Original Article

Cutaneous Manifestations of Extra pulmonary Tuberculosis

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Conflict of Interest: None
Received: 12-08-2018
Accepted: 06-11-2018
www.banglajol.info/index.php/JSSMC

Abstract:

Background: *Ulcers and surgical wounds not healing well and expectedly are common problems among patients in countries like us. Ulcers may develop spontaneously or following a penetrating injury. wounds not healing well are common among poor, lower middle class and middle class people. Postsurgical non-healing wound or chronic discharging sinuses at the scar site are also common in that class of people. Suspecting malignancy or tuberculosis in these types of wounds we have sent wedge or excision biopsy for these ulcers in about 500 cases and found tuberculosis in 65 cases. In rest of the cases histopathology reports found as non- specific ulcers, Malignant melanoma, squamous or basal cell carcinoma, Verruca vulgaris.*

Objectives: *To find out the relationship of tuberculosis with chronic or nonhealing ulcers.*

Methods: *This is a prospective observational study conducted for patients coming to our chambers, OPD of a district general hospital and Shaheed Suhrawardy Medical College Hospital, Dhaka from July 2012 to June 2018.*

Results: *Mean age of the study subjects were 28±2. Among the study subjects nonspecific ulcer or sinus tracts were found in 418 (83.6%), tuberculosis in 65 (13%), Malignant melanoma 7 (1.4%), Verruca vulgaris 5(1%), squamous cell carcinoma 3(0.6), basal cell carcinoma 2 (0.4%). Biopsy done only for very suspicious ulcers or wounds.*

Conclusion: *With this very small sample size it is difficult to conclude regarding incidence of cutaneous involvement of extra pulmonary tuberculosis , but every clinician should think of it in case of suspicious non healing wounds, ulcers and prolonged discharge from a surgical incision site.*

Key Words: Cutaneous manifestation, Extrapulmonary involvement, Tuberculosis.

[J Shaheed Suhrawardy Med Coll 2018; 10(2): 86-90]
DOI: https://doi.org/10.3329/jssmc.v10i2.41166

Introduction

Cutaneous tuberculosis occurs very rarely despite a high and increasing prevalence of tuberculosis worldwide.[1,2] Mycobacterium tuberculosis, Mycobacterium bovis and the Bacille Calmette Guerin vaccine can cause tuberculosis involving the skin. Cutaneous tuberculosis can be acquired exogenously or endogenously and presents as a multitude of differing clinical morphologies. Diagnosis of these lesions can be difficult as they resemble many other dermatological conditions that are often primary considerations. Extra pulmonary TB constitutes approximately 10% of all case of TB and is on the rise due to compromised host immunity.[3] A more accurate classification of CTB includes inoculation tuberculosis, tuberculosis from an endogenous source and haematogenous tuberculosis. There is furthermore a definite distinction between true CTB caused by Mycobacterium tuberculosis and CTB caused by atypical mycobacterium species. The lesions caused by mycobacterium species vary from small papules (e.g. primary inoculation tuberculosis) and warty lesions(e.g. tuberculosis verrucosa cutis) to massive ulcers (Buruli ulcer) and plaques (Lupus vulgaris) that can be highly deformative. Presently cutaneous TB is rare and makes up only 0.1 to 1.5% of all new cases worldwide but in high prevalent settings can be upto 2.5%[4567].

A study showed a series of 15 patients of whom twelve had lupus vulgaris and three had scrofuloderma.[8]

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Five cases of scrofuloderma over the sternum was reported.[9] Another study showed a case of erythema induratum in a patient with active endometrial tuberculosis.[10] Those studies were done in Sri Lanka. The climate of that country is as ours and incidence of TB is almost same as our country.

Methodology

Our study was prospective observational study. Patients presented to us with non heaking ulcers on a district hospital, Shaheed Suhrawardy Medical College Hospital and our private chambers from July 2012 to June 2018 was included in our study. Patient with definite clinical patterns like Marjolin's ulcer, Malignant melanoma, Basal cell carcinoma, squamous cell carcinoma were not included in our study. We did not take wound swab for culture rethink we did wedge biopsy for all our patients. We found significant number of our patients were suffering from tuberculous ulcer and it was found retronnal with other countries in this sub continents.

