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Incidence of Tuberculosis in Fistula in Ano in Northwest Part of Bangladesh, a Prospective Study of 50 Cases

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Abstract **Original Research Article**

Background: Tuberculosis in the fistula in ano is extremely rare and has an important clinical entity, especially in cases where healing has not occurred despite proper multiple surgical interventions in developing countries like Bangladesh. Diagnosis of tuberculosis in the fistula is still a challenge in the modern era of medical science, even with the advancement of diagnostic modalities. ***Objectives:*** The purpose of this study was to determine the incidence of tuberculosis in fistulae- in-ano, with or without evidence of tuberculous foci elsewhere in the body and not responding to conventional surgical treatment. ***Materials and Methods:*** This is a prospective study of 50 cases of anal fistula admitted in the surgical unit of 250 Bed General Hospital, Thakurgaon during the period from March 2023 to February 2024. Tissue sent for histopathological examination, Ziehl-Neelsen staining and Tuberculosis culture. All data collected properly are evaluated by standard statistical methods. ***Result:*** Out of the 50 cases the majority were males (84%) and the majority of the patients belonged to the 40-60 years of age group. Maximum patients were from lower socio-economic conditions. Only 3(6%) patients are diagnosed with tubercular fistula-in-ano, all are male, and one was under anti-TB treatment previously. Three patients had fistulous tract containing multiple epithelioid cells and granuloma which is suggestive of tuberculosis. ***Conclusion:*** Tuberculosis should be suspected in all cases of complex and recurrent fistulae-in- ano. Meticulous clinical evaluation with tissue from anal fistulas should therefore routinely be sent for TB culture as well as histopathological examination and ZN staining in areas where TB is prevalent. The treatment of tuberculous fistula in ano includes not only surgery but also ATT, which is the mainstay of treatment with an adequate duration, owing to the recurrent and relapsing nature of the disease and regular follow-up to cope up with recurrence.

Keywords: Tuberculosis, Crohn's Disease, Anti-tubercular Therapy, Fistula-in-ano, Perianal.

INTRODUCTION

A fistula-in-ano is a pathological, epithelial-lined chronic abnormal communication, usually lined to some degree by granulation tissue, which runs outwards from the anorectal lumen (the internal opening) to an external opening on the skin of the perineum or buttock (or rarely, in women, to the vagina). The majority of anal fistulae are termed non-specific, idiopathic or cryptoglandular and intersphincteric anal gland infection, this obstructed suppuration follows the least resistance path and open in the perianal region, which determines the location of the fistula [1, 2], association with specific conditions, such as Crohn's disease, tuberculosis, actinomycosis, rectal duplication, foreign body and malignancy, and suspicion of these should be aroused if clinical findings are unusual [3].

Parks describes a classification system (Surgical classification) for anal fistulas, four types were: interspincteric, Transspincteric, supraspincteric, and extraspincteric. Goodsall's rule states two types where the internal opening is anterior or posterior to the transverse anal line. Radiological classification grade 1: simple linear intersphincteric. grade 2: intersphincteric with abscess or secondary tract. grade 3: transsphincteric. grade 4: transsphincteric with abscess or secondary tract within the ischiorectal fossa.

Tuberculosis is one of the most ancient diseases in human history, a significant public health challenge for decades. In Bangladesh, the estimated incidence rate for all forms of Tuberculosis in 2021 was 221 per 100,000 populations. An estimated 25 per 100,000 people (HIV negative) died of TB in the same year. The estimated incidence rate of HIV-positive TB cases decreased from 0.45/100,000 in 2018 to 0.43/100,000 in

