TUBERCULOSIS OF THE SKIN

A. MAMMEN AND † A. S. THAMBIAH

Summary

A study on true Tuberculosis of the skin conducted in the Dermatology Department of Government General Hospital, Madras over a period of 6 months is presented. There were a total of 27 cases. Lupus Vulgaris formed the major group. Pathogenesis of Lupus Vulgaris and TB Verrucosa cutis as found in the study is briefly discussed.

Tuberculosis is still a major problem in our country and tuberculosis of the skin (T.B. Skin) is not an unfamiliar condition to the dermatologists. Yet Indian literature on this topic is very scanty. This prompted us to conduct a small study on tuberculosis of the skin.

Material and Methods

All patients who showed lesions clinically suggestive of T.B. Skin attending the Dermatology Dept. of Government General Hospital, Madras over a period of 6 months from 15th of July 1970 to 15th of January 1971 were included in the study. Lesions suggestive of tuberculides were not included.

After a detailed history and complete physical examination the following investigations were done in all cases.

1. Wet preparation of scrapings with 10% KOH for fungal elements.
2. Smear of Discharge when present or slit smear from lesion and touch smear from biopsy material, were stained with Ziehl Neelsen's stain for Acid fast bacilli.
3. Mantoux test with PPD 1 in 1000 solution.
4. E.S.R. 5. X-Ray Chest.
6. **Biopsy.**

(a) **Skin.** After using 10% Aq. formalin as fixative, the following stains were used.

1. Haematoxylin - eosin
2. Acid Fast Stain.
3. Periodic acid schiff reagent.

(b) Lymphnode (wherever indicated) were stained with.

1. Haematoxylin - eosin.
2. Acid fast stain.

The diagnosis was based on a combination of, morphology of the lesion, evidence of tuberculosis elsewhere in the body, histopathological findings and a response to therapy.

Though the absolute criteria for diagnosis of tuberculosis consists in demonstrating the organism by histological, cultural and animal inoculation procedures, culture and animal inoculation were not done because of limited facilities.

Findings

During the period of study, 32 patients were examined with a clinical

*Department of Dermatology, M. M. M. Hospital, Kolencherry, (Kerala State).

†Professor of Dermatology, Madras Medical College, Madras-3.

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diagnosis of T.B. Skin. Of these only 28 were confirmed by the histological study. Of the other four, two were viral warts, one was an angiokeratoma and in one, diagnosis could not be established.

The total number of fresh cases attending the Dermatology Dept., during the period of the study was 25,113, thus giving an incidence of T.B. skin among hospital dermatology outpatients of 0.11%

Of the 28 cases, one patient did not return after the biopsy done at the first visit, leaving only 27 cases for final analysis.

Breakdown of the 27 cases show

	% among T.B. Skin
Scrofuloderma 2	– 37.4%
TB Verrucosa cutis 10	– 37.1%
Lupus vulgaris 15	– 55.5%

The number of scrofuloderma is too small to draw any useful conclusions, except to mention that in both cases, both axillary and cervical lymphnodes were the sites of primary infection. A.F.B. could be demonstrated from one of the lesions on direct smear, though the histology sections did not show AFB.

Lupus Vulgaris

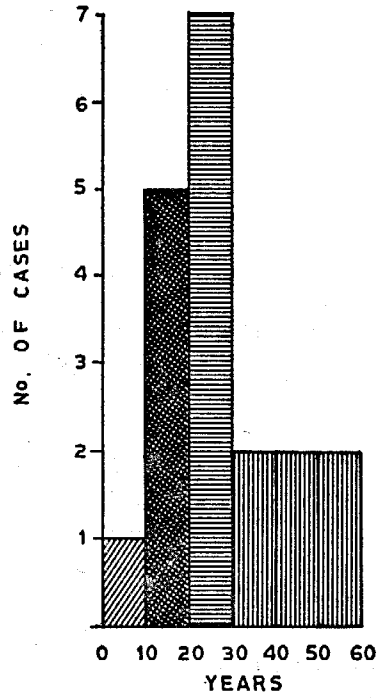
Age incidence–Maximum number of cases belonged to the adolescent and young adult group.

It is worth mentioning that the largest lesions were found in the two patients aged 60 yrs and 45 yrs respectively.

