LICHENOID TUBERCULID

A CLINICAL AND HISTOPATHOLOGIC STUDY*

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Under the title "lichenoid tuberculid," we wish to report data on a total of 15 cases, 13 of which have been studied at the Mayo Clinic. The term "lichenoid tuberculid" was created by one of us (Montgomery) (1) after consideration of the subject with Ormsby and given as such in the sixth edition of Ormsby and Montgomery and amplified in the seventh edition (1948). In this paper we shall attempt to show that lichenoid tuberculid differs from sarcoid on the one hand and from tuberculosis miliaris disseminatus faciei, rosacea-like tuberculid and micropapular tuberculid (2, 3) on the other hand. Different classifications of cutaneous forms of tuberculosis have been given by one of us (Montgomery) (4) and on a prognostic basis by Michelson and Laymon (5). Lichenoid tuberculid, we believe, is an uncommon but not rare form of cutaneous tuberculosis which often is unrecognized. Thus, when one of us (Ockuly) submitted a thesis on this subject we had a total of 5 cases, but since then we have seen 8 additional patients at the clinic (including case 6, which was misfiled). In addition, there is a case of Dr. Marcus R. Caro, of Chicago, in which one of us (Montgomery) made a histologic diagnosis of lichenoid tuberculid in 1942, as well as a case presented by Dr. Dalton, of Indianapolis, at the Meeting of the Cincinnati Dermatological Society in May, 1948, both of which cases fulfilled, we believe, the clinical and histologic criteria for the diagnosis of lichenoid tuberculid.

The term "lichenoid tuberculid" may be subject to criticism because the ending "id" has been used loosely in various dermatoses to designate either a toxic eruption or true bacterial or fungal dissemination. The clinical resemblance of lichenoid tuberculid to the "id" reaction in trichophytosis, however, is striking. The term "lichenoid" is justified because of the resemblance of the lesions to those of lichen planus and even those of lichen nitidus.

Cases similar to those which we shall describe have been reported in the European literature, but we believe no mention has been made of these cases in American literature.

Pick (6) in 1904 described a patient with a generalized, nonpruritic eruption, showing both lichenoid and psoriasiform features. The essential lesion was a flat-topped, raised, infiltrated and umbilicated nodule, of the size of a split pea, and brownish red. There was overlying telangiectasia, and the entire lesion was covered with a thin scale. The histopathologic findings, he thought, simulated most closely those of lichen scrofulosus. He

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described definite tubercle formation as well as caseation, but stated that there was lack of the acute inflammatory reaction characteristic of lupus vulgaris and some of the other so-called true tuberculodermas.

Civatte (7), in 1906, described 3 cases of widespread papulosquamous tuberculids which previously had been diagnosed by Brocq as parapsoriasis en gouttes. The eruption was most marked on the extremities, although the trunk was also involved. The essential lesions were of two types: (1) a yellowish, shiny, umbilicated, lentil-sized papule with little or no scaling, in which the histopathologic picture was that of tuberculosis, and (2) a rose-colored macule with friable scale, in which the histopathologic picture was nonspecific, and which he considered an involuting phase of tuberculosis. No evidence of tubercle bacilli could be found in the lesions.

The following year, Milian and Pinard (8) described a case showing a generalized, non-

pruritic eruption consisting of the following features: (1) ham-colored macules, resembling the roseola of secondary syphilis, (2) small telangiectatic spots, (3) red papules resembling lichenoid syphiloderm. Histopathologically, they described definite epithelioid tubercles and the picture of tuberculosis. No tubercle bacilli were found. Being aware of Civatte's cases, Milian and Pinard suggested that certain cases of parapsoriasis en gouttes be classified as angiomatous tuberculids.