2021. The incidence of MDR/RR-TB was 2.7/100,000 population, decreased from 3.7/100000 population in 2018 (Table 1). The total number of notified cases was 307,561 which is 82% of the total incidence cases. Bangladesh is one of the high TB- burden countries and accounts for 3.6% of the global total. TB is a communicable disease that usually harbor the lungs but can also affect any other viscera of the body, such as the brain, kidneys, or spine. Anoperineal TB is usually very rare but may coexist with anal fistula (5-10%) and the prevalence of Anal TB is male (ratio 4:1) and primarily in the fourth decade of life [4,5]. Anal tuberculosis can present with various morphological features, including ulcerative, verrucous, lupoid, military and fistulas truck. The diagnosis of anal TB is challenging and requires histologic analysis, Suspected with constitutional symptoms with features of TB lesion (caseous discharge, undermined edges), fistula not responding to conventional treatment, recurrent, multiple or complex fistulae and patients with anorectal strictures & inguinal lymphadenopathy [6], should undergo for histopathological examination to exclude tuberculosis to avoid delay in treatment. Diagnosis of tuberculosis of fistula in ano could be performed one of the following processes detection of acid-fast bacilli histologically in the biopsied tissue, polymerase chain reaction (PCR) positive for M. tuberculosis, growth of Mycobacterium tuberculosis in tissue or pus culture, typical caseating granulomatous necrosis [7].

MATERIALS AND METHODS

This prospective, observational study was carried out from March 2023 to February 2024 in a 250-bed general Hospital, Northwest part of Bangladesh. A total of 50 adult patients (>12 years) with history and clinical examination confirmed fistula in ano were included, collected data by a predesigned data collection sheet with consent from patients. All patients were initially diagnosed clinically by the history of pus, serous fluid and/or (rarely) feces discharge, itching, pain, swelling, fever, skin maceration, unpleasant odor and clinical examination including number and site of opening, nature of margin and distance from the anus. A fistulogram was performed on all the patients. All patients underwent standard fistulectomy, fistulotomy, seton placement and ligation of the intersphincteric tract after an informed written consent. The excised tract was sent for histopathological examination, Ziehl Neelsen staining of pus for mycobacterium tuberculosis was done in patients suspected of having tuberculosis, multiple external openings and recurrent fistula. During the post-operative period advised to sitz bath with oral antibiotics. All the patients were followed up clinically till the fistula healed and the postoperative complications. After confirmation of the cause of the disease, immediate start of antituberculosis therapy and observing the response to treatment like decreased discharge and closure of the fistula. All these observations were recorded on the prescribed proforma.

Inclusion criteria:

- All new patients with features of fistula in the perianal region.
- Not responding to conventional surgical treatment i.e. fistulectomy in other hospitals.
- Patient admitted through surgical OPD with signs and symptoms suggestive of recurrent fistula- in-ano that was treated in this hospital.

Exclusion criteria:

- Those with bleeding disorders, age below 12 years.