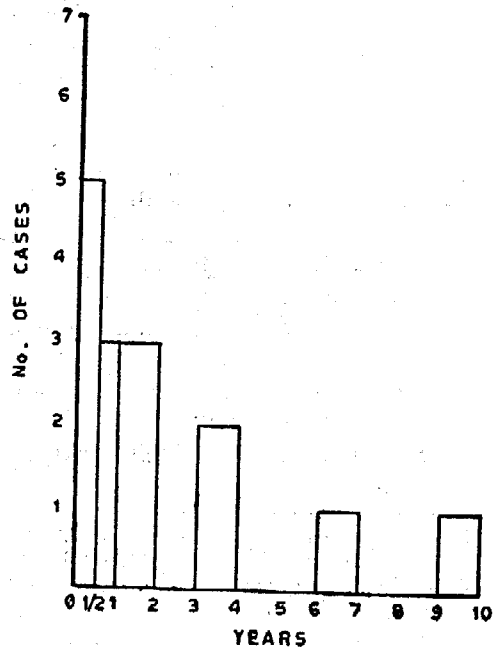
Number and Distribution of lesions

15 patients had a total of 19 lesions. 12 patients having one lesion each, two having two lesions each and one with 3 lesions.

AGE INCIDENCE OF LUPUS VULGARIS



DURATION OF LESIONS IN L V



Site	No.
Face & neck	3
Trunk	2
Proximal parts of extremities	5
Distal parts of extremities (below knees and elbows)	9

There was no lesion involving the sole of the foot.

Duration of Lesions

Duration varied from 4 months to 10 yrs. There was no correlation between duration and size of the lesion.

Associated Tuberculosis in lupus Vulgaris.

Organ or site involved	No.
Lungs & Lymphnode	1
Abdomen & lymphnode	1
Ankle joint & lymphnode	1
Spine (D_8 & D_9)	1
No other site involved	11

Mantoux

Mantoux readings in Lupus Vulgaris

Extent of induration at 48 hrs.	No.
10 — 20 mm	4
5 — 10 mm	5
Below 5 mm	5
Not returned for reading	1
Total	15

The national institute for Tuberculosis at Bangalore has stipulated that only reading above 10 mm could be considered as definite evidence of human or bovine tubercular infection. The common recognised cause for negative mantoux in the presence of undoubted tubercular infection is anergy due to poor general health. However it is common knowledge that this need not be always so. Two of our patients in good general health had readings below 5 mm. and their lesions resolved in less than 3 months on antitubercular therapy. Other possible causes for negative mantoux are deterioration of mantoux antigen, intercurrent viral infections etc.

Erythrocyte Sedimentation rate

Only 5 patients had an ESR above 15 mm at 1 hour. All these patients had associated tuberculosis elsewhere suggesting that lupus vulgaris by itself does not produce an increased sedimentation rate.

Histopathological changes

Epidermal changes

All the specimens showed acanthosis. In 5 cases the acanthosis was uniform while in 10 other cases some areas showed acanthosis (Fig. 1) and other areas showed atrophy (Fig. 2) of the epidermis. (Photomicrographs.) *Dermal changes* consisted of either typical tubercles (Fig. 3) a tuberculoid histology or a combination of both (Fig. 1).

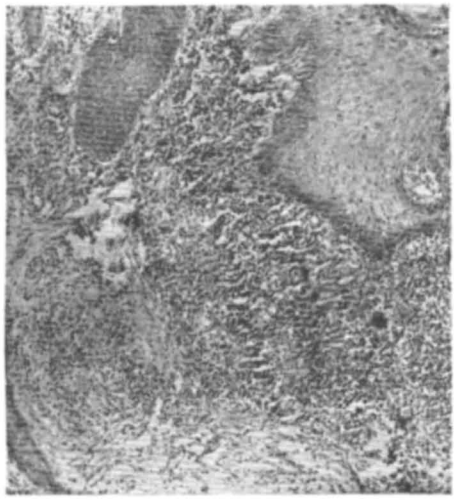


Fig. 1

Showing acanthosis and tuberculoid granulomatous infiltration extending upto the mid-dermis

In 8 specimens these dermal changes were confined to the upper dermis (Fig. 3) and in 7 they extended to the mid or deep dermis (Fig. 1). Amount of inflammatory infiltrate was variable. Caseation was either absent or minimal. Acid fast bacilli were seen in 2 sections. PAS stain did not reveal any fungal elements.

Fig. 2
Showing atrophy of epidermis

Fig. 3
Showing tvpical tubercle formation in the upper dermis

Therapeutic response

Only 4 patients had regular treatment. Of these: two who had only INH showed clinical resolution in 6 months. The other two who had streptomycin and INH because of associated TB elsewhere, resolution was noticed in 2 to 3 months.

