

Tuberculosis of Penile Shaft- A Rare Clinical Presentation

HARSH BAGLA¹, VIKRAM SATAV², VILAS P SABALE³, PRABHAV AGARWAL⁴, SHAMBHAVI SURENDRA GHOTANKAR⁵

CC BY-NC-ND

ABSTRACT

Tuberculosis (TB) is an opportunistic infection caused by *Mycobacterium TB*, and it has plagued mankind since ages, posing a major health concern in developing countries. Pulmonary TB is the most common form, but extrapulmonary TB is also not uncommon, with an incidence of 8-14%. Cutaneous manifestations of TB, known as lupus vulgaris, are extremely rare, constituting less than 1% of cases worldwide. Diagnosing a cutaneous lesion of TB poses a challenge for clinicians, as it requires both absolute and relative criteria. In the present case report, the author presents the case of a 15-year-old male from a low socio-economic background who presented with painless oedema over the penis for one and a half months. The patient had a history of dry cough and tested positive for Coronavirus Disease-2019 (COVID-19). Systemic examination was normal, and vital signs were stable. Local examination revealed oedema, redness, and phimosis over the penile shaft, along with non tender ulcerative lesions and deep cracks in the groin crease. A skin biopsy revealed lymphocytic infiltration with Langhans-type giant cells and epithelioid cell granulomas, suggesting TB of the skin overlying the penis. Laboratory investigations revealed a positive Mantoux test and an elevated Erythrocyte Sedimentation Rate (ESR) of 42. The patient was initiated on antitubercular therapy, comprising isoniazid, rifampicin, pyrazinamide, and ethambutol (HRZE). After one month of treatment, the oedema subsided, and the penile ulcers and groin skin cracks healed. Penile skin involvement in TB is rare, and the clinical appearance of such involvement may vary.

Keywords: Coronavirus disease-19, Cutaneous tuberculosis, Lupus vulgaris, Opportunistic infection

CASE REPORT

A 15-year-old male from a low socio-economic family presented with complaints of painless oedema over the penis for the past one and a half months. There was no history of Lower Urinary Tract Symptoms (LUTS), fever, or any constitutional symptoms of TB. A detailed history revealed that the patient had a dry cough and tested positive for COVID-19 in the Reverse Transcription-Polymerase Chain Reaction (RT-PCR) report two weeks before admission.

Systemic examination and vital signs were normal. On local examination, oedema and redness were observed over the penile shaft, along with phimosis. Non tender ulcerative lesions with undermined edges and deep cracks were seen in the groin crease [Table/Fig-1]. The inguinal lymph nodes were slightly enlarged but non tender, and Fine Needle Aspiration Cytology (FNAC) was non specific [Table/Fig-2]. A dorsal slit was performed, and a skin biopsy was taken. The biopsy report revealed lymphocytic infiltration with Langhans-type giant cells and epithelioid cell granulomas, suggesting TB of the skin overlying the penis. Stains with AFB, PAS, and Ziehl-Neelsen staining were inconclusive.

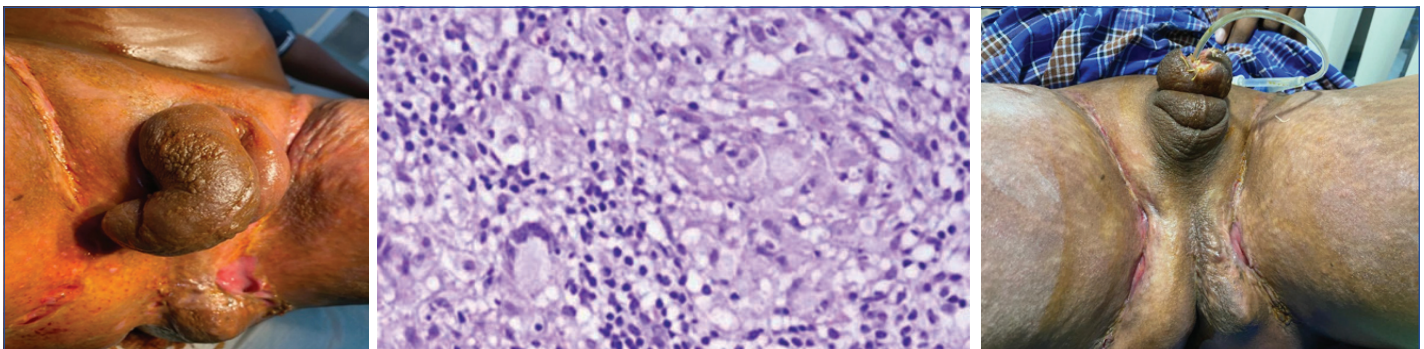
Laboratory investigations revealed a positive Mantoux test strongly positive at 14 mm and an elevated ESR of 42, while all