Results:

Table I

Age distribution

Age (in yr)	n	%
20-30	15	23
31-40	20	30.7
41-50	16	24.6
51-60	4	6.15
61-70	7	10.7
71-80	3	4.6

Individulas between 31 to 40 year were mostly affected.

Table II

Histopathology findings

Histopath	n	%
Nonspecific ulcer	418	83.6
Tuberculosis	65	13
Malingant melanoma	7	1.4
Verruca vulgaris	5	1
Squamous cell ca	3	0.6
Basal cell ca	2	0.4

Some of the ulcers clinically suggestive of squamous cell carcinoma, basal cell carcinoma, Marjolin's ulcer and malignant melanoma and proved histologically were not included in our study. We included only suspicious delayed healing ulcers.

Table III

Tubercular involvement

Site	n	%
Caesarean section site	20	30.7
Laparoscopic umbilical port	6	9.23
Laparoscopic epigastric port	2	3.07
Cheek	2	3.07
Sole of the foot	4	6.15
Buttock	5	7.69
Perianal sinus	2	3.07
Back	7	10.76
Finger	3	4.61
Forearm	6	9.22
Arm	2	3.07
Over shin of tibia	5	7.69

TB infection commonly found in Caesarean section wound.

Classification and clinical variants

The most widely accepted classification system for cutaneous TB is based on the mechanism of propagation. The concept of bacterial load has been added to the classification (Table IV), where in multi bacillary forms, direct visualization of Ziehl-Nielson stained organism from skin biopsy is readily possible.[11,12,13,14]. Tuberculids are symmetric generalized exanthems in the skin of patients, possibly resulting from hypersensitivity reaction to tubercle bacillus.

Table IV

Classification of cutaneous tuberculosis

Bacteria load	Mechanism of propagation	Disease form
Multi-bacillary	1. Direct inoculation 2. Contiguous infection 3. Hematogenous dissemination	1. Primary inoculation TB (chancre) 2. ScrofulodermaTuberculous periorificialis Acute military TB Gumma (cold abscess)
Pauci-bacillary	1. Direct Inoculation 2. Hematogenous dissemination 3. Tuberculids	1. Verruca cutisLupus vulgaris(acral) 2. Lupus vulgaris (facial or multiple) 3. Lichen scrofulosorum Erythema induratum of Bazin Erythema nodosum

1. Multibacillary forms

Primary-inoculation TB (tuberculous chancre)

Primary-inoculation TB results from direct introduction of mycobacteria into the skin or mucosa of an individual who was not previously infected with TB.

Scrofuloderma

Scrofuloderma is the result of continuous propagation of infection to involve the skin from an underlying structure, most commonly a lymphnode, bone or joint and is the most common form of cutaneous TB in many series. Primarily affected areas are the neck, axillae, chest wall and groin.

Tuberculosis periorificialis:

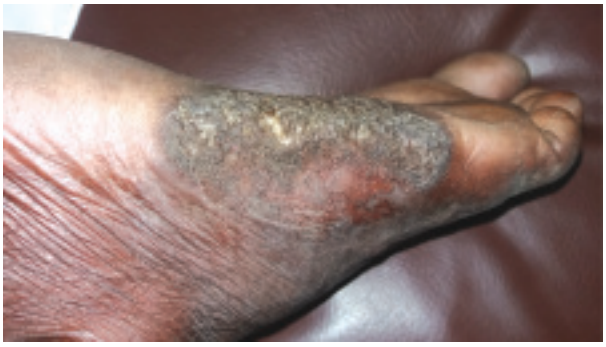
Periorificial TB results from autoinoculation of mycobacteria into the periorificial skin and mucous membrane in patients with advanced TB. In perioral TB primary site is usually upper airways or lungs, while perineal TB is secondary to intestinal or genitourinary disease.

