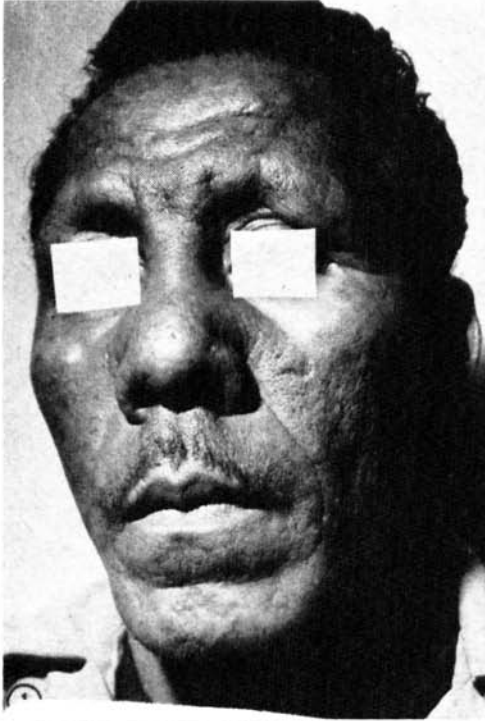
Clinically, Ruiter emphasizes in his clinical concept: (a) a more or less clear tendency toward cutaneous hemorrhages; (b) healing in a number of cases, leaving small superficial scars; and (c) the presence of an urticarial component. Histopathologically, characteristic vascular changes are seen.

McCarthy and Kesten⁽¹⁴⁾ offer the suggestion that cutaneous arteriolitis, dermatitis nodularis necrotica, pyoderma gangrenosum, hypersensitivity angiitis, allergic granulomatosis with asthma, and Wegener's granulomatosis represent varying degrees of allergic vasculitis.

PRESENT REPORT

The two lepromatous patients described in this article show an allergic vasculitis with a different clinical picture.

CASE 1. S., male, age 42, Ambonese, arrived in the Netherlands from Indonesia in 1951. In 1958 he was diagnosed as having lepromatous leprosy. The face (Fig. 1) showed diffuse, symmetrical infiltration. The eyebrows were absent. Hands and feet were swollen. The appearance of the skin of the lower legs was glossy. On careful inspection, slight diffuse infiltration of the skin of the whole body was found. Apart from a few small, lichen rubber-like lesions on the dorsum of the wrist and a few small, slightly raised nodules on the cheek, the infiltration was diffuse. The patient was unable to state when the condition had started, since he had taken hardly any notice of the slight infiltration until it became gradually more marked.



The right ulnar nerve was moderately enlarged, the left ulnar only slightly; other nerves were almost normal. Smears from several sites of the body were strongly positive for bacilli, with many globi. The Mitsuda reaction was negative, measuring only 1 mm. The red cell sedimentation rate was 84 mm.

Serologic tests for treponematoses: Wassermann 1/16 positive, Kline positive, VDRL 1/4. The patient had suffered from yaws in childhood. In 1957 the patient had a mild tuberculous infection of the left upper apex, which soon subsided under treatment.

The general condition on admittance to the Heidebeek Leprosy Sanitarium was good. The patient was treated with DDS, the dosage being slowly built up to 600 mgm. weekly. No complication was observed during the first year of treatment, and the dose was then increased to 1 gm. weekly.

On Feb. 25, 1960, 1½ years after beginning of treatment, numerous red spots suddenly appeared on both the arms and the legs, and a few spots were also seen on the trunk. Most of the spots were small, 2 to 3 mm. in size (Fig. 2), but larger lesions, ½ to 3 cm. in size, were found on the feet and lower legs (Fig. 3). At first the lesions were under pressure. The temperature was increased to 38.5°C. The patient complained of joint pains in the legs, and the large joints were slightly swollen.

In the centers of the larger lesions, which were irregularly shaped, hemorrhagic blisters appeared after a few days. The area around the blisters darkened, and around the dark zone a small erythematous zone was seen. The blisters ulcerated superficially, and the ulcers healed with a dark, paper tissue scar within 2 to 3 weeks. The E.S.R. was 124 mm. The antistreptolysin titer was 2,400 U. A skin specimen was removed for histologic examination at this time.