other investigations including Complete Blood Count (CBC), Liver Function Tests (LFTs), Renal Function Tests (RFTs) and blood glucose were normal. The chest X-ray was also normal. Based on the local examination, biopsy report, and laboratory findings, the patient was started on a course of antitubercular therapy consisting of a four-drug regimen: isoniazid, rifampicin, pyrazinamide, and ethambutol. Remarkably, after only one month of treatment, the oedema subsided, and there was evident healing of the penile ulcers and groin skin cracks [Table/Fig-3].

The patient received the intensive phase of four drugs (HRZE) for two months, followed by a maintenance phase of two drugs (HR) for six months. On follow-up, the subject was asymptomatic, with no lesions observed on the genitals, although the patient declined to provide a photograph.

DISCUSSION

Tuberculosis (TB) is an opportunistic infection caused by *Mycobacterium tuberculosis*. While pulmonary TB is the most common form, extrapulmonary TB is not uncommon, with an incidence of 8-14% [1]. Cutaneous manifestations of TB are extremely rare, accounting for less than 1% of cases worldwide [2]. They can take various forms, with Lupus vulgaris and cervical



[Table/Fig-1]: Clinical image showing redness over the penile shaft and groin area skin cracks.

[Table/Fig-2]: Haematoxylin and Eosin (H&E) stained section showing lymphocytic infiltration with Langhans-type giant cells and epithelioid cell granulomas (40x).

[Table/Fig-3]: After 1 month of antitubercular treatment. (Images from left to right)

scrofuloderma being the most common types. Diagnosing cutaneous TB lesions can be challenging for clinicians, requiring both absolute and relative criteria [3].

Penile skin involvement in TB is a rare condition [4], and it generally involves the facial skin, neck, or buttocks. Spread usually occurs through intrinsic foci, lymphatic or haematogenous routes, and rarely from exogenous sources such as droplets [5]. Lupus vulgaris manifests as an asymptomatic scaly plaque known as a lupoma, which develops when red-brown papules with soft matter coalesce. The plaque develops steadily, while additional papules forming along the edges [5]. Due to the paucibacillary nature of the disease, there is low specificity and sensitivity for various stains and PCR assays. Sensitivity and specificity of PCR assays can be improved using the dot-blot method.

In 1996, Pal DK et al., described a case of tuberculous balanitis in a 24-year-old patient who presented with a tender/firm, cauliflower-shaped growth with a nodular surface on the glans penis [6]. Further histological analysis confirmed the diagnosis, and the lesion improved with HRZE anti-TB medication. In the present case, the patient had phimosis along with oedema and redness over the penile shaft. Non tender ulcerative lesions with weakened edges and extensive cracks were observed in the groin crease, indicating that the clinical appearance of penile skin involvement in TB can vary.

Another case report by Kishan Chand C et al., described a 59-year-old patient with sensitive bilateral inguinal lymph node enlargement and ulceration on the glans penis [7]. Microscopic examination of a biopsy sample from an ulcer revealed chronic granuloma, and the Mantoux test was strongly positive, with PCR confirming TB. Effective treatment was achieved with HRZE anti-TB therapy. Similar to the present case, the patient exhibited mild bilateral lymph node enlargement but did not show any specific changes on FNAC. After receiving anti-TB treatment, all skin changes improved.

In 2012, Kar JK and Kar M presented a case report of a 31-year-old man with glans penis ulcers. Positive Mantoux and TB-PCR results supported the diagnosis, and a biopsy of an ulcerated lesion confirmed TB of the penis. Anti-TB therapy successfully healed the ulcer [8]. Since TB-PCR was not accessible in the present case, the diagnosis relied on the Mantoux test and histology. The Mantoux test and a biopsy of the affected skin are important tests for diagnosing TB, although the availability of TB-PCR is crucial for confirming the diagnosis. In situations where the diagnosis is uncertain, performing a biopsy and Mantoux test is recommended.

