

**Non-ulcerative Sexually Transmitted Diseases among married women in selected urban and semi-urban area (aetiological aspects)**

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The study population comprised of 269 and 464 cases of non-ulcerative females (>20-50 years) from Ahlone and Thaketa townships respectively. In Ahlone area, different pathogens were isolated from 32 cases (11.20%): *Chlamydia trachomatis* (1.12%), *Candida albicans* (2.23%), *Trichomonas vaginalis* (7.06%), *Neisseria gonorrhoeae* (0.74%) and mixed infection (*C. albicans* + *T. vaginalis*) (0.74%). In Thaketa, 69 cases (14.87%) were infected: *C. trachomatis* (1.94%), *C. albicans* (1.72%), *T. vaginalis* (7.54%), *N. gonorrhoeae* (2.16%) and mixed infection (*N. gonorrhoeae* + *T. vaginalis* 0.86%; *C. trachomatis* + *T. vaginalis* 0.65%). Antibiotic susceptibility activity of *N. gonorrhoeae* from Ahlone area revealed that one strain was resistant to all antibiotics tested and another strain was resistant to penicillin, erythromycin, tetracycline, however, it was sensitive to spectinomycin, sparfloxacin, kanamycin, cefaclor, ceftriaxone and netilmicin. Fourteen strains of *N. gonorrhoeae* isolated from Thaketa area were resistant to amikacin (71.43 %), carbenicillin (50%), erythromycin (78.57%), kanamycin (71.43%), penicillin (92.86%), rifampicin (57.14%), septrin ( 85.71%), spectinomycin (14.28%), and vancomycin (42.85%). The plasmid 25.2 MDa was obtained from *N. gonorrhoeae* when tested by agarose gel electrophoresis.

## INTRODUCTION

Sexually transmitted diseases have recently been regarded as serious health problems in developing countries as well as in Myanmar. They have been ranked as the sixth priority health problem out of 39 in Myanmar (1996-2001) [1]. Gynaecological morbidity associated with STDs is thought to be high among women and pelvic inflammatory

disease (PID), one consequence of STD infection, may lead to infertility [2]. According to WHO, in women aged 44 years, reproductive ill-health account for 33 percent of the total disease burden as compared to 12.3% for males of the same age [3]. In order to improve care for women with STDs, this field study was carried out to identify the level of asymptomatic, unrecognised or untreated infection in women.

## MATERIALS AND METHODS

### *Study area and study population*

The study was carried out from February 2002 to March 2004. It was a cross-sectional community-based study. The study population was on non-ulcerative married women from Ahlone and Thaketa townships, Yangon Division during the study period. It comprised of 269 and 464 cases from Ahlone and Thaketa townships respectively with their ages ranged between >20-50 years. A set of questionnaire was administered to all cases tested which covered the gynaecological history including menstruation, symptoms of genital and urinary tract infection and obstetric, medical and surgical histories.

The medical officers examined the vulva for ulcerative lesions and vaginal discharge with disposable speculum. The cervix was inspected for ulcers, warts, ectopy and cervicitis. Two high vaginal swabs were taken, one was inoculated into *Trichomonas media*, a second into sterile saline for wet mounting and gram staining for Candidiasis. After the ectocervix had been cleaned out of secretions, three Dacron-coated swabs were placed in the cervical and rotated to collect endocervical secretions and cells. These were placed in Amies transport medium for gram staining and culture of *N. gonorrhoea*; *E. coli* and *S. aureus*; second swab in sterile normal saline for PCR; and the third in the transport media for antigen detection of *C. trachomatis* by Clearview kit (Unipath). All the specimens were transported to the laboratory within 2-4 hours and processing of specimens was carried out within 24 hours.

### *Laboratory diagnosis of Sexually Transmitted Diseases*

The isolation and identification of the sexually transmitted pathogens was carried out as the method described by Dyck, Meheus & Piot,

1999 [4]. The isolation and identification of bacterial pathogens was carried out by gram-staining, biochemical tests and serology. *Candida albicans* was confirmed by germ tube test. *Neisseria gonorrhoea* was tested by oxidase and Phardebact monoclonal lab test. The active form of trophozoite of *T. vaginalis* was identified in *Trichomonas media* up to seven days. The molecular assay of plasmid analysis on *Neisseria gonorrhoea* was assayed by the method of Sambrook, 1982 [5].

### *Antibiotic susceptibility testing*

It was carried out as described by WHO, 1996 [6]. The discs were purchased from BBL, USA or Hi, India: Erythromycin (E-15), Carbenicillin (Car-100), Kanamycin (K-30), Penicillin (P-2), Rifampicin (RF-30), Amikacin (An-30), Septrin (trimethoprim + sulfamethoxazole) (SXT), Tetracycline (Te-30) Vancomycin (VA-30), Spectinomycin (SN-10) and Netilimicin (NET-30); Ceftriazone (Ci-30) and Cefclor (Cj-30).