In the next 6 weeks several new crops of purpuric lesions appeared. On March 19, 1960, the patient complained of abdominal pain. The stools contained macroscopic blood. At the same time a new purpuric eruption appeared on the skin.

The patient was then treated with 800,000 U Combielline daily, followed by 1.5 gm. of Terramycin daily for 10 days. On April 11, 1960, all lesions were healed and no new lesions have appeared since then. The antistreptolysin titer decreased from 1,000 U (4/26/60) to 450 U (6/7/60).

In the second half of 1960 his lung tuberculosis relapsed, but soon subsided again under treatment with PAS, INH and streptomycin. Leprosy treatment was continued with 2 gm. DPT daily. Apart from a moderately severe ENL reaction, the patient did not show any further complications.

Histopathology.—The specimen examined is a small lesion on the lower arm. In the upper and medium parts of the dermis there is an extensive vasculitis, surrounded by lepromatous granuloma (Figs. 4 and 5).

Many blood vessels contain thrombi. The endothelial cells are swollen. The walls of the vessels are thickened, infiltrated with polymorphonuclear leucocytes, and show fibrinoid deposit. The vessels are surrounded by edema, swollen fibroblasts, many round cells, some poly-

DESCRIPTION OF PLATE

FIG. 1.—*Case 1, face.* Advanced, rather diffuse lepromatous leprosy with complete symmetrical loss of the eyebrows. A few small nodules are seen on the cheek.

FIG. 2.—*Case 1, right foot.* Large, irregularly-shaped hemorrhagic spots with central bulla.

FIG. 3.—*Case 1, right arm.* Innumerable small, slightly raised, hemorrhagic spots.

FIG. 4.—*Case 1, photomicrograph.* Many vessels show a vasculitis, and are surrounded by lepromatous infiltrate.

FIG. 5.—*Case 1.* A higher-power photomicrograph of the largest blood vessel in Fig. 4, showing the fibrinoid deposit in the wall, edema, and infiltration of polymorphonuclears, degenerated nuclei of leucocytes, and a few eosinophilic leucocytes. (Hematoxylin-azophloxin.)

morphonuclear leucocytes and degenerated nuclei of leucocytes, and a moderate number of eosinophilic leucocytes are also present. In several parts of the upper dermis, accumulations of extravascular erythrocytes are seen.

CASE 2 .V., male, age 39, Indo-European, arrived in the Netherlands from Indonesia in 1946. The first symptoms of leprosy appeared in 1943, when he complained of dryness and slight painfulness of the skin of the face, and of burning feet; also, some not very conspicuous red macules were noticed on the face. The diagnosis of lepromatous leprosy was made in 1944, when the patient complained of congestion of the nose and paresthesia of the hands.

When he arrived in the Netherlands, the face was slightly reddened and slightly infiltrated (Fig. 6). The eyebrows were almost completely lost on both sides. Beard and moustache were only slightly developed. The auricular nerves were moderately enlarged. On both arms and legs (Fig. 7) there were a few bluish-red infiltrates. The back was covered with faint, symmetrical, partly coalescing, brownish-red macules. The ulnar and peroneal nerves were moderately enlarged. Sensitivity for temperature was disturbed on extensive areas of the arms, legs and trunks. Sensitivity for pain and light touch were disturbed to a lesser degree. Smears from the ears, cheek and nose were strongly positive. E.S.R. 24/60. Serologic tests for treponematosis were negative. Urine: urobilin 1+. Mitsuda reaction: negative.

A biopsy specimen was taken at that time showed the following changes: Epidermis slightly atrophic. In the dermis there were extensive infiltrates around the blood vessels and the appendages, and around nerves. The infiltration forms broad bands which sometimes coalesced, and were separated from the epidermis by a free zone. The infiltrate consisted mainly of Virchow cells, histiocytes and a moderate number of round cells. The nerves were not infiltrated. Fite-Wade stain: abundant acid-fast bacilli, with many globi.

Sulfone treatment was started in 1947, as a result of which the patient gradually improved and became bacteriologically negative in 1954. During this time he experienced some ENL reactions. However, between 1954 and 1959 he took DDS very irregularly, and in 1959 smears from both ears were positive again.