REPORT OF CASES

The positive or significant findings in 13 cases in which the patients were seen at the clinic are briefly summarized as follows:

Case 1. This case has been previously reported by one of us (Montgomery) (9) as an unusual form of cutaneous tuberculosis, probably best classified as tuberculosis cutis follicularis disseminatus (lupus miliaris disseminatus faciei). The lesions occurred in a white woman, aged 61 years, and were limited to the legs (fig. 1). Biopsy revealed a histologic

Fig. 1. (case 1). Purpuric lichenoid lesions on leg.
picture of tuberculosis with caseation necrosis (fig. 2) and presence of acid-fast organisms presenting the morphologic features of Mycobacterium tuberculosis. The results of inoculation of material into guinea pigs were negative for tuberculosis. The cutaneous lesions

involved after a course of gold sodium thiosulfate, and there was no recurrence of the lesions at the time of the patient's death from a cerebral accident at the age of 76 years.

Case 2. A white man, aged 57 years, was seen in 1934 because of a diffuse erythema with telangiectasia which developed two years previously. The lesions started on the lower extremities and then involved the genitalia and upper extremities. A clinical diagnosis of
Poikiloderma atrophicans vasculare was made. The patient was again seen in August, 1938, at which time he had a generalized symmetric eruption over the trunk and extremities consisting of discrete and grouped, flat-topped, shiny, violaceous papules with overlying and peripheral telangiectasia. Some of the papules had a fine adherent scale. There was annular configuration with central depression in some of the lesions. The clinical diagnosis was that of lichen planus (fig. 3a). Two specimens for biopsy revealed a definite picture of tuber-

Fig. 3 (case 2). a. Annular lichen planus-like lesions on leg. b. Epithelioid tubercle with blood vessel at X (elastic tissue stain X200).
culosis (fig. 3b), and caseation necrosis was noted in several small regions. No tubercle bacilli were found. A tuberculin test, purified protein derivative, weak dilution, gave a 1 plus reaction. The patient was advised to have a course of gold sodium thiosulfate at home, but this was discontinued because of diarrhea. By December, 1938, the cutaneous lesions had disappeared. Inguinal adenitis, reported histologically as a nonspecific granuloma, then developed. In February, 1939, a painful swelling over the cricoid cartilage was excised. No tubercle bacilli were found. The patient then had several episodes of generalized lymphadenopathy. In April, two sets of lymph nodes in the neck broke down. From the

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**Fig. 4 (case 3).** a. Many of the papules from the arm were flat topped and violaceous in color. b. Hematogenous distribution of epithelioid tubercles duplicating the histopathologic picture of sarcoid. In other regions, however, there was evidence of caseation necrosis (hematoxylin and eosin ×90).

material from these nodes, his home physician reported that he obtained a pure culture of tubercle bacilli. We have not been able to follow this patient further.

**Case 3.** A white housewife, aged 59 years, was seen in October, 1941, because of a widespread nonpruritic eruption of a year's duration. The lesions consisted of discrete, grouped and coalescent infiltrated papules from the size of a pinhead to that of a lentil, varying in color from light brown to violaceous. A few of the lesions could be described as nodules. They were most numerous on the extensor surfaces of the forearms (fig. 4a) but the upper part of the back, the neck and the face were involved. A clinical diagnosis of tuberculosis was favored. A roentgenogram of the thorax revealed a primary Ghon complex, pleuritic adhesions to the left pericardium and an interlobar pleuritic band on the lower right. The results of tuberculin tests, purified protein derivative, both first and second strengths, were negative. Biopsy from the left arm revealed epithelioid tubercles duplicating the histo-
pathologic picture of sarcoi'd (fig. 4b), but in other regions there was evidence of caseation necrosis. Since the patient also had peripheral neuritis, gold therapy was withheld. When she was seen again in May, 1942, the cutaneous lesions were the same. Roentgenograms of the thorax revealed marked calcification of the hilar lymph nodes on both sides. There was no evidence of sarcoi'dosis. The patient received twenty injections of gold sodium thiosulfate. When she was seen in February, 1943, the lesions were markedly reduced in number. A letter received from her physician in 1946 stated that the cutaneous lesions had involuted.