## RESULTS

Distribution of sexually transmitted pathogens such as *C. trachomatis*, *N. gonorrhoeae*, *C. albicans* and *T. vaginalis* from Ahlone and Thaketa Township is shown in Table 1 & 2.

From Ahlone *C. albicans* and *T. vaginalis* was found in 2 cases (0.74%) as mixed infection. Moreover, from Thaketa, *N. gonorrhoeae* and *T. vaginalis* was found in 4 cases (0.84%) as mixed infection. It was determined that 32/269 cases (11.90%) from Ahlone and 67/477 cases (14.05%) from Thaketa were isolated with these 4 pathogens, and seems that women from Thaketa were contracted more than Ahlone area ( $p < 0.01$ ).

As for other bacterial infection, *E. coli* and *S. aureus* were isolated from both areas.

Table 1. Distribution of pathogens isolated different age groups from Ahlone Township

Age group yrs	Tested	<i>Chlamydia trachomatis</i>	<i>Candida albicans</i>	<i>Trichomonas vaginalis</i>	<i>Neisseria gonorrhoeae</i>	<i>C. albicans</i> + <i>T. vaginalis</i>	Total
>20-25	26	1 (3.85)	1 (3.85)	2 (7.69)	0	0	4 (15.38)
>25-30	37	1 (2.70)	0	4 (10.81)	0	0	5 (13.51)
>30-35	67	0	4 (5.97)	1 (1.49)	2 (2.99)	0	7 (10.45)
>35-40	47	0	0	3 (6.38)	0	0	3 (6.38)
>40-45	54	1 (1.85)	1 (1.85)	6 (11.11)	0	2 (3.70)	10 (18.52)
>45-50	38	0	0	3 (7.89)	0	0	3 (7.90)
Total	269	3 (11.11)	6 (2.23)	19 (7.06)	2 (0.74)	2 (0.74)	32 (11.90)

Figures in parenthesis denote percentages

Table 2. Distribution of pathogens isolated from different age groups from Thaketa Township

Age groups yrs	Tested	<i>C. trachomatis</i>	<i>C. albicans</i>	<i>T. vaginalis</i>	<i>N. gonorrhoeae</i>	<i>N. gon.</i> + <i>T. vag.</i>	<i>C. tra</i> + <i>T. vag.</i>	Total
>20-25	36	1 (2.78)	1 (2.78)	3 (8.33)	0	1 (2.78)	0	6 (16.67)
>25-30	67	0	2 (2.98)	8 (11.94)	0	0	0	10 (14.93)
>30-35	119	4 (3.36)	2 (1.68)	5 (4.20)	2 (1.68)	2 (1.68)	1 (0.84)	16 (13.45)
>35-40	108	2 (1.85)	1 (0.93)	9 (8.33)	8 (7.41)	1 (0.93)	1 (0.93)	19 (17.59)
>40-45	84	2 (2.38)	2 (2.38)	4 (4.76)	4 (4.76)	0	0	12 (14.26)
>45-50	50	0	0	5 (10.00)	1 (2.00)	0	1	7 (14.00)
Total	464	9 (1.94)	8 (1.72)	35 (7.54)	10 (2.16)	4 (0.86)	3 (0.65)	69 (14.87)

Figures in parenthesis denote percentages

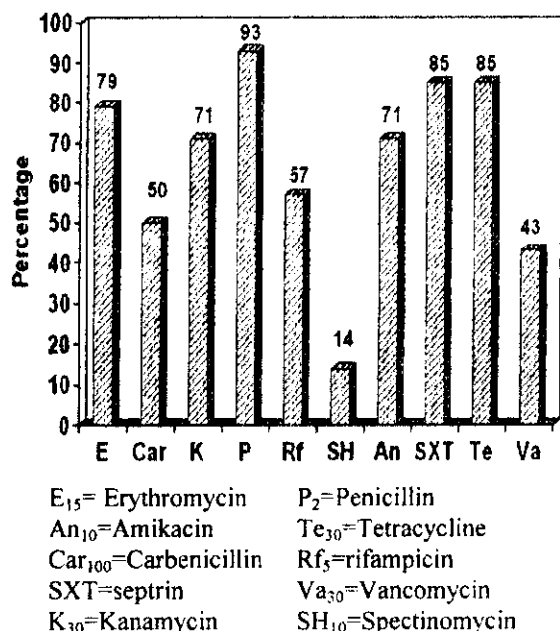


Fig. 1. Resistant pattern of different antibiotics when tested on *Neisseria gonorrhoeae* isolated from nonulcerative women with STD (n=14) 2 cases from Ahlone and the rest from Thaketa

It was found that *E. coli* was isolated from 4.46% and 6.03% from Ahlone and Thaketa respectively. So also *S. aureus* was isolated from 0.37% and 0.64% from Ahlone and Thaketa respectively. (Table 3 & 4).