On May 11, 1960, the patient was seen with swollen left foot and enlarged lymph nodes in the left groin. A small sequestrum was removed from the fifth toe, and three injections of 600,000 U of PAM were given. The ulcer healed within a few weeks.

On August 8, 1960, the patient reported with a trophic ulcer of the right fifth toe. He stated that he had taken DDS regularly again for the last 6 months. On December 3, he had an accident with his motorbicycle. The injured part of the right tibial area became infected. His left leg was slightly swollen, and a few days later also the right leg, and the fingers became slightly swollen. He complained of pain in the wrists, felt ill and feverish "like malaria."

When seen again on Dec. 19, 1960, the patient exhibited a few erythema nodosum-like nodules that had appeared on the extremities. He was treated with a few injections of Fuadin. One week later red spots appeared on his legs. On December 28 the ulcer over

DESCRIPTION OF PLATE

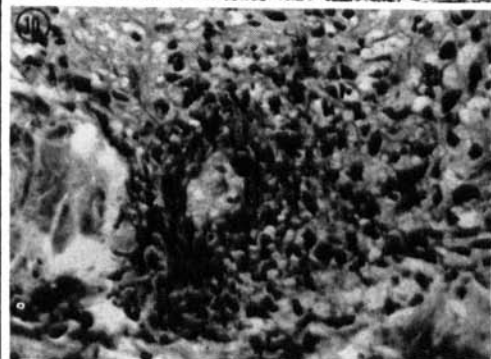
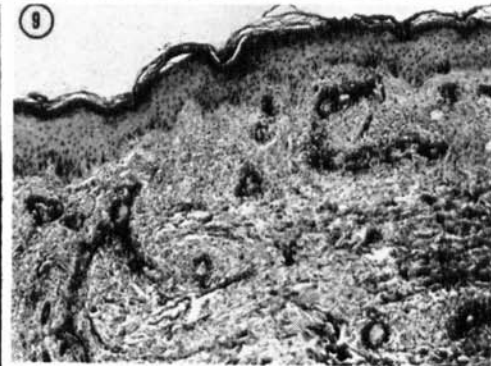
FIG. 6.—Case 2, face. Diffuse lepromatous infiltration, with loss of eyebrows but without nodule formation. The lesion on the chin is an old, nonspecific scar.

FIG. 7.—Case 2, lower extremities. Numerous lesions of varied aspect, including capriciously-shaped hemorrhagic spots on the lower legs, with central necrosis.

FIG. 8.—Case 2, lower leg. Marmorated aspect of eruption.

FIG. 9.—Case 2. Photomicrograph showing vasculitis in cutis and upper part of subcutis, with small conglomerates of Virchow cells. (Iron-hematoxylin.)

FIG. 10.—Case 2. Photomicrograph of a large vessel with fibrinoid deposit in the wall, and infiltrate of lymphocytes, polymorphonuclears and nuclear debris, surrounded by edema and small conglomerates of Virchow cells. (Iron-hematoxylin.)



the left tibia was still 2 to 3 cm. in size, slightly purulent, and surrounded by a zone of inflammation. Numerous diffuse erythematous spots were seen on both legs. Many spots had a darker violet center. The spots were capriciously shaped; some were linear, but others were triangular or Z-shaped, and had spurs which seemed to touch others and which produced a reticular, marmorated aspect of the legs. An indication of a diffuse reticular network was also seen on the nates. The spots, which were painful, varied in size from a few millimeters to 6 cm. (Fig. 8). The lighter spots disappeared under pressure, but darker lesions did not.

The patient did not feel very ill, at least not enough to cause him to stay in bed. E.S.R. 61/94. White blood cell count 11,500; erythrocytes 3,890,000. Hemoglobin, 80 per cent. Antistreptolysin titer, 600 U. The Medina reaction was negative, but the test was made rather late. Smears were still positive (1+). A biopsy specimen taken at this time is described below.

The patient was treated with 1.5 gm. of Terramycin daily for 10 days. The reaction subsided gradually, and there were no relapses. On Jan. 3, 1961, the antistreptolysin titer was still 600 U, and the E.S.R. was 58/91. On Jan. 21 the spots had almost disappeared, leaving only some hyperpigmented, paper-tissue scars. The antistreptolysin titer was further decreased, to 450. Leucocytes, 8400; E.S.R., 14 mm.