Case 4. A white single woman, aged 72 years, was seen in June, 1942, because of a generalized eruption of four months' duration. The lesions were distributed symmetrically over the trunk and extremities, being most prominent on the extensor surfaces of the forearms. The lesions consisted of discrete and grouped macules and papules, capped by a fine adherent scale. Some of the macules were fawn colored and seemed to represent involuting lesions. The papules were flat-topped, shiny, often umbilicated and of violaceous hue. Some of the lesions revealed overlying and peripheral telangiectasia. One of us (Montgomery) made the clinical diagnosis of lichenoid tuberculid, which was substantiated on histopathologic examination. There was some evidence of caseation. The result of a tuberculin test, purified protein derivative, weak dilution, was reported as negative. Roentgenograms of the thorax failed to reveal any pulmonary pathologic changes. The patient was advised to have a course of gold sodium thiosulfate but only a few injections had been made before involution of the lesions began. In a letter which we received in 1946, she said there had been no recurrence of the cutaneous eruption.

Case 5. A white woman, aged 52 years, was seen in July, 1945, because of arthritis and a nonsymptomatic eruption over the arms and shoulders of five months' duration. Clinical description of the lesions duplicates that of case 4 and a clinical photograph of the lesions on the arm parallels that of figure 3a (case 2). An erroneous clinical diagnosis of lichen planus was made. Biopsy revealed the histologic picture of hematogenous tuberculosis with a few small regions of caseation necrosis. No tubercle bacilli were demonstrable. The results of tuberculin tests, purified protein derivative, were negative in both first and second strengths. Roentgenograms of the thorax and hands were negative for sarcoi'd. The patient returned home, received twenty one injections of gold sodium thiosulfate and came back in November with only a few lesions remaining. When she was seen in April, 1946, the lesions had undergone involution. The tuberculin reaction was still negative.

Case 6. A white man, aged 65 years, was seen in July, 1941, because of a reddish papular eruption of one and a half years' duration. This had started over the back and gradually had extended to involve the skin of the entire body, including the face, neck and dorsum of the hands. The lesions were flat-topped. Some had a translucent scale. They varied from deep red to coppery color (fig. 5). The lesions were more extensive than in any of the other cases. Biopsy of a lesion from the shoulder revealed the picture of hematogenous tuberculosis with a number of vacuolated cells but no regions of caseation necrosis. Tubercle bacilli could not be demonstrated. Roentgenograms of the thorax, hands and feet were negative for sarcoi'dosis. The result of a tuberculin test was negative in weak dilution. Before the patient came to the clinic, the eruption had cleared up once after a course of bismuth, and the patient presumably had a course of gold sodium thiosulfate on his return home. When seen by one of the internists from the clinic at his home in 1944, he no longer had any cutaneous lesions but at that time he had general and central nervous system arteriosclerosis, hypertension and mental depression, and he died shortly thereafter.

Case 7. A white housewife, aged 54 years, was seen in April, 1945, because of arthritis of the hands. The patient had pinhead-sized, flesh-colored, papular eruption scattered mostly over the trunk and lower part of the arms, which she said was of three weeks' duration. When the patient was shown in dermatologic conference, a diagnosis of lichen nitidus was favored. Biopsy from the left shoulder revealed hematogenous tuberculosis with typical
tubercle formation, many of the tubercles revealing small regions of caseation necrosis. Roentgenograms of the thorax and hand showed no evidence of sarcoidosis. A tuberculin test was not performed. We have lost track of this patient.

Case 8. A Negro housewife, aged 21 years, was seen in June, 1946, because of recurrent pains in both legs at night together with swelling of the legs and recurrent ulcers. Examination revealed an emaciated negress with two superficial ulcers over the left hip which were probably decubitus and one over the left ankle. Over the legs and left hip there was a symmetric eruption of discrete, flat-topped, shiny papules, of the size of a match head and larger, capped by a fine scale. One of us (Montgomery) made a diagnosis of lichenoid tuberculid, which was confirmed by biopsy. There were definite regions of caseation necrosis. Tubercle bacilli were not demonstrable. The condition had previously been diagnosed as sickle cell anemia, and on examination at the clinic 50 per cent of the patient's erythrocytes exhibited sickling. A roentgenogram of the thorax revealed a widening of the superior mediastinum with a diffuse miliary type of process throughout the lower left pulmonary field. The gastric contents after aspiration were negative for acid-fast bacilli. With the peritoneoscope, a specimen of the liver for biopsy was obtained and a diagnosis of tuberculosis was made. Guinea pig inoculations gave negative results, but on reconsideration the specimen from the liver was re-diagnosed as sarcoid. This patient was subsequently seen elsewhere where again a diagnosis of sickle cell anemia was made and a question was raised of Boeck's sarcoidosis. Since there was no mention of any cutaneous lesions in the