Another study reported a 53-year-old man with multiple asymptomatic papules on his glans penis. The tuberculin test was positive, whereas PCR test was negative. The patient was started on anti-TB treatment

and showed improvement [9]. Cases published by Theodosiou G et al., [5] and Mizuta T and Kato M [10] reported the diagnosis of lupus vulgaris through biopsy. In the study by Mizuta T and Kato M, the patient had a painless ulcer on the wrist with no signs of active pulmonary TB, but further investigations, including PCR, led to the diagnosis of pulmonary TB and tuberculous lymphadenitis [10]. However, the present cases differ from theirs in terms of lesion location, age, gender, and ethnicity. The major limitation in the present case was the lack of availability of Cartridge-based Nucleic Acid Amplification Testing (CBNAAT) or any confirmatory test, which posed a therapeutic challenge.

CONCLUSION(S)

The clinical manifestations of penile TB might range from oedema over the penile skin to lesions that discharge an unpleasant odour. In countries where TB is common, a thorough history, laboratory tests, biopsy, and TB-PCR should be performed for diagnosis, which was a limitation in the present report. The Mantoux test and biopsy remain valuable techniques for diagnosis and should be performed in circumstances when clinical diagnosis and other specific tests are ambiguous, as newer PCR assays are expensive and difficult to obtain in developing countries. Without a confirming diagnosis, treating penile lesions with generalised, non specific antibiotics can occasionally miss uncommon illnesses.

REFERENCES

- [1] van Zyl L, du Plessis J, Viljoen J. Cutaneous tuberculosis overview and current treatment regimens. *Tuberculosis (Edinb)*. 2015;95(6):629-38.
- [2] Gunawan H, Achdiat PA, Hindritiani R, Essary ED, Ningtias LD, Siregar EP, et al. Various cutaneous tuberculosis with rare clinical manifestations: A case series. *Int J Mycobacteriol*. 2018;7(3):288-91.
- [3] Santos JB, Figueiredo AR, Ferraz CE, Oliveira MH, Silva PG, Medeiros VL. Cutaneous tuberculosis: Epidemiologic, etiopathogenic and clinical aspects-part I. *An Bras Dermatol*. 2014;89(2):219-28.
- [4] Tapsoba AK, Bibi M, Traoré TM, Ayari A, Ben Rhouma S, Nouira Y. Primary tuberculosis of the glans penis: A rare presentation and review of literature. *Urol Case Rep*. 2021;39:101858.
- [5] Theodosiou G, Papageorgiou M, Mandekou-Lefaki I. An unusual presentation of lupus vulgaris and the practical usefulness of dermatoscopy. *Case Rep Dermatol Med*. 2018;2018:1036162.
- [6] Pal DK, Kundu AK, Chakraborty S, Das S. Tuberculosis of penis: Report of two cases. *Indian Journal of Tuberculosis*. 1996;43:203-04.
- [7] Kishan Chand C, Vilas AP, Chethan A, Prasad S. Primary tuberculosis of penis mimicking a malignant ulcer. *The Internet Journal of Dermatology*. 2009;8(1):01-04.
- [8] Kar JK, Kar M. Primary tuberculosis of the glans penis. *J Assoc Physicians India*. 2012;60:52-53.
- [9] Aytakin S, Göktay F, Yasar S, Ferhatoglu ZA, Güneş P. Penile tuberculosis: A case report. *Indian J Dermatol Venereol Leprol*. 2017;83(3):357-59.
- [10] Mizuta T, Kato M. Ulcerative lupus vulgaris on the wrist. *Case Rep Dermatol*. 2021;13(2):428-31.

PARTICULARS OF CONTRIBUTORS:

1. Senior Resident II, Department of Urology, Dr. D.Y. Patil Medical College and Hospital, Pune, Maharashtra, India.
2. Professor, Department of Urology, Dr. D.Y. Patil Medical College and Hospital, Pune, Maharashtra, India.
3. Professor, Department of Urology, Dr. D.Y. Patil Medical College and Hospital, Pune, Maharashtra, India.
4. Senior Resident II, Department of Urology, Dr. D.Y. Patil Medical College and Hospital, Pune, Maharashtra, India.
5. Clinical Research Coordinator, Department of Clinical Research Facility, Dr. D.Y. Patil Medical College and Hospital, Pune, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Vikram Satav,
Professor, Department of Urology, Dr. D.Y. Patil Medical College and Research Centre and Hospital, Dr. D.Y. Patil Vidyapeeth, Pimpri, Pune-411018, Maharashtra, India.
E-mail: vikramsatav@yahoo.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Aug 28, 2023
- Manual Googling: Nov 15, 2023
- iThenticate Software: Dec 08, 2023 (8%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Aug 25, 2023**

Date of Peer Review: **Oct 13, 2023**

Date of Acceptance: **Dec 12, 2023**

Date of Publishing: **Jan 01, 2024**