Antibiotic susceptibility pattern of *Neisseria gonorrhoea* is shown in Fig. 1.

Table 3. *Escherichia coli*, *Staphylococcus aureus* isolation and clue cells from non-ulcerative women from Ahlone area (n=269)

Age groups (yrs)	clue cells <5	clue cells 5>20	Total	<i>E. coli</i>	<i>S. aureus</i>
>20-25	3	2	5	2	0
>25-30	3	2	5	2	0
>30-35	6	9	15	2	1
>35-40	6	3	9	3	0
>40-45	4	4	8	1	0
>45-50	2	2	4	2	0
Total	24	22	46	12	1
	(8.92)	(8.18)	(17.10)	(4.46)	(0.37)

Figures in parenthesis denote percentages

The resistance pattern was found in erythromycin (78.6%), carbenicillin (50%),

kanamycin (71.4%), penicillin (92.9%), rifampicin (57.1%), spectinomycin (14.0%), amikacin (71.4%), septrin (85.7%), tetracycline (85.7%) and vancomycin (50%). However, they were sensitive to cefaclor and ceftriaxone.

Table 4. *Escherichia coli*, *Staphylococcus aureus* isolation and clue cells from non-ulcerative women from Thaketa area (n=464)

Age groups (yrs)	clue cells <5	clue cells 5 > 20	Total	<i>E. coli</i>	<i>S. aureus</i>
>20-25	2	1	3	1	1
>25-30	5	5	10	6	1
>30-35	13	6	19	9	1
>35-40	4	8	12	4	0
>40-45	6	13	19	4	0
>45-50	4	6	10	4	0
Total	34	39	73	28	3
	(7.33)	(8.41)	(15.73)	(6.03)	(0.64)

Figures in parenthesis denote percentages

## DISCUSSION

*Neisseria gonorrhoea*, is a reservoir in human genital tract and therefore, transmission is caused by sexual intercourse. In men, symptoms will develop two to five days following infection with the mean incubation period of 8.3 days. For women, the average incubation period is about 10 days. The most common complaints for men are urethral discharge and painful urination (dysuria). However, 5-10% of infected men will be asymptomatic. For women, increased vaginal or cervical discharge is the most frequently reported symptom. The other complaints are burning sensation or itching, bleeding during and after intercourse, and fowl smelly discharge, 30-60% of infected women will be asymptomatic or subclinical [7].

Antimicrobial agents against *Neisseria gonorrhoea* in western region of the Kingdom of Saudi Arabia [8]; Kenya [9]; Kigali, Rwanda (1985-1993) [10]; India [11]; Thailand [12]; and Phillipines [13]

claimed the increasing resistance pattern to antimicrobial agents.

The bacterial vaginosis in pelvic inflammatory disease of sexually active young women, may give the sequelae, such as tubal-factor infertility and ectopic pregnancy [14]. The relationship of vaginal trichomoniasis and pelvic inflammatory disease among women colonized with *C. trachomatis* revealed the evidence of upper genital tract disease [15]. The risk factors for infection in women in Manitoba, Canada demonstrated that differences in the demographic and socioeconomic characteristics of women with gonorrhoea, chlamydia and coinfection suggest the existence of multiple reservoirs of infection in their study population [16]. After studying the prevalence of *C. trachomatis* urogenital infection, in pregnant women in Martinique, the authors stated that none of the behavioral, demographic and clinical factors associated with chlamydial infection was sensitive enough to permit efficient selective screening. It was cost effective to recommend a routine screening for chlamydial infection together with an educational programme [17]. The cost effective analysis of screening and treatment for *C. trachomatis* infection in asymptomatic subjects showed that treatment with a single dose of azithromycin under supervision in the clinic was the most cost-effective intervention strategy [18].

Sensitivities of PCR, MicroTrak, Chlamydia EIA, IDEIA and PACE 2 for purified *C. trachomatis* elementary bodies in urine, peripheral blood leukocytes and synovial fluid was reported [19]. In detection of *C. trachomatis* when compared between a commercial and in house amplification methods and culture demonstrated that the in house PCR had the highest sensitivity [20]. It was reported that STD awareness and case management improved considerably after approaching various activities in Haiti [21].

From various studies it had been shown that the success of a control programme is evidenced when a reduction of the STD prevalence or when the impact of improved syndrome-based STD case management. In this study candidiasis and trichomoniasis were expected to be more common in view of the poor socioeconomic background of the women and the unsatisfactory housing conditions under which they lived. Thus, personal hygiene is always essential for the control of infections and health education on STDs is always needed.

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