Histopathology.—The specimen was taken from the center of a large, dark lesion on the right lower leg. The epidermis shows some hyperkeratosis, intra- and inter-cellular edema, and part of the papillae have disappeared. The contact between basal layer and dermis is partly lost, and in these places some leucocytes are noticed. The upper part of the dermis shows edema and conglomerates of extravascular erythrocytes. Many vessels in the upper dermis are wide, and capillaries show fibrinoid thrombi and leucocytes in the lumens; others have fibrinoid deposits in the vessel walls, and the endothelial cells are swollen. Around these vessels there are edema and moderate round cell infiltrates with polymorphonuclear leucocytes.

In the deeper parts of the dermis and in the subcutis some larger vessels show thickened walls with fibrinoid deposit (Figs. 9 and 10). In and around the vessels, the infiltrate consists of lymphocytes, polymorphonuclear leucocytes, broken-down nuclei of polymorphonuclears, and a few eosinophilic leucocytes.

In the subcutaneous fat a moderately extensive infiltrate of predominantly round cells is seen.

DISCUSSION

Lucio and Alvarado (¹³) described the skin lesions as follows: The patient complains suddenly of pain and burning sensations of the skin. At the same time a bright red, hard nodule or indurated spot, pea-sized, elongated and painful on pressure, is seen. In the center appears a dark red or violet spot which increases in size within a few hours. Spots may also appear without the preceding induration. The spot is surrounded by a bright-red zone. The dark color of the center does not disappear under pressure, contrary to the surrounding zone. The spots become elongated, linear, circular or like veins in marmor. The size varies between 3 mm. and 2.5 cm.

This description would fit well the group of allergic cutaneous vasculitis. In cutaneous allergic vasculitis (Ruiter and Hadders⁽¹⁹⁾), vascular changes are mainly found in the subpapillary and reticular strata. In most cases the exudative change consist of accumulation of PAS-positive fibrinoid material in the vessel walls, which are thickened. Polymorphonuclear leucocytes and lymphocyte-like cells occur in the vessel walls proper, but even more so perivascularly. Eosinophilic leucocytes are also found. Nuclear disintegration of leucocytes is a prominent feature. The endothelial cells are swollen, and the lumens are narrowed. Microorganisms cannot be demonstrated. Generally speaking, the vascular changes everywhere are of about the same age. The occurrence of exudative and clearly reparative processes, as in periarteritis nodosa, is not observed.

The Lucio phenomenon and allergic vasculitis have very much in common histologically (Frenken⁽⁵⁾). In the Lucio phenomenon the vascular changes are seen mostly in the deeper levels of the dermis. In allergic vasculitis some of the deeper vessels may be involved. The deposit of fibrinoid material in the vessel wall has not been described in the Lucio phenomenon. It is not always very obvious after hematoxylin-eosin staining. It is usually visible after hematoxylinazophloxin staining. Ruiter advocates PAS and Heidenhain iron hematoxylin staining.² In a slide from the Lucio case reported by Derbes *et al.* we noticed the fibrinoid deposit.

The course of the Lucio phenomenon and of cutaneous allergic vasculitis is fundamentally the same. Latapi has expressed the opinion that other microorganisms than the leprosy bacillus play an important role in the Lucio phenomenon, although it is not the direct cause of the vasculitis. He speaks about synergic sensitization to *M. leprae* and microorganisms from foci of secondary infection. Patients with the Lucio phenomenon recover after antibiotic treatment.

Ruiter states that, etiologically, an allergic or related manifestation, although not established, should be considered. Microbes are likely to play the most important part in this condition. Examination often reveals the presence of an infective focus.

Our two patients show, clinically and histopathologically, somewhat different pictures. Clinically, the first patient showed many small spots not typical for the Lucio phenomenon, but the larger spots on the legs are much like that condition. Histologically, the vascular changes are mainly localized in the middle and upper parts of the dermis. However, the biopsy specimen was taken from a small lesion, and not from a larger spot.

The clinical picture is in agreement with allergic vasculitis, and the

²Mallory's phosphotungstic hematoxylin stain, after Zenker fixation, demonstrates fibrinoid material (as it does fibrin itself), exceptionally well.—EDITOR.

initial urticarial element was also noticed. Intestinal hemorrhages have been described in allergic vasculitis, but never in Lucio leprosy.