Fig. 5. (case 6). Extensive miliary lichenoid eruption.
letter received regarding her condition in 1948, it is possible that they had undergone involution spontaneously. It is worth emphasizing that the cutaneous lesions that she had when seen at the clinic in 1946 were more typically those of lichen planus than in any of the other cases we are reporting, and the lesions had no resemblance to the cutaneous lesions usually seen in sarcoidosis.

**Case 9.** A married white woman, aged 30 years, was seen in November, 1946, because of a nonsymptomatic eruption on the lower part of the right leg of five years' duration. The lesions consisted of grouped, translucent lichen planus-like papules which were flat-topped and a few of which showed central umbilication. Roentgenograms of the thorax were negative. The result of a tuberculin test, purified protein derivative, in single strength was negative. Biopsy of one of the lesions revealed hematogenous tuberculosis with slight caseation necrosis of some of the tubercles. Tubercle bacilli were not demonstrable. No further follow-up has been possible.

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**Fig. 6.** (case 10). *a.* Lichenoid papules of neck. *b.* Tubercle with caseation necrosis at X (hematoxylin and eosin X80).

**Case 10.** A white widow, aged 52 years, was seen in October, 1946, because of fatigability and because of a cutaneous eruption which had begun on the forehead and neck some eight years prior to admission to the clinic. The patient had lesions on the dorsa of the hands, forearms, outer aspect of the thighs, neck (fig. 6a) and forehead. The lesions on the hands were regarded as those of granuloma annulare. Those on the forearm and neck were diagnosed clinically as lichenoid tuberculid. Biopsies from the right elbow, right wrist and left forearm all revealed the picture of hematogenous tuberculosis with evidence of caseation necrosis (fig. 6b) in two of the three biopsies. Tubercle bacilli were not demonstrable. Roentgenograms of the thorax in 1946 and again in 1947 showed no evident pathologic change. The result of a tuberculin test, purified protein derivative, single strength, was strongly positive in two hours and the result of a similar test a year later was positive. New lesions developed while the patient was taking gold sodium thiosulfate but then she was given vitamin D3, 50,000 units twice a day, and in October, 1948, her home physician reported that her eruption had completely disappeared.

**Case 11.** A white married woman, aged 40 years, was seen in July, 1947, because of a cutaneous eruption of two years' duration which had been diagnosed elsewhere as a tuber-
culid. She presented lesions on her forehead, sides of neck and extensor surfaces of forearms and wrists, consisting of discrete, occasionally grouped and coalescing, fawn-colored, shiny papules, many of them flat-topped. Biopsy revealed the histopathologic picture of hematogenous tuberculosis with slight caseation. Roentgenograms of the thorax were negative, as was the tuberculin reaction. After twenty injections of gold sodium thiosulfate at home, the lesions disappeared.

Case 12. A white man, aged 43 years, was seen in June, 1948, because of loss of weight and malaise. Sputum was found positive for tuberculosis, as was culture of gastric contents. Roentgenograms of the thorax revealed a pathologic process in the right upper lobe. Thoracotomy was performed and the pathologic diagnosis of the parietal pleura and pulmonary tissue was caseous tuberculosis. While the patient was still in the hospital under treatment with streptomycin, a symmetrical eruption developed, most prominent on the back and medial aspects of the upper extremities and on the lower extremities. This eruption consisted of nonpruritic, flat-topped, violaceous, lichenoid papules. Clinical diagnoses considered were lichen planus, drug eruption and tuberculid. A specimen for biopsy revealed hematogenous tuberculosis but with no evidence of caseation necrosis. Tubercle bacilli could not be demonstrated in the cutaneous lesions. The patient had had a similar eruption about seven months previously, which had disappeared when he had gone to Florida and had been exposed to the sun. He had had two previous cutaneous biopsies that had not been diagnostic.