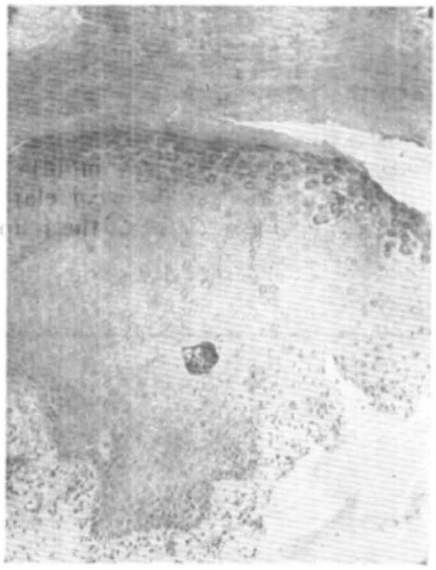


Fig. 4
Showing marked hyperkeratosis

Wherever there was healing with or without treatment, the scar was atrophic except in one patient who showed keloidal changes also. *Pathogenesis* can only be surmised from historical evidence.

In 3 of our cases (Nos. 7, 25 and 32) the lupus vulgaris probably followed scrofuloderma, as suggested by the history of a swelling breaking down to give a sinus which eventually healed leaving no evidence of either the sinus or the underlying lymphadenopathy.

In a 25 yr old patient (No. 19) the lesion followed a tattoo.

Case No. 9 was a 60 yr old female with an extensive lupus vulgaris involving the neck and chest along with tubercular lymphadenitis and pulmonary tuberculosis. It is possible that lupus vulgaris was the result of haematogenus spread from internal focus.

Three patients (Nos. 13, 23 and 24) had sustained external trauma prior to the onset of the lesions. Of these 3, case No. 13 developed the lesion over a non-healing burns ulcer. The regional lymphnode subsequently developed scrofuloderma which in turn left a lupus vulgaris. Later the patient developed abdominal tuberculosis. Our surmise is that the first lupus vulgaris in this patient followed a primary inoculation tuberculosis. Case No. 24 developed the lupus vulgaris over an abrasion which she sustained 6 months earlier. At the time of examination, patient had a painless lymphadenopathy suggesting the possibility that the lupus vulgaris developed over primary inoculation T.B.

Case No. 23, developed the lesion over a knife injury. In the absence of a history of regional lymphadenopathy, it is suggested that the lupus vulgaris is the result of reinoculation tuberculosis.

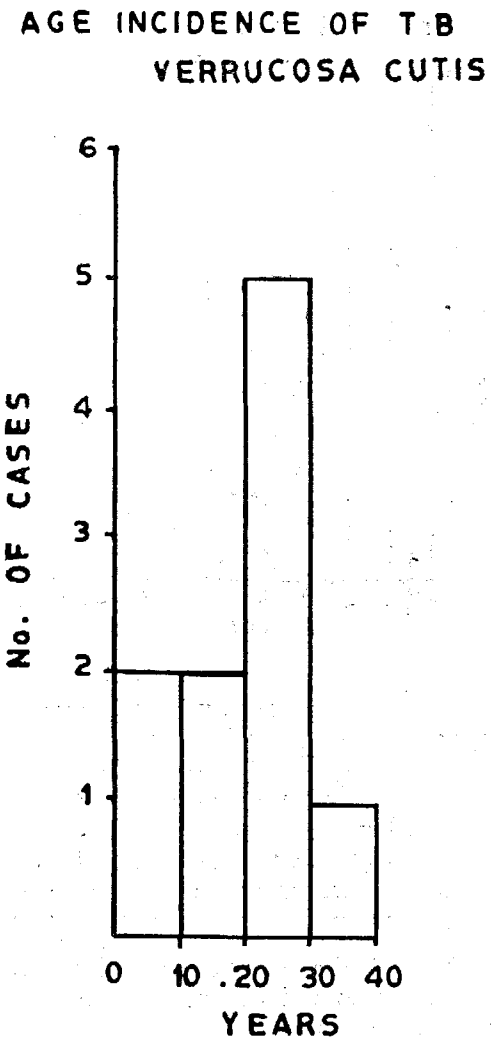
In the remaining 7 cases, there was no history of trauma or associated active tuberculosis to suggest possible pathogenesis.

None of the 15 patients had a history of contact with known case of tuberculosis.

Tuberculosis Verrucosa cutis

Age incidence

Majority of patients belonged to the young adult group.



Number and sites of lesions

None of the ten patients had more than one lesion each.