The clinical symptoms in the second case are much more typical of the Lucio phenomenon—red, purpuric, capricious, painful spots in different stages of evolution. The negativity of the Medina reaction is not conclusive, since the test was done in a rather late stage of the disease.

Histopathologically the changes in the second case do not differ from the description of the Lucio phenomenon. Here the vasculitis is mainly situated in the middle and deeper parts of the dermis, and in the upper part of the subcutis. The biopsy specimen was taken from a typical lesion. However, the histologic picture is also in complete agreement with some forms of allergic vasculitis.

The nodules seen just before the outbreak of purpura may equally well represent the initial indurated nodules mentioned by Lucio, as well as the urticarial element mentioned by Ruiters. At the time these nodules appeared we thought that the patient had a mild erythema nodosum leprosum, and we took no special notice of the peculiarities of the nodules.

In the first patient we did not find any source of infection, but the raised antistreptolysin titer points to an infection with streptococci. Besides, the reaction subsided after antibiotic treatment. In the second case the source of infection was apparent, the antistreptolysin titer was raised, and antibiotic treatment was also successful.

The first case is doubtless a cutaneous allergic vasculitis, but we should like to emphasize some similarities with the Lucio phenomenon. The second case is also a typical cutaneous allergic vasculitis, but here the similarity with the Lucio phenomenon is so striking that one is forced to include the Lucio phenomenon in the group of cutaneous allergic vasculitis.

One of the peculiarities of the Lucio phenomenon is that it occurs only in lepromatous leprosy. It has been the normal development in pure primary lepromatous leprosy in Mexico. It seems that it happens only in those cases of leprosy with diffuse infiltration and many bacilli in and near the vessel walls. At present, cases of the Lucio phenomenon have become scarce in Mexico⁽¹²⁾. This may be due to the fact that the second factor necessary to elicit the phenomenon, i.e., secondary infection with certain microorganisms, has become less frequent due to the introduction of antibiotics, combined with more protection against infection by improved general conditions. It is also possible that sulfone treatment changes the conditions necessary to develop the phenomenon^(10, 11).

Although the pure primary diffuse form of leprosy is uncommon in many endemic leprosy areas, it is strange that the Lucio phenomenon has seldom been seen in other diffuse leprosy cases in these countries.

It is possible that a third, unknown factor is involved.

It is hoped that further study of other cases of allergic vasculitis in lepromatous patients may contribute to elucidate the still unknown mechanisms in allergic vasculitis.

SUMMARY

This is a report of two imported cases, seen in the Netherlands, of rather diffuse lepromatous leprosy with cutaneous allergic vasculitis (Ruiter). Emphasis is laid upon similarities with the Lucio phenomenon.

The first patient, a native of Indonesia, showed diffuse infiltration and several small nodules on the face. After a year of treatment with DDS, numerous erythematous and purpuric spots appeared abruptly on the extremities and body, accompanied with fever and symptoms of arthritis. Some spots had bullous necrotic centers, which subsided in a few weeks with superficial healing. An elevated antistreptolysin later suggested the existence of a secondary infection.

The second case, in a Hollander born in Indonesia, had diffuse lepromatous leprosy which was irregularly treated since 1947. An accidental injury caused an ulceration of the leg which became secondarily infected, with high fever and symptoms of arthritis. Shortly thereafter painful spots, capriciously typical of the Lucio phenomenon, appeared on the extremities.

The histopathologic preparations from both patients obtained from the lesions described showed, in addition to the features of lepromatous leprosy, the picture of allergic vascularitis.

Both cases responded well to antibiotic treatment.

The relationship between cutaneous allergic vasculitis (Ruiter) and the Lucio phenomenon is discussed.

RESUMEN

Esta es la presentación de dos casos importados, observados en Holanda, de lepra lepromatosa bastante difusa con vasculitis alérgica cutánea (Ruiter). Se hace hincapié en las semejanzas que hay con el fenómeno de Lucio.