Case 13. A white married woman, aged 30 years, was seen in October, 1948, because of a chronic cough. Her home physician suspected that she had pulmonary sarcoidosis. Examination of the skin revealed very superficial annular papulosquamous lesions on the dorsum of the left forearm which were compatible with the diagnosis of lichenoid tuberculid. Biopsy revealed noncaseating hematogenous tuberculosis. The histologic picture was consistent with sarcoid. Tubercle bacilli could not be demonstrated. A roentgenogram of the thorax revealed infiltration throughout both lungs, probably Boeck's sarcoid, although an atypical tuberculosis could not be excluded. There was a positive reaction to a tuberculin test, purified protein derivative, weak dilution. Numerous specimens of sputum and gastric washings were negative for tubercle bacilli on smear and concentration and also in cultures. A cervical lymph node was incised, and the pathologic diagnosis of granulomatous tissue with regions of necrosis, probably caseous tuberculosis, was made. Tubercle bacilli were grown in culture, and guinea pig inoculation was positive from material from this lymph node. Final decision as to whether the pulmonary lesion was an inactive tuberculosis or pulmonary sarcoidosis was not established. The cutaneous lesions in this case were not numerous nor as characteristic as those seen in the other patients.

COMMENT

The pertinent findings in each of our 13 cases have been given individually because there is considerable variance in the clinical picture and much variance in the systemic manifestations. Our concept of lichenoid tuberculid is that it is a subgroup of hematogenous forms of cutaneous tuberculosis. Our concept has become broadened as we have seen more cases of this unusual form of tuberculosis and, therefore, the statements in this paper may be somewhat contradictory to those that one of us (Montgomery) wrote in the Ormsby and Montgomery text.

Lichenoid tuberculid can occur anywhere on the skin but so far we have not found involvement of the mucous membranes. The lesions predominate on the extremities and except for 1 case have always been symmetrical. There may be extensive involvement of the entire cutaneous surface. The predominant lesion is a nonpruritic, flat-topped or slightly umbilicated papule, of the size of a split
pea, of violaceous to brown color with overlying and peripheral telangiectasia and capped, as a rule, by a fine adherent scale. There is often a central sheen suggestive of atrophy. Macular lesions may be seen between the papules but the fact that on careful palpation a slight infiltration can be felt shows that most of these are superficial papules. The papules are discrete and grouped, occasionally coalescing. Annular configuration is often noted. On involution, the papules flatten and become brownish pigmented macules. Well-developed papules and involuting macules may be found in the same areas. When involution occurs, it does so without any residual scarring.

The histopathologic changes are those of a hematogenous tuberculosis with typical tubercle formation together with varying degrees of caseation necrosis. In 3 of the 15 cases (including 2 outside cases), there was no evidence of caseation necrosis, and the tubercles were composed chiefly of epithelioid cells such as are seen in sarcoidosis. Elastic tissue stains revealed the tubercles to be centered about the horizontal network of blood vessels in the upper portions of the cutis. Infrequently, tubercles may be found in surrounding hair follicles. Rarely does the tubercle formation extend into the subcutaneous tissue, but this is to be expected since clinically very few of the lesions are large or deep enough to be called nodules. Search for tubercle bacilli in the cutaneous lesions with acid-fast stains was negative except in the first case even though in some of the other cases there was proved tuberculosis elsewhere in the body.

As in sarcoid and also as in most cases of tuberculosis cutis miliaris disseminatus (tuberculosis miliaris disseminatus faciei), the reaction to the tuberculin test, purified protein derivative, and in some cases even in strong dilutions, was negative except for those cases in which there was evidence of lymph nodal or systemic tuberculosis.