Distribution

Sites of lesion	No.
Sole of foot	5
Leg	4
Elbow	1

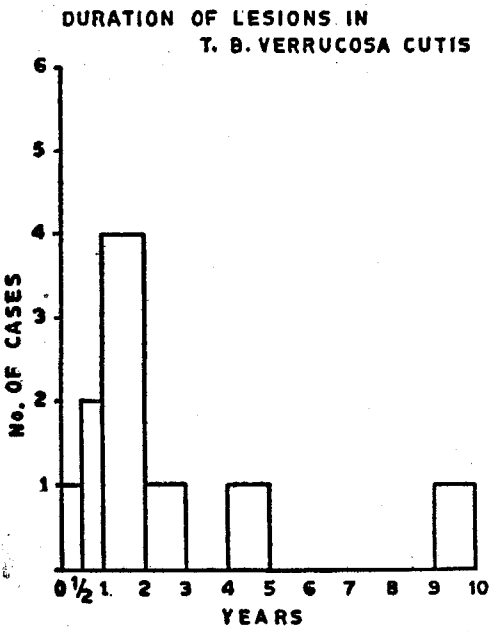
Pustular reaction over parts of the lesion was noticed in 2 patients. Atrophic scarring was present over parts of the lesion in 4 cases before therapy.

Duration of Lesions

Varied from 6 months to 10 years. There was no correlation between duration and size of the lesion.

Associated tuberculosis

Regional lymphnode involvement was present in 4 cases, three of which were proved by biopsy.



Mantoux

Reading at 48 hrs.	No.
10 — 20 mm	3
5 — 10 mm	3
Below 5 mm	3
Not returned for reading	1

One of the mantoux negative (i.e. below 10 mm induration) showed a good therapeutic response.

Erythrocyte Sedimentation Rate

Only one patient had an ESR above 15 mm at one hour. This patient also had a tubercular lymphnode involvement.

Histopathological findings

Epidermal changes

Marked hyperkeratosis[4] was a constant feature with parakeratosis in some. Acanthosis was present in all specimens with pseudoepitheliomatous hyperplasia in 7 cases. Atrophy of the epidermis was not seen in any specimen.

Dermis

Moderate to dense inflammatory infiltrate was present subepidermally in all the ten specimens. Three sections showed abscess formation either in superficial dermis or in the epidermis. Seven specimens showed typical tubercles in mid or deep dermis. Three specimens showed only a tuberculoid infiltrate.

Caseation varied from minimal to moderate. AFB could not be demonstrated in any section. PAS stain showed no fungal elements.

Therapy

Only two patients had regular treatment. Both showed clinical resolution in 6 months. One of them had only INH and the other patient was on streptomycin and INH, because of associated gland involvement.

Pathogenesis

Two patients sustained trauma prior to the onset of the lesion, suggesting reinfection as the possible pathogenesis. One of these two, gave a history of contact with active pulmonary tuberculosis.

Two other patients gave history of contact with tuberculosis, but no history of trauma.

The remaining 6 patients had neither history of trauma nor contact with known case of TB

But the occurrence of all lesion over distal parts of extremities suggest the possibility of reinfection via minor cuts or abrasions as the possible mode of infection.

CONCLUSIONS

1. The incidence of skin TB in a large dermatology clinic is 0.11%

2. **Age incidence** Lupus vulgaris and Tuberculosis verrucosa cutis predominantly affects adolescent and young adults. When lupus vulgaris occurs in the older age group, the spread of the lesion is more rapid.

3. Lupus vulgaris forms the major group of TB skin in this series. Therefore Lupus vulgaris is not a rare occurrence in the tropics as reported by Western Authors.

4. Face and neck are not the most frequent sites of involvement in lupus vulgaris. The maximum number of LV were seen on the distal parts of the extremities.

As for TBVC, distal parts of the extremities only were involved, though they were not confined to the hands and feet.

5. Pathogenesis

Possible Pathogenesis for LV in this series were following primary inoculation TB, or scrofuloderma, as complication of tattoo, reinfection tuberculosis and haematogenous spread.

In TBVC, it is probably reinfection tuberculosis.

6. **Associated Tuberculosis** is not unusual in either LV or TBVC though both these types are said to occur in patients with good immunity.

7. **Therapy** Therapeutic trial helps one in confirming the clinical diagnosis, especially where facility for specific diagnosis is limited.

8. **Histopathology** Epidermal changes are helpful in differentiating between LV and TBVC. In LV, a combination of acanthosis and atrophy of the epidermis is very common whereas in TBVC, acanthosis and hyperkeratosis are constant features. AFB is difficult to demonstrate in histological sections by routine methods.

Low incidence of scrofuloderma absence of scrofulous gumma, miliary TB and mucosal TB, in this series may be due to the fact that all these types of skin TB occur in association with involvement of other organs and as such these patients may seek the aid of the internist rather than a dermatologist.

The absence of primary complex in this series may be because these groups of patients were seen for the first time in hospital, a few months after the onset of lesions.