

Primary and secondary syphilis, 20 years' experience. 1 Epidemiology

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SUMMARY The case notes of 946 patients with primary and 854 with secondary syphilis who attended the department of genitourinary medicine at the Middlesex Hospital in 1965-84 were analysed retrospectively. Most patients were homosexual men, and the proportion of homosexuals showed a significant ($p < 0.0005$) upward trend during the study period. There was also a significant upward trend in the percentage of British attenders ($p < 0.0001$), as well as an increase in patients in social classes I, II, or III non-manual ($p < 0.0001$). Homosexual men had a greater number of sexual partners than heterosexuals or women, and were also more likely to have had a sexually transmitted disease. The proportion of homosexuals with multiple partners showed a significant ($p < 0.0005$) upward trend during the study period.

Syphilis is one of the most diverse and fascinating diseases affecting man, and until a few decades ago was extremely common. Necropsies in the first half of the century showed a prevalence of 5-10%.^{1,2} The widespread use of antibiotics, however, coupled with specific sensitive serological tests and adequate provision of diagnostic and treatment facilities, have led to a dramatic decline in numbers of cases. In 1984 only 3101 cases were reported from sexually transmitted disease (STD) clinics³ compared with 27 761 in 1946 (Communicable Disease Surveillance Centre (CDSC), unpublished data). The decline in the prevalence of syphilis has led to a decrease in interest in the disease, and as a consequence very few modern studies have been undertaken. To rectify this we conducted a study of the clinical features, serology, treatment, follow up, and demographic characteristics of patients with primary and secondary syphilis who attended this clinic in 1965-84. The demographic features are considered in this first part of the study.

Patients and methods

We analysed retrospectively the clinical notes of all

patients with primary or secondary syphilis diagnosed in 1965-84. Information about age, social class, nationality, and sexual orientation were recorded on a standardised recording schedule. Social class was assessed using the Registrar General's classification of occupation.⁴ To measure the amount of sexual activity we recorded the number of sexual partners in the three months before diagnosis and the history of STDs.

To assess whether any change had occurred in the demographic characteristics during the 20 years of the study, we analysed in five year blocks information about social class, nationality, and sexual orientation. Statistical tests used included the χ^2 , the Mann-Whitney U, and the χ^2 trend test.

Results

We analysed the notes of 946 patients with primary and 854 with secondary syphilis. Thirty (3%) of the patients with primary and 58 (7%) of those with secondary syphilis were women. Of the 916 men with primary syphilis 627 (68%) were homosexual, 184 (20%) heterosexual, and 101 (11%) bisexual. A similar breakdown was seen in the 796 men with secondary syphilis; 631 (79%) were homosexual, 75 (9%) heterosexual, and 86 (11%) bisexual. In both groups there were four men whose sexual orientation could not be identified. The median age of men with primary syphilis was 30 (range 12-78) compared with 23

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(range 17–44) in the women, a significant ($p < 0.0001$) difference. A similar difference was seen in the ages of patients with secondary syphilis (men 30 (13–64), women 24 (16–55) ($p < 0.0001$). The age ranges of homosexual, heterosexual, and bisexual men were similar.

SEXUAL ORIENTATION

Table 1 shows the change in sexual orientation during 1965–84. There was a significant increase in the percentage of homosexual patients and a decrease in heterosexuals. In the first five years (1965–9) 30% of the patients were heterosexual compared with 22% in the following five years 9% in the next, and only 5% in the years 1980–4. This decrease was more than matched by an increase in homosexual men from 48% to 84% during the same time (χ^2 trend test, $p < 0.0005$). The number of bisexual men remained relatively constant. The number of women, however, decreased from 7% in 1965–9 to 2% in 1980–4.

NATIONALITY

Table 1 also shows that 1244 (69%) of the patients were British. There was, however, a significant upward trend in the percentage of British attenders from 184 (59%) in 1965–9 to 394 (76%) in 1980–4 ($p < 0.0001$).

Table 1 Sexual orientation and nationality of 1800 patients with primary or secondary syphilis in 1965–84

Sexual orientation	No (%) attending in five year periods:			
	1965–9 (n = 311)	1970–4 (n = 386)	1975–9 (n = 587)	1980–4 (n = 516)
Homosexual men	148 (48)	221 (58)	457 (79)	432 (84)
Heterosexual men	94 (30)	85 (22)	55 (9)	25 (5)
Bisexual men	44 (14)	45 (12)	52 (9)	46 (9)
Women	23 (7)	32 (8)	22 (4)	11 (2)
<i>Nationality</i>				
British	184 (59)	247 (64)	419 (71)	394 (76)
Non-British	127 (41)	139 (36)	168 (29)	122 (24)

Upward trend in proportion of homosexuals to heterosexuals ($p < 0.0005$). Upward trend in proportion of British patients ($p < 0.0001$). Sexual orientation of eight men not known.

SOCIAL CLASS

The figure shows that, although most patients with primary or secondary syphilis were in social classes I, II, or III non-manual (NM), there was a significant increase in the numbers of patients in these social groups. In the years 1965–9 94 of 151 patients (62%) with primary syphilis were in social classes I, II, or III NM. These numbers increased to 122/172 (71%), 232/267 (87%), and 201/220 (91%) in each of the succeeding five year periods ($p < 0.0001$ —comparing so-

