A PROFILE OF GONOCOCCAL URETHRITIS IN MALE
(A Time Series Clinic Study)

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Summary

A study of 125 uncomplicated gonococcal urethritis in males were selected at random and analysed from different angles keeping in view the changing facets of gonococcal infection and its impact at the present time.

Introduction

Current estimates of world incidence of gonococcal infection vary from 70 million to 200 million, Arya[1]. W.H.O.[2] estimated an approximate incidence of 250 million fresh cases throughout the globe in one year. An accurate estimate for this subcontinent has not been made. One can only guess the magnitude of the problem by nation-wide periodic study.

The occurrence of increasing proportion of symptomless gonorrhoea in males was cited by Catterall[3]. He estimated it to be about 10% out of all cases of gonorrhoea.

The dosage schedule of penicillin has been rapidly changing following the increasing number of relatively resistant strains, Masshoor et al[4]. In a given region and at the moment dosage schedule has reached the level of 4.8 mega units or even higher. Report of emergence of strains of beta-lactamase-producing-gonococci totally resistant to penicillin from different corners of the world since its first announcement in 1976, has impressed us of the magnitude of the problem immensely.

The present study reflects the problem of increasing resistance of N. gonorrhoea to penicillin schedules and absolute failure to response in a proportion of cases.

Material and Method

This study pertains to 125 males with uncomplicated gonococcal urethritis selected at random in the STD Training and Demonstration Centre, Safdarjang Hospital, New Delhi.

The patients were thoroughly examined clinically and the findings recorded in pretested proforma. The following laboratory diagnostic procedures were adopted on the pre-therapy day.

1. Urethral smear stained by Gram's method for on spot diagnosis.

2. Pus culture on conventional chocolate agar/Thayer-Martin medium for identification and isolation of colonies by oxidase reaction.

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3. Serological test for syphilis.

Subsequent follow up of patients was done on 3rd, 7th, 14th and 28th day approximately.

1. 8 hour held urine for two glass test and sedimentation study. Gram stained slides were scanned for intra leucocytic diplococci on 3rd and 7th day.

2. Examination of prostatic fluid smears by Gram stain on 14th day and culture of prostatic fluid for isolation of N. Gonorrhoea as and when felt necessary.

On approximately the 28th day the patients were reassessed clinically and examination of 8 hour held urine test and STS was repeated.

Standard schedules of treatment were prescribed. The base line therapy schedule was 2.4 mega units of aqueous procaine penicillin (fortified A.P.P.F.) on the initial visit in a single shot. Sustenance of clinical cure for 14 days without any history of fresh sex exposure was considered as satisfactory response to the schedule. In cases of failure to base line schedule the following alternate therapy schedules were chronologically followed:

1. Inj. procaine penicillin fortified 4.8 mega units in one sitting.

2. Injection procaine penicillin fortified 4.8 megaunits with 1 gm. probencid, ½ hour before penicillin and 1 gm. 6 hours of penicillin.

3. Capsule tetracycline 500 mg. 6 hourly for four days (drug was issued after for 2 days at a time).

4. Injection Kanamycin 2 g. in one shot.

Health education was given to every case by the health education expert attached to the centre to ensure adequate follow up for 4 weeks. Patients were strictly advised to avoid any sexual intercourse during the first fortnight and abstinence of alcoholic drinks.

Observation

A trend in the incidence rate in time series model in the last decade (1971-80) compared to major STDs in males registered in this centre is shown in Table 1. There is a definite increase in the relative incidence every fourth year with starting point in 1972. Table 2 indicates the duration of complaints in weeks. It is observed that majority of the cases (82.4%) attended the

TABLE 1

Decennial distribution of major S. T. D. and gonorrhoea at Safdarjang Hospital

Disease	Year									
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
No. of major STD cases registered in clinic (Male)	1304	1914	1867	1292	1720	1849	1540	1631	1422	2375
No. of gonococcal urethritis cases registered in clinic (Male)	302	505	401	335	348	407	285	337	355	497
Percentage	23.15	26.38	10.76	25.90	20.23	24.28	18.50	20.66	24.96	20.92

$\frac{1304}{365}$ = Less than 4 per day

$\frac{2375}{365}$ = Less than 7 per day

TABLE 2

Age group and Duration of Symptoms

Age (years)	Duration of Symptomatology			Total
	1st week 1—7 days	2nd week 8—14 days	3rd week and above 15 days	
15—19	10	3	1	14
20—24	41	2	3	46
25—29	29	5	3	37
30—34	10	1	1	12
35—39	6	—	—	6
40*	7	3	—	10
Total	103	14	8	125
Percentage	82.4	11.2	6.4	100.0

Gon. is acute infection unforgettable in life of a man. Therefore patients report early.

centre within one week of onset of symptoms.