El primer enfermo, natural de Indonesia, revelaba infiltración difusa y varios nodulillos en la cara. Al cabo de un año de tratamiento con DDS, aparecieron súbitamente en los miembros y el cuerpo numerosas manchas eritematosas y purpúricas, acompañadas de fiebre y síntomas de artritis. Algunas manchas tenían centros esfacelados y flictenulares que desaparecieron en algunas semanas con cicatrización superficial. La elevación subsiguiente de la antiestreptolisina sugirió la existencia de una infección secundaria.

El segundo caso, en un holandés nacido en Indonesia, tenía lepra lepromatosa difusa que había sido tratada irregularmente desde 1947. Una lesión fortuita ocasionó ulceración de la pierna que se infectó secundariamente, con hipertermia y síntomas de artritis. Poco después aparecieron en los miembros manchas dolorosas, caprichosamente típicas del fenómeno de Lucio.

Las preparaciones histopatológicas, obtenidas de las lesiones descritas en ambos enfermos, mostraron, además de las características de la lepra lepromatosa, el cuadro de una vasculitis alérgica.

Ambos casos respondieron bien al tratamiento antibiótico.

Se discute la relación entre la vasculitis alérica cutánea (Ruiter) y el fenómeno de Lucio.

RESUMÉ

Rapport de deux cas importés, vus aux Pays-Bas, de lèpre lépromateuse à caractère plutôt diffus, avec vascularite cutanée allergique (Ruiter). L'accent est mis sur l'analogie avec le phénomène de Lucio.

Le premier malade, natif d'Indonésie, présentait une infiltration diffuse avec plusieurs petits nodules sur la face. Après un an de traitement par la D.D.S., de nombreux points érythémateux et purpuriques sont apparus brusquement sur les extrémités et sur le tronc, accompagnés de fièvre et de signes d'arthrite. Quelques uns s'effaçaient de ces points montraient en leur centre une bulle nécrotique, qui en quelques semaines avec cicatrisation superficielle. Un niveau par après élevé d'antistreptolysine suggérait l'existence d'une surinfection.

Le second cas, chez un hollandais né en Indonésie, consistait en une lèpre lépromateuse diffuse, traitée irrégulièrement depuis 1947. Une blessure accidentelle avait causé une ulcération de la jambe qui s'était surinfectée, avec fièvre élevée et signes d'arthrite. Bientôt après, des points douloureux, singulièrement évocateurs du phénomène de Lucio, sont apparus sur les extrémités.

Chez les deux malades, les préparations histopathologiques des lésions décrites ci-dessus ont montré une image de vascularite allergique.

Les deux cas ont bien répondu à la thérapeutique antibiotique.

La relation entre la vascularite allergique (Ruiter) et le phénomène de Lucio est discutée.

ADDENDUM

Histologic sections of the two cases were sent to Prof. M. Ruiter, Gronigen, Netherlands, to Prof. F. Latapí, Mexico City, and to Dr. H. W. Wade, Culion, Philippines. We are most grateful for the comments received.

PROFESSOR RUITER: The vascular changes in both sections are identical with those I have seen in allergic vasculitis. There are: endothelial swelling, fibrinoid changes of the vessel wall, infiltrates restricted to the vessels predominantly of leucocytes with marked destruction of nuclei, a few eosinophilic leucocytes, and extravasates of erythrocytes. The condition, apparently, is a "hyperergic" vasculitis caused by the leprosy bacillus, in combination with a drug or a focal infection involved.

In a discussion with Professor Ruiter, our attention was drawn to the "polymorphous nodular" variety of allergic cutaneous vasculitis. In some cases, not only urticarial elements appear but also firm nodules, which may last as long as a week (Fig. 11). Here is presented another similarity to the "bright red, hard nodules or indurated spots," originally described by Lucio himself.

DRA. JOSEFA NOVALES comments on the sections sent to Prof. Latapi: *Case 1.* Epidermis with moderate acanthosis, hyperpigmented basal layer, and a small intradermal bulla without acantholysis. In the superficial, medium and deeper parts of the dermis, the capillaries and medium-sized vessels show thickened walls and some obstruction, and they are surrounded by infiltration of lymphocytes, vacuolized cells and polynuclears. The medium part of the dermis shows hemorrhagic zones corresponding to the bullous area. The microscopic picture is compatible with lepromatous leprosy with Lucio phenomenon.