Acute military tuberculosis

Acute military TB variant is usually seen in children and adolescents with advanced pulmonary or dissemjnated TB. The trunk is the most common location, where small erythematous macules or papules develop. Tuberculin test may be negative.

Tuberculous gumma:

Gummas are cold abscesses that will develop at extremities or on the trunk as a result of haematogenous spread from dormant mycobacteria in patients without underlying disease.



TB gumma.

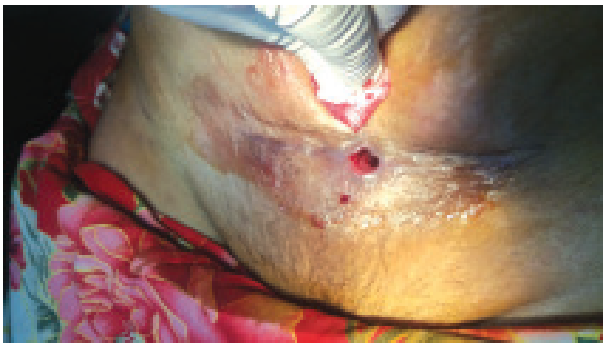
2. Paucibacillary forms

Tuberculosis verrucosa cutis

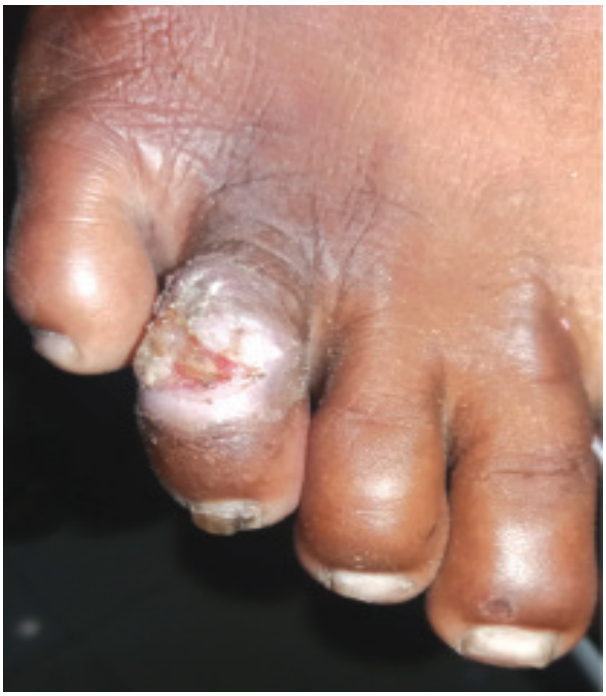
Verrucous TB results from reinoculation of mycobacteria in an individual with previous exposure and is characterized by the presence of a solitary ,verrucosae plaque, usually on an extremity such as the hand and the foot.

Lupus vulgaris

This is the most common form of cutaneous TB in many parts of the world with a female preponderance of 2-3:1. Facial lesions usually follow haematogenous spread, while direct inoculation is responsible for many lesions in extrimities. Lupus vulgaris may also follow direct extension or lymphatic spread from underlying tuberculous foci, BCG vaccination or scrofuloderma. Head and neck is involved in more than 90% of cases. Characteristically lesions are solitary, small, sharply marginated, red-brown papules or gelatinous consistency. Other than the plaque form, ulcerative, vegetative and nodular forms of lupus vulgaris have been described.



Lupus vulgaris

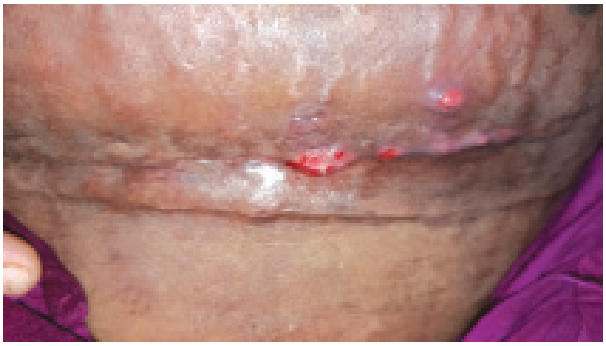


Lupus vulgaris

Tuberculids

Tuberculids were once regarded as purely hypersensitivity reactions to the presence of mycobacteria in the host with