RESULTS

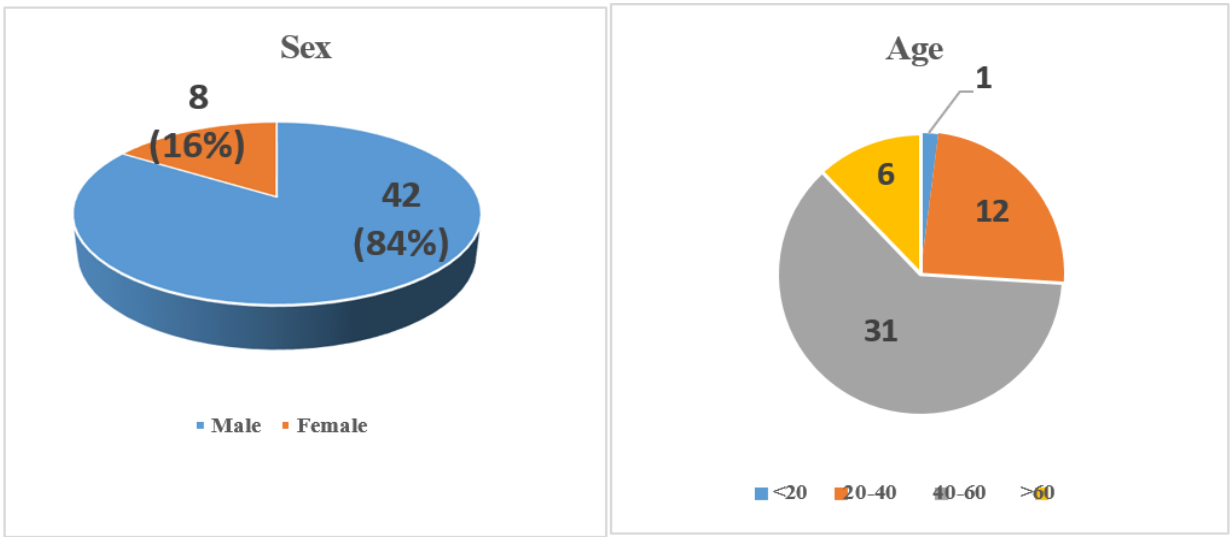

Figure-1: Age and Gender Distribution (n=50)

Out of the 50 patients, the majority were males (84%) and the majority of the patients belonged to 40-60 years of age group.

Table-1: Socio-economic distribution of cases: (n=3)

Socio-economic condition	Number of cases	Percentage
Good	0	00%
Average	1	33.33%
Poor	2	66.66%

Maximum patients were from lower socio-economic conditions.

Table-2: Clinical Presentation (n=50)

No of Patients					**Percentage (%)**
Clinical Findings					
Pus discharge			45		90
Pain			41		82
Swelling			20		40
Per rectal bleeding			3		6
Skin excoriation			9		18
Pruritis			21		42
Findings on Local Examination					
External opening			Absent	present	
			02	Single	Multiple
				41	**7**
			Distance from Anus	0-3cm	>3cm
				39	11
			Margin	Everted	undermined
				14	5
Goodsall's rule - Location of External Opening			Anterior	Posterior	
			34	14	
Internal Opening	Midline posteriorly	Anterior	Lateral	Not seen or Palpate	
	35	9	4	2	
Number of Fistula tract			Single	Multiple	
			43	7	
Type of fistula			High	Low	
			6	44	

Table-3: Incidence of tuberculosis in fistula-in-ano patients: (n=50)

Histopathological finding	Number of patients	Percentage
Fistulous tract lined by non- specific inflammatory cells.	42	84%
Fistulous tract with granulomatous inflammation suggestive of tuberculosis	3	6%
Others	5	10%

The above data shows that forty-two patients had fistula with non-specific inflammation, 3 patients had fistulous tract containing multiple epithelioid cells and granuloma which is suggestive of tuberculosis.

Table-4: Various histological findings in tuberculous fistula-in-ano: (n=3)

Histopathological finding	Number of patients
Only granulomatous inflammation	2
Granuloma & Langhan's giant cell	1

Among the 3 patients, one was under anti-TB treatment previously. The remaining two patients had no evidence of past or present tuberculosis. So 2 patients out of 49 healthy patients had tuberculous fistula-in-ano, so the incidence is 4.081%.

Table-5: Incidence of active tuberculosis in patients with tuberculous fistula-in-ano: (n=3)

Tuberculosis	Number of patients	Percentage
Evidence of active tuberculosis	1	33.33%
No of evidence of active or past tuberculosis	2	66.66%

After a diagnosis of tuberculosis, all newly diagnosed patients were given anti-TB medication and were referred to a TB clinic.

DISCUSSION

Two billion people – one-fourth of the world's population – may be infected with tuberculosis (TB), with 10.6 million becoming ill each year. Despite being preventable and treatable, TB remains a deadly disease. Globally, over 3,500 people lose their lives to TB each day – totaling 1.3 million deaths each year. In 2022, eight countries accounted for more than two-thirds of global TB cases. India (27%), Indonesia (10%), China (7.1%), Philippines (7%), Pakistan (5.7%), Nigeria (4.5%), Bangladesh (3.6%) and the Democratic Republic of the Congo (3%). Although TB is known to affect any organ of the human body, gastrointestinal tuberculosis is a rare form of extrapulmonary TB (1-2 % of total TB cases). Anal TB is extremely rare and associated with intestinal TB [8]. There are no specific features for diagnosis of tuberculous fistula in ano and very difficult to recognize, not treated properly and developed from a neglected case of anal sepsis [9]. This results in recurrence and non-healing fistula after routine surgical treatment.

In our study out of the 50 patients of fistula in ano, the majority were male 42(84%) with a male: Female was 5.25:1 and a maximum of 31(62%) patients were in the age group 40-60 years, 12(24%) patients were in the age group 20-40 years. This result is similar to Chaudhry *et al.,* [10]. The usual clinical features of fistula in ano in this study including anal pain(82%), discharge(90%), swelling(40%), pruritus(42%), skin excoriation(18%), external opening Single(82%) multiple(14%) or recurrent fistulae in the perianal region and inguinal lymphadenopathy are not characteristically distinct from tubercular fistula in ano [11]. Most of the fistula caused by cryptoglandular nonspecific infection, that responsible for the surgical condition for 90% of anorectal abscesses, finally burst into formation fistula in ano [12]. Similarly, in this study, there was no specific clinical picture for fistulae-in-ano caused by TB, presented with various morphological forms like ulcer, Verrous, Lupoid and miliary lesion which classically show superficial undermined edge ulcer with necrosis and mucopurulent discharge, formation of fistulae, firm and annular stricture from ulceration. Clinical suspicion of TB in the anal fistula is extremely difficult due to the absence of a typical, local or systemic pattern. Anoperineal TB is very uncommon form of extrapulmonary tubercular involvement in developed countries but higher in the Indian subcontinent as an endemic region, the presence of TB in fistula in ano in almost 16% [13] and Complex fistulae is above 60%, may be associated with pulmonary or abdominal tuberculosis. TB can be spread via haematogenous, lymphatic dissemination of intestinal or genitourinary disease from regional lymph nodes, ingestion of contaminated milk swallowing of infected bacilli sputum from active pulmonary foci or direct propagation from infected adjacent organs [14]. TB is also related to immunocompromised states, as the infection occurs in cases of HIV infection and leprosy [15] which were not observed in this study. A great deal of importance was given for the diagnosis and treatment of pulmonary, lymph node and other internal organ tuberculosis after the discovery of Mycobacterium Tuberculosis in 1982. Though tuberculosis is an identified cause of perianal fistula, often a histopathological study of the fistulous tract is omitted or missed following surgery. Sometimes excessive use of the diathermy makes the tissue unsatisfactory for histological study. What is needed for the identification of underlying tuberculosis is thorough history taking, clinical examination, laboratory investigations and histological study of fistula tract. Thus with proper medication recurrence of fistula-in-ano can be avoided. In the modern era of medical science, despite of several test, accurate and prompt diagnosis of anal fistula caused by tuberculosis still remains challenging. In developing countries like Bangladesh usually, the search starts with some routine investigations as total leucocytes count, Erythrocytes sedimentation rate, Mantoux test, and identification of acid-fast bacilli by using of specific stains such as Ziehl-Neelsen in collected discharge or excised tissue from fistulous tract and mycobacterial culture [13]. These tests are performed routinely in all patients with cases of recurrent complex fistula with a high degree of suspicion. Even though the sensitivity and specificity of these tests are still low but frequently performed investigations as simple and cheap molecular detection methods such as polymerase chain reaction (PCR) are now available for the rapid diagnosis of tuberculous infection, which can detect the presence of bacterial DNA in 48 hours with high sensitivity and specificity [16]. Mycobacterial culture requires several weeks to provide a result and PCR is not yet in widespread use.

Anal fistula caused by TB is an extremely rare, accounting for less than 1% of extrapulmonary TB. The deferential diagnosis of tubercular fistula in the perianal region includes Crohn's disease, Pyoderma gangrenosum, burst anorectal abscess associated with various mixed flora, diverticulis, hydradenitis suppurativa, syphilis, actinomycosis and malignancy. Of these diseases, Crohn's disease and pyoderma gangrenosum are the most important. In Crohn's the perianal skin appears bluish with superficial ulcers with