Case 2. Epidermis with moderate acanthosis, basal hyperpigmentation, and small subepidermal bullae without acantholysis. The vessels in the dermis show fibrinoid necrosis, and are surrounded by a moderate infiltrate of lymphocytes and polynuclears with broken-down nuclei. The picture is suggestive of vascularitis allergica? (Note: staining for acid-fast bacilli is needed.)



FIG. 11.—Solid, urticaria-like nodules in the polymorphous nodular variety of allergic cutaneous vasculitis.

(The sections of Case 1 showed numerous acid-fast bacilli with globi; those of Case 2 showed moderate numbers of bacilli, including small bunches.—AUTHORS.)

DR. WADE: *Case 1.* Overall picture lepromatous, predominantly vacuolated Virchow-celled, but without the old foamy cells of an entirely quiescent lesion. Although lepromatous, and with no suggestion of tuberculoid, the usual free zone beneath the epidermis does not exist except fragmentarily and minimally. Nevertheless, only here and there is there evidence of disturbance of the basal layer, and yet in one place the epidermis is split, with some polymorphonuclear accumulation (beginning of a blister).

The most striking feature is a "necrotizing vasculitis," most marked in the sub-papillary and upper dermal layers, with a good deal of polymorphonuclear infiltration in the affected fields. A few eosinophils are also present. In places there is also poly infiltration of the reticular connection tissue, where blood vessels larger than capillaries are not present.

The condition seems to affect all of the larger blood vessels in these levels; the larger arterioles and the more conspicuous venous channels all show more or less necrosis of the walls and some degree of thrombosis. A few very small arterioles present nothing more than swelling of the endothelium to occlude the channels. Despite all this vascular trouble, no hemorrhages are seen. (Present in other sections—AUTHORS.)

The study of this specimen would be greatly aided by sections after a fibrin stain. (Fibrin staining demonstrates an extensive fibrinoid deposit in the vessel walls—AUTHORS.)

My impression, subject to confirmation by the clinical data, is that this lesion represents a phase of the Lucio phenomenon, too early for gross necrosis and ulceration to have occurred. That it would occur later seems likely, in view of the general affection of the blood vessels. (The biopsy specimen was taken from a small, early spot on the arm, without macroscopic necrosis.—AUTHORS.)

Case 2. The principal lesion involves a deep artery in the upper subcutis. The skin itself shows very little lesion, although there evidently has a lesion as shown by the thickened subepidermal connective-tissue layer and small collections of foamy cells in practically all of the neurovascular tracts, slight in those of the papillary plexus, more in the fewer but larger tracts farther down. (This is in agreement with the clinical data, a relapsed case.—AUTHORS.)

A curious feature is that in the uppermost levels there is hyalinization of and around small blood vessels, together with some disturbance of the basal layer of the epidermis in the neighborhood, with a few polymorphonuclears present.

In one fairly deep neurovascular tract is a relatively large venule that is rather badly affected, with thickening, invasion and apparent beginning necrosis of the wall and some polys in the neighborhood.

The main lesion is in and around a relatively large artery, close under the dermis. The lumen, patent and filled with red blood cells, is surrounded by a lining layer of hyaline character and redder than the surrounding structure, which is much dispersed and infiltrated with exudate cells, mostly polys. This immediate infiltrate contains nothing which can be recognized (without bacillus-stain) as of lepra-cell nature, but in some of the strands that extend between fat cells and into connective tissue zones of the neighborhood there are small aggregates of foamy cells.

The basic condition is lepromatous of wide extent but slight degree and of residual appearance. The main lesion in the upper subcutis is regarded as an acute arteritis giving rise to an area of acute panniculitis. The hyaline condition of the superficial blood vessels is peculiar and unfamiliar. It would be venturesome to suggest that the condition as a whole pertains to Lucio leprosy, although it cannot be said that it is not possible.

(In other sections more vessels were involved, and the picture is more clear-cut. It is interesting to note that, clinically, the second patient resembled more the Lucio phenomenon, although histologically the first case seems to be the more typical. This illustrates the importance of selection of site of biopsy, the stage of the lesion, and the histologic similarities of the Lucio phenomenon and allergic cutaneous vasculitis.—AUTHORS.)

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