an acquired immunity against TB. Morphological variants of tuberculids are erythema induratum of Bazin, papulonecrotic tuberculid. Lichen scrofulosorum and other related conditions such as granulomatous mastitis and lupus miliaris disseminatus facial. Now it is thought as hematogenous spread as mycobacterial DNA is found in it[15]. Erythema induratum of Bazin is most common tuberculid, it affects legs of females and can cause scarring. It mat occure with active or past disease.[16]



Post C/S

Diagnosis and treatment

A clinical diagnosis of skin tuberculosis should always be confirmed with biopsy. A strongly positive Mantoux reaction of over 15 mm is considered of diagnostic value, while negative result does not exclude the diagnosis. When available ELISA or PCR is helpful[17] However since too strict diagnostic microbiological criteria may result in under-diagnosis, therapeutic trials need to be considered in areas of high TB prevalence [18].

As per the protocol for any case of extrapulmonary TB, all patients with skin TB should be thoroughlyb screened for associated pulmonary TB, with chest X-rays in all and sputum studies when relevant. Contact tracing is important in containing diseases in children who are generally exposed to a small population only.

Management of skin TB depends on individual's previous TB status.Primary skin TB is considered less severe and category 1 regiment of anti-tubercular therapy should be stated. This comprises the standard six month regimen with a two-month intensive phase including isoniazid, rifampicin,pyrazinamide and ethambutol and a four-month continuation phase including isoniazid and rifampicin. In patients with past TB, category II regimen should be considered for treatment of skin TB. This consists of a three months intensive phase, where injectable streptomycin should be added for the first two months in addition to the standard to the standard four drugs. Continuation phase is also prolonged to five months. When treating children the dosage of medication should be calculated according to body weight and ethambutol preferable not given for the very young. A lower dosage regimen is considered for adults with a body weight below 30 kilograms and hepatic or renal disease, While a higher dose given for adults over 50 kilograms[19,20,21.]

Response to anti TB drugs depends on the types of skin TB and extent of involvement. The commonest forms, lupus vulgaris and scrofuloderma generally show a good response to medical management. A clinical response is generally detected between 4- 6weeks of treatment, but a prolonged course is required for improvement of skin condition when present with coexisting miliary or disseminated disease or TB meningitis. Failure to respond to adequate therapy should raise the possibility of drug resistance, where the patient should be managed in a specialized centre with second line therapy [22, 23].

All patients with ATT should be frequently monitored for major and minor adverse effects, including impairment of color vision, drug induced hepatitis or cholestasis and thrombochtopenia[21,24].

Sugical options such as electosurgery, cryosurgery and curettage with electro-desiccation are occasionally required for hypertrophic and verrucous forms of lupus vulgaris and TB verrucosa cutis. Reconstructive surgery may be needed for disfiguring lessions.

Discussions:

A high prevalence of extrapulmonary TB is an indication of poor TB control in a community and early recognition, prompt treatment and effective contact tracing of all TB cases is mandatory to contain the disease.

A good understanding of different presentations of TB is essential for all clinicians practicing in high prevalent settings to achieve both national and global TB prevention targets.

Skin TB remains to be one of the most elusive and difficult diagnoses to make for clinicians practicing in developing countries, not only because they have to consider a wider range of differential diagnoses such as leishmaniasis, leprosy, actinomycosis, skin cancer and deep fungal infections, but also because of the difficulty in obtaining a microbiological confirmation. Despite all the advances in microbiology, including sophisticated techniques such as polymerase chain reaction, the sensitivity of new methods are no better than the gold standard that is the isolation of organisms in culture and histopathology. Therefore even now sometimes we have to rely on old method of Mantaux test and therapeutic trials. This diagnostic difficulties may lead to serious case underreporting in low resource setting which will obscure the true disease burden of the country.

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