Table 3 shows incidence of gonorrhoea in different age groups with their marital status. The incidence of gonorrhoea is highest in the age group of 20-24 years followed by the age group of 25-29 years (overall 20-29 years of age). There is no significant difference in incidence between married and unmarried individuals. Relative incidence of promiscuity appeared significant being present in 41.6% (52/125). Table 4 indicates the educational background of the individuals and previous history of major STDs registered in this centre. It is observed that educational background might have facilitated the individual to remove the stigma of attending an STD centre.

Table 5 relates to the sources of acquisition of disease. Prostitutes constituted the source of infection in a majority of cases (35.2%) followed by marital partners. Relative incidence from call-girls, girl friends and casual

TABLE 3

Distribution of the Cases by Age, Marital Status and Sexual Behaviour

Age in years	Marital Status			Sexual Behaviour	
	Single	Married	Widower	Promiscuous behaviour	Non-promiscuous behaviour
15-19	12	2	—	5	9
20-24	28	18	—	20	26
25-29	23	15	—	18	20
30-34	—	12	—	4	8
35-39	—	6	—	1	5
40+	—	8	1	4	5
Total	63	61	1	52	73
Percentage	50.4	48.8	0.8	41.6	58.4

50 : 50 Strange! The promiscuous escape relating!

TABLE 4

Age, Educational Standard and History of Previous S.T.D.

Age (Years)	Educational Standard					History of previous STD	
	Illiterate	Primary School	Secondary School	Graduate	Post Graduate	Positive	Negative
15—19	2	4	5	3	—	2	12
20—24	1	18	12	13	1	11	34
25—29	2	14	14	7	1	12	26
30—34	3	—	6	3	—	2	10
35—39	1	1	3	1	—	3	3
40+	1	4	2	2	1	6	4
Total	10	41	42	29	3	36	89
Percentage	8	32.8	33.6	23.2	2.4	28.8	71.2

Gonorrhoea is non-respector of educational status.

TABLE 5

Distribution of source of infection in different age groups

Source	Age group						Total	%
	15—19	20—24	25—29	30—34	35—39	40+		
Prostitute	6	17	16	2	1	2	44	35.2
Call girl	1	5	6	—	1	3	16	12.8
Girl friend	1	7	4	—	—	—	12	9.6
Casual acquaintance	4	7	4	—	1	—	16	12.8
Marital	—	5	4	6	2	4	21	16.8
Multiple	2	4	2	4	—	1	13	10.4
Homosexual	—	1	1	—	1	—	3	2.4
Total	14	46	37	12	6	10	125	100.0

In our country teenagers are still lying low. 20—29 year period registers the maximum.

acquaintances remained almost similar. Higher incidence from marital source was inconclusive and suggested a possibility of ping-pong infection.

Table 6 indicates the reduced rate of defaulter load achieved through efforts of health educationist.

Table 7 gives the success rate of various schedules undertaken.

Table 8 represents in vitro sensitivity of gonococci to doxycycline (Doxone) in plate dilution methods and the results of 25 randomly selected isolates.

TABLE 6

Number of visits for follow up of the Cases :

Visits	Follow up	
	Non-Defaulter %	Defaulter %
1st Visit	119 (95.2)	6 (4.8)
2nd Visit	107 (85.6)	13 (14.4)
3rd Visit	95 (76.0)	30 (24)
4th Visit	91 (72.8)	34 (27.2)

SWs have done a good job!

Discussion

Table 1 shows the registered cases of gonococcal urethritis in males compared to the total number of STD cases in male clinic during the last

TABLE 7

Response to Treatment with Subsequent Schedules

Treatment Schedule	Number	Percentage	
1. Inj. APPF 2.4 mega units	100	80	
2. Inj. APPF 4.8 mega units	13	10.4	95.2
3. Inj. APPF 4.8 mega units with Probenecid	6	4.8	
4. Cap. Tetracycline 2 g daily for 4 days	4	3.2	
5. Inj. Kanamycin 2g Stat	2	1.6	

Compares well with others' reports

TABLE 8

Sensitivity to Doxycycline

Concentration of doxycycline microgram per ml	1	2	4	8 and above
No. of cases	4	5	4	12

Results of in vitro sensitivity to doxycycline in 25 isolates at random to correlate its clinical applicability with single dose schedule.

decade. From this table one can only conclude that neither stabilisation nor decline has occurred with respect to gonococcal infection. Only a sporadic increase at regular intervals of four years has been observed. WHO/SEARO/72 has reported the incidence of gonococcal infection from different centres of Bangladesh[5] which appears quite alarming. Wadhwa et al[6] from Bombay reported the incidence of gonorrhoea for 5 years with an increasing trend in time series (1972-76). On the contrary Wallian[7] from the west observed a decreased incidence in the first half of the last decade followed by a period of increase. Many reasons were attributed for the decline, including use of mechanical contraceptives (condom). Similar view has been upheld by many observers.