It would seem that lichenoid tuberculid predominates in patients past middle age. The majority of patients in our series responded to treatment with gold sodium thiosulfate, although in 2 cases involution apparently took place spontaneously. The degree or extent of the lesions was apparently of no significance regarding any associated systemic tuberculosis. It is interesting in this regard that the patient described in case 13 had a definitely proved tuberculous lymphadenopathy; yet, the histopathologic picture of the cutaneous lesions was that of sarcoid without caseation necrosis and the pulmonary lesions were regarded as probably those of sarcoid. Absence of caseation in the cutaneous lesions also occurred in case 12, in which there was no question about definite diagnosis of pulmonary tuberculosis.

**DIFFERENTIAL DIAGNOSIS**

Diagnosis of miliary sarcoidosis might well be considered in case 3, in which some of the lesions were nodular and in which there were also lesions on the face. The relatively short duration of the lesions, the absence of evidence of pulmonary sarcoidosis and the lichenoid character of many of the cutaneous lesions speak against the diagnosis of miliary sarcoid. Case 13 brings up the old question of whether sarcoid is related to tuberculosis and whether we had more than
one condition occurring in the same patient. The fact that 2 other cases histologically showed epithelioid tubercles such as one expects to see in sarcoid substantiates Michelson and Laymon's concept that one cannot always make a diagnosis on a histopathologic basis alone. The fact that in 1 case tubercle bacilli were demonstrable in the skin and in 4 others there was proved tuberculosis elsewhere is against grouping lichenoid tuberculid with miliary sarcoidosis. The character of the cutaneous lesions in practically all of the cases with their lichenoid and purpuric features differs also from that of the lesions seen in diffuse miliary sarcoid of the skin.

In Ormsby and Montgomery, one of us (Montgomery) stated, "Lichenoid tuberculid warrants subdivision from the two previous groups [tuberculosis miliaris disseminatus faciei and rosacea-like tuberculid] on the basis of the character of the lesions and their distribution." All three conditions might be grouped under the term "tuberculosis cutis follicularis disseminatus" except that most of the lesions in lichenoid tuberculid are not follicular in origin. Lichenoid tuberculid simulates tuberculosis miliaris disseminatus faciei in that there is caseation necrosis and a negative tuberculin reaction, but the lesions predominate on the extremities and only occasionally is the face involved and then only when the lesions are quite extensive in their distribution. Furthermore, most cases reported under the term "tuberculosis miliaris disseminatus faciei" have not been associated with any systemic evidence of tuberculosis. Distinction of lichenoid tuberculid from a rosacea-like tuberculid is readily made on the basis of distribution and character of the lesions. The absence of necrosis or scarring serves to distinguish lichenoid tuberculid from papulonecrotic tuberculids. Lichenoid tuberculid should not be confused with a case of tuberculid en plaque described by Sweitzer (10) which, although similar to our cases in distribution, histopathology and tuberculin reaction, differed in that the lesions were coin-sized plaques and on involution left soft depressed scars. Lichen scrofulosus occurs predominantly in children and the lesions lack the reddish and purplish color seen in those of lichenoid tuberculid.

The guttate form of parapsoriasis was considered in the European literature, but our cases tended more to simulate lichen planus, lichen nitidus or even purpura. The distribution and clinical appearance of the lesions of lichenoid tuberculid, however, differ somewhat from the just previously mentioned conditions, and we believe that one may at least be strongly suspicious and even perhaps make a positive diagnosis of lichenoid tuberculid on a clinical basis alone. We regard the combination of the clinical and the histopathologic findings as diagnostic.

CONCLUSIONS

On the basis of 15 studied cases, 13 of which are from the Mayo Clinic, we believe that lichenoid tuberculid is a distinct form of cutaneous tuberculosis. It has certain clinical and pathologic characteristics which together make distinction from tuberculosis miliaris disseminatus faciei on the one hand and sarcoid on the other. Lichenoid tuberculid is probably more common than the
literature would indicate. The condition may be erroneously diagnosed as lichen planus, lichen nitidus or even purpura. Lichenoid tuberculid is frequently associated with lymph nodal or systemic tuberculosis; yet, the cutaneous lesions in themselves are essentially a benign form of tuberculosis and apparently respond to treatment with gold sodium thiosulfate.

REFERENCES