bridging of epithelium. Deep cavitating ulcers cause perianal abscesses and fistulae and can be differentiated from Crohn's disease by Ziehl-Neelsen staining, culture for M. tuberculosis and particularly the PCR test for TB DNA [17]. As anal TB is rarely diagnosed accurately before operation based on clinical features, histopathological examination of excised tissue from the fistulous tract is mandatory. So all the excised tract of the fistula is sent for histopathological examination. In this study fistulous tract is lined by non-specific inflammatory cells (84%), the Fistulous tract with granulomatous inflammation (6%), and others (10%), this result is supported by the study of D Stupart *et al.*, [18]. The histological lesion usually involves the central area of caseation necrosis, surrounded by epithelioid cells, plasma cell, lymphocytes and Langhan's giant cells that is not constant and presents diagnostic problems, especially in the case of Crohn's disease with anoperineal localization. The histological picture of granulomatous inflammation is characteristic of Mycobacterium infection, it can also be found in other disease entities such as systemic lupus erythematosus (SLE), sarcoidosis and leprosy. Tuberculosis, even when present, is frequently missed due to burn of tissue by excessive use of diathermy, wrong selection of tissue and inadequate tissue. In this study, 3(6%) cases were diagnosed as tuberculosis fistula-in-ano, only granulomatous inflammation in two cases and Granuloma & Langhan's giant cell in one patient. In Bangladesh granuloma goes in favour of tuberculosis.

In a study carried out in 2000 and 2001 at Dhaka Medical College, Dr. Subarna Islam found that the incidence of tuberculosis was 7%, she studied 100 patients [19]. Whereas the result in my study has been 6% both of our studies included male patients predominantly and the majority of the age group belongs to 40- 60 years [13]. Sukla (1988) reported 15.6% incidence of tuberculosis in fistula –in-ano which is a more than double the incidence of my study and also reflects the high overall incidence of TB in this subcontinent in comparison to other developed parts of the world as evidenced by the report of only three cases in 10 years in a retrospective study in the Prince of Wales Hospital, Hong Kong (Chung 1997). In the present study, one out of three patients with perianal Tuberculous fistula had previously been diagnosed with tuberculosis. In the present study, 3 (6%) cases of fistula-in-ano were proven to be tuberculosis. There was one case with active pulmonary focus. The other 2 cases had no evidence of past or present pulmonary tuberculosis. In Goligher's experience of 28 tuberculous fistulas 15 (53.57%) had active tuberculous focus, 9 (32.14%) had old healed TB and 4 (14.28%) had no evidence of active or healed TB (based on history, clinical findings, blood count and CXR). The difference between these two studies is probably due to the larger number of patients in Goligher's study, which was four times the present study group. Also poor quality of X-rays and unreliable laboratory findings could be another possibility. Logan (1969) reported a fall in incidence from 16% to 1% at St. Mark [20]. Over a period of 50 years but in this study it is 6% as the overall incidence of tuberculosis is still very high in Bangladesh. In this study, Tuberculous fistula in ano more common in low socioeconomic people (66.66%). Undernutrition, poverty, poor general health knowledge, overcrowding and poor sanitation in rapidly industrialized countries, all play their part in the increased incidence in poor population groups [11].

CONCLUSION

The incidence of tuberculosis continues to decline in most countries, there is evidence from parts of the developing world that rates may begin to increase. Despite prevention programs tuberculosis is still progressing in developing countries. Fistula-in-ano is often a dilemma both for surgeons and patients. Patients often come with a second, third or even fourth time recurrence of anal fistula. Risk factors as a cause of recurrence include undiagnosed primary diseases like tuberculosis, a complex type of fistula, horseshoe extension and lack of identification of internal fistula opening. In our country one of the primary diseases causing fistula-in-ano is tuberculosis. This study found a significant incidence of tuberculosis (6%) causing fistula. In most cases, thorough clinical assessment, routine laboratory investigations, etc. are not enough to conclude the diagnosis. Therefore, what is crucial for diagnosis is a histopathological study of the fistulous tract. It is a matter of happiness that provision for the good histological study is now available in many centres in Bangladesh. From this study, it may be concluded that the incidence of fistula-in-ano caused by tuberculosis is significant.

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