Incidence in different age groups is comparable to studies reported from this subcontinent by Wadhwa et al[6], Bhattacharjee et al[8] and Dutta[9]. Studies by Wallian and Arya[1] from west showed results similar to those of the above workers but the incidence of gonococcal infection in teenagers is lower in this study as was reported by some other authors.

The reason for the lower incidence in teenagers irrespective of sex is probably socio-cultural. The socio-economic status and educational background have posed no problem to the patients in attending STD clinic.

The observation of Anandam[10] about the higher incidence in married individuals could not be corroborated.

Acquisition of infection from prostitutes is significant. In this series we are inclined to include prostitutes, call girls and casual acquaintances in one group in the absence of the clear definition of prostitution in this subcontinent where particularly relations are based on deals. This point is comparable to that expressed by Bhattacharjee et al[8] in their study of other STDs from Old Delhi.

Morbidity of the promiscuous males due to gonorrhoea and their association with prostitutes has been cited by Morton[5] and correlates with our findings. Although the recent reports from the west indicate a decline in the incidence of STD from prostitutes, such trend has yet to be observed in this subcontinent.

The baseline schedule of APPF 2.4 megaunit became necessary on other previous studies in the centre[11,13]. Khandhari et al[11] reported success rate of 84.6% with 24 megaunit APPF in a single dose and recommended single dose therapy. Based on this APPF 24 megaunits was taken as baseline for

our study with 80% success rate which is a decline of cure rate by 4.6% in a span of 5 years. Reviewing the literature, a definite change in the susceptibility to penicillin has been observed in recent years depending upon the relative resistance of the strains of N. gonorrhoea in that particular region. Catterall[3] also observed in his review that the dosage schedule has reached the levels of 4.8 to 6.4 mega units of APPF in South Asia and eastern coasts of United States of America.

Anandam[10] in his comparative study with limited number of patients using multiple dose low schedules of APPF has achieved 100% success. On the contrary Kandhari et al[11] using different schedules concluded that single dose schedule of 2.4 mega units of APPF produced the best results, compared to lower regimens, whether administered in a single or multiple dose.

In the present study 80% responded to baseline schedule and upto 90.4% success was achieved with 4.8 mega units of APPF. With the addition of probenecid the success rate was increased by 4.8% achieving a total 95·2% success. Catterall[12] observed a success rate of over 90% with the addition of probenecid. 4 cases (3.2%) responded to tetracycline schedule and 2 cases (1.6%) responded to kanamycin.

Results of in vitro sensitivity to penicillin from Safdarjang Hospital and AIIMS, New Delhi have showed higher incidence of relatively resistant strains of *N. gonorrhoea.*

Pandhi et al[13] have reported 12.5% clinical failure rate with dose schedule of 1.5 mega units of APPF and 1.5 mega units of crystalline penicillin as a single shot. On the contrary by doubling the baseline schedule the clinical cure rate was improved by 10.4% and addition of probenecid to the double up dose improved the success rate by 4.8%. This achievement correlates well with the observation of Catterall[12] and also substantiates the observation of increasing trends of relatively resistant strains worked out by the authors of the same region[4,11,13].

Tetracycline group of drugs has been accepted as an alternative effective therapy particularly in patients allergic to penicillin.

Single dose therapy is regarded as the most suitable regimen. Hence an attempt was made to understand the practicability of use of doxycycline. 25 isolates were selected at random for in vitro sensitivity to doxycycline (Table 8). From review of literature single dose Doxycycline varying from 200mg to 500mg, success rate ranging from 47% to 93.6% has been reported. In vitro sensitivity results as well as unpublished data from this centre on single dose Doxycycline did not further encourage authors to use single dose Doxycycline in place of conventional dosage of tetracycline used in the schedule. We agree, in particular, with the observation made by Pandhi et al[13] for the need of monitoring the sensitivity pattern of *N. gonorrhoeae* specially from the different regional centres.

An attempt to detect beta-lactamase producing N. gonorrhoeae by Gohil et al[14] from Bombay metropolis has failed to detect any such strain.

Conclusion

The present study has revealed the necessity of a thorough study of treatment failure cases with APPF schedule with probenecid particularly to forestall the probability of introduction of beta-lactamase producing strain in this region for epidemiological purposes.

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