

Original Research Article

Microbiological Study of Genital Ulcers at Tertiary Care Hospital

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Abstract: In all societies sexually transmitted infections rank among the most common of all infection diseases. Whereas the comparable figure in Europe and North America is at most 5%. The infection with HIV remains a leading cause of death in persons 25 to 44 years of age in the United State, as in developing countries, despite the advent of potent anti-retro viral therapy. The study is done to determine the etiology of genital ulcers, to assess the correlation between the clinical and laboratory diagnosis and to assess the prevalence of human immune deficiency virus infection in ulcer patients. A total of 125 patients with genital ulcers attending these sexually transmitted diseases clinic in Rajiv Gandhi Institute of Medical Sciences (RIMS) Adilabad and private STD Clinics at Adilabad were included in our study during the period Dec 2013 – Jan 2015. Of the 125 patients 102 (81.6%) were males and 23 (18.4%) were females. The maximum incidence of genital ulcers was found in the age group 20 to 29 Years. Genital ulcers disease is more common among patient with low literacy status. Of the 125 patients with genital ulcer diseases (29) were positive for syphilis 20 for herpes simplex, Candidal balanoposthitis were seen in 20 patients (among these 20 cases 12 were with diabetes mellitus 2 cases of LGV). Mixed infections with herpes simplex and syphilis in 9 cases, 2 cases with herpes simplex and candidal balanoposthitis, 7 cases with syphilis & HIV 9 cases with HSV & HIV, 2 cases with CBP & HIV. No cases of chancroid in our study. LGV were seen only in 2 patients.

Keywords: sexually transmitted diseases, genital ulcer, syphilis, chancroid, herpes simplex

INTRODUCTION

Genital ulcer disease is an important health problem in many developing countries. It is defined as a lesion in the skin or mucous membranes, usually by sexually acquired organisms.

In all societies sexually transmitted infections rank among the most common of all infection diseases with over thirty infections now classified as predominantly sexually transmitted. Whereas the comparable figure in Europe and North America is at most 5% [1].

Sexually transmitted herpes simplex virus Infection now cause most genital ulcer diseases throughout the world and an increasing proportions of cases of genital herpes in the developing countries with generalized HIV epidemic [2].

The infection with HIV remain a leading cause of death in persons 25 to 44 years of age in the United

State, as in developing countries, despite the advent of potent anti-retro viral therapy [3].

Herpes is the most responsible for an estimated 208,000 initial visits to physicians in 1996. During this year, 3831 cases of primary syphilis were reported to the Centers for Disease Control and prevention vastly under reported in the United States [4].

The studies conducted among gay men in the United State, and among heterosexuals in developing countries, indicate not only that the presence of genital ulcer significantly enhances susceptibility to HIV infection but that the presence of genital ulcers in HIV positive individuals results in increased transmission of the virus to others [5].

A polymicrobial flora was identified in the ulcers of 97 men. Herpes simplex Virus and *Treponema pallidum* was the prevalent pathogens identified [6].

Chancroidal lesions were most commonly found to have other microbiological aetiology[7]. In Africa, establishment of an accurate clinical diagnosis in cases of genital ulcer disease is difficult owing to atypical presentation of ulcerations and mixed infections[8].

There are two naturally occurring variants of HSV, HSV type I and type 2 HSV 2 is the major causes of genital herpes infection occurring in 80-90 % of cases. HSV – 1 normally causes non STD infections such as oral – labial herpes [9].

In India prostitution is still an important cause for the spread of STD's, syphilis was found to be the commonest STD affecting 305 of 200 commercial sex workers attending a clinic for various ailments [10].

Secondary syphilis develops 6-8 weeks after the appearance of primary chancre. The common signs include a rash (75-100% of patients), lymphadenopathy (50 – 86%) and mucous lesions (6-30%) [11].

In Tertiary syphilis the characteristic lesion is the gumma. The organism cannot be demonstrated except by animal inoculation [12].

Chancroid is a major genital ulcerative disease in Africa, South East Asia, the Caribbean, and Latin America and is of increasing concern in the United States. The WHO estimates that the annual incidence is about 7 million, it is also associated with augmented transmission of human immunodeficiency virus (HIV)[13].

Pond and Grebbel described in 1937 a large mononuclear cell containing intracellular Donovan bodies (DB) in the histological sections of donovanosis lesions which they called the pathognomonic cell of inguinale[14].

Anderson succeeded in cultivating the organism in the yolk sac of a developing chick embryo in 1943 and later proposed a new name donovaniagranulomatis. Based on the antigenic cross reactivity pattern, a relationship between klebsiella and D. granulomatis was suggested by Rake [15].

LGV is primarily a sexually transmitted infection although close non-sexual contact with infectious secretions can result in transmission. Congenital transmission does not occur[16].

MATERIALS AND METHODS

Microbiological study of genital ulcers was undertaken in the department of Microbiology, RIMS Adilabad from December 2013 to January 2015. Specimens were obtained from patients with genital

ulcer disease attending to the department of sexually transmitted diseases, RIMS Adilabad and private STD clinics at Adilabad.

From clinically diagnosed cases, specimens were based on clinical findings made prior to the result of microscopic or laboratory tests, collected and processed in the Department of Microbiology, RIMS Adilabad.

Specimen collection

After thorough cleaning of each ulcer with a gauze pad and saline, material from the base was collected on 3 swabs. The first swab was used to prepare a direct smear on clean glass slide, and stained by Gram's Method or Leishman's or Fontana's and the morphology of the organism have been noted. The second swab was inoculated on Blood agar, MacConkey Agar, Nutrient Agar and the inoculated plates were incubated at 37°C aerobically overnight. If any growth was seen on the plates, it was processed according to standard bacteriological techniques. The third swab is inoculated directly on C.G. Agar medium cultures are incubated for up to 5 days at 35-37°C in a humid atmosphere in jar containing wet blotting paper with additional carbon dioxide.

Secretions were expressed from each ulcer and subjected to dark field microscopy. Fluid from blisters or ulcers of clinically suspected case of herpes genitalis were obtained aseptically for Tzanck smear preparation. Tissue smears were collected from edges of the ulcer of clinically suspected cases of granuloma inguinale and were stained by Leishman staining.

About 8-10 ml of Patients venous blood was drawn and collected in plain bottle under sterile conditions, serum separated and the tests were done.

Serological tests for HIV detection: 1. COMB AIDS-RS, 2. NEVA HIV (naked eye visible agglutination) 3. HIV TRI- DOT

RESULTS

A total of 125 patients with genital ulcers attending the sexually transmitted diseases clinic in Rajiv Gandhi Institute Of Medical Sciences Adilabad and private STD clinics at Adilabad were included in our study during the period Dec 2013 – Jan 2015.

Of the 125 patients 102 (81.6%) were males and 23 (18.4%) were females. The maximum incidence of genital ulcers was found in the age group 20 to 29 Years (Table-1).

Among the patients with ulcers disease, majority were from urban areas 61.6%, rural 38.4%.

Genital ulcers disease is more common among patient with low literacy status (Table-2).

Of the 125 patients with genital ulcer diseases (29) were positive for syphilis 20 for herpes simplex Candidal balanoposthitis were seen in 20 patients, among these 20 cases 12 were with diabetes mellitus 2 cases of LGV.

Mixed infections with herpes simplex and syphilis in 9 cases, 2 cases with herpes simplex and candidal balanoposthitis, 7 cases with syphilis & HIV 9 cases with HSV & HIV, 2 cases with CBP & HIV. No cases of chancroid in our study (Table-3).

Nonspecific ulcers were seen in 25 cases with Coagulase negative staphylococcus, Coagulase positive staphylococcus, *Escherichia coli*, *Klebsiella* and *Proteus* as secondary bacterial infections.

Table 1: Showing incidence of genital ulcers in relation to Age and Sex

S.No	Age in years	Male		Female		Total no. of cases	
		Number	percent	Number	Percent	Number	Percent
1	Below 20	3	2.4	1	0.8	4	3.2%
2	20-29	44	35.2	12	9.6	56	44.8
3	30-39	35	28	7	5.6	42	33.6
4	40-49	12	9.6	2	1.6	14	11.2
5	50&above	8	6.4	1	0.8	9	7.2
	Total	102		23		125	

Table2: Showing Literacy status of 125 cases

Literacy status	No. of cases	Percentage
Illiterate	27	21.6
Up to 5 th standard	64	51.2
Up to 12 th standard	24	19.2
Graduate & above	10	8

Table3: Showing the incidence of Various in Genital ulcers

Disease	Males		female		Total	
	No	%	No	%	No	%
Specific infections						
Syphilis	24	19.2	5	4	29	23.2
Herpes	12	9.6	8	6.4	20	16
CBP	17	13.6	3	2.4	20	16
LGV	2	1.6	-	-	2	1.6
Mixed infection						
Herpes + Syphilis	8	6.4	1	0.8	9	7.2
Herpes + CBP	2	1.6	-	-	2	1.6
Syphilis + HIV	6	4.8	1	0.8	7	5.6
HSV+HIV	7	5.6	2	1.6	9	7.2
CBP + HIV	2	1.6	-	-	2	1.6
Non specific	22	17.6	3	2.4	25	20
Total	102		23		125	

DISCUSSION

In our study of 125 patients with genital ulcer attending STD Clinics, we got 102 (81.6%) males and 23 (18.4%) females, and in a study by Ndinyaachola 1996 in Kenya 91.9% were males and 9.1% were females [17].

The most common age group is between 20-29yrs that is 56 cases (44.8%) which are similar to the study of Fawole *et al* 2000 in Nigeria [18].

In our study syphilis was found in 45 (36%) of cases, the same was observed by Khanna *et al*, who found

the incidence of syphilis in India varying from 10.4 - 36% However H.H. Crew brown *et al* got 49% of syphilis cases in their study.

In our study 40 cases 32 % of Herpes simplex Virus were positive for HSV – 2 similar observation were made in STD clinic in United States by Chapel *et al*, Jaganmohan Reddy *et al* Kinghorn G *et al* who found 40-60 % of HSV cases in genital ulcerations [6,19].

The study of HSV – 2 seroprevalence conducted in STD Clinic Milan Italy showed 29.5% sero positivity. Candida were isolated from 24 cases (19.2%) in our study 2 cases of Lymphogranulomavenereum were found. Among the various mixed infections HIV & HSV2 were more than 50% similar observation were done by Chen et al[20].

In 25 cases there were mixed infections, 9 with herpes and syphilis, 2 with herpes and candida, 7 with syphilis and HIV, 9 with HIV & herpes, 2 with candida and HIV, wang QQ et al also got mixed infections[21].

HIV Seropositivity in ulcer patients were 18 (14.4%) this is similar to the study done in 10 cities which showed 6% (0.18%) and also by gadkari DA, Qunin TC et al in 1996[22].

No chancroid cases were identified in our study similar study was done by wang QQ et al[21]. Diaz – mitoma et al 1987: twenty – eight patients with recent onset of nonvesicular ulcerative genital lesions were studied prospectively to define. Nine patients had syphilis, six had genital herpes one had chancroid one had granuloma inguinale, and one had a human bite injury. Six of seven homosexual men had syphilis[23].

Dillon SM et al, there were 33 cases of primary syphilis 27 of chancroid and 24 of genital herpes simplex, more than one microbial etiology was found in 19 of the patients[24]. Varela JA et al studied 25 % were seropositive for HSV – 2 (12 % of men, 30 % of women[25].

SUMMARY AND CONCLUSION

Sexually transmitted disease remains a serious medical and social problem in many countries. Studies of genital ulcer usually are directed towards detection and identification of microorganisms responsible for the more serious sexually transmissible disease. The present study was therefore undertaken to determine the nature and frequency of the various aetiological agent involved in genital ulceration. Thus 102 men and 23 women patients with genital ulcer who are attending the STD clinic were studied. The most prevalent pathogen identified among 45 (36%) patients was *Treponema pallidum* (syphilis) out of 125 patients with genital ulcers.

Herpes simplex virus -2 was the next common pathogen 40 cases (32%). Candidal Balanoposthitis is found in patients with diabetes mellitus more than non-diabetics. Out of 125 patients with GUD, 25 (20%) patients were having mixed infections of syphilis, herpes simplex virus – 2 and candida and HIV. LGV were seen only in 2 patients.

Nonspecific ulcer was seen in 25 cases with secondary bacterial infections due to Coagulase negative staphylococcus, Coagulase positive staphylococcus *Echerischia Coli* Klebsiella and proteus. Out of 125 patients with genital ulcer disease 15 (14.4%) patient are serologically positive for HIV. No cases of chancroid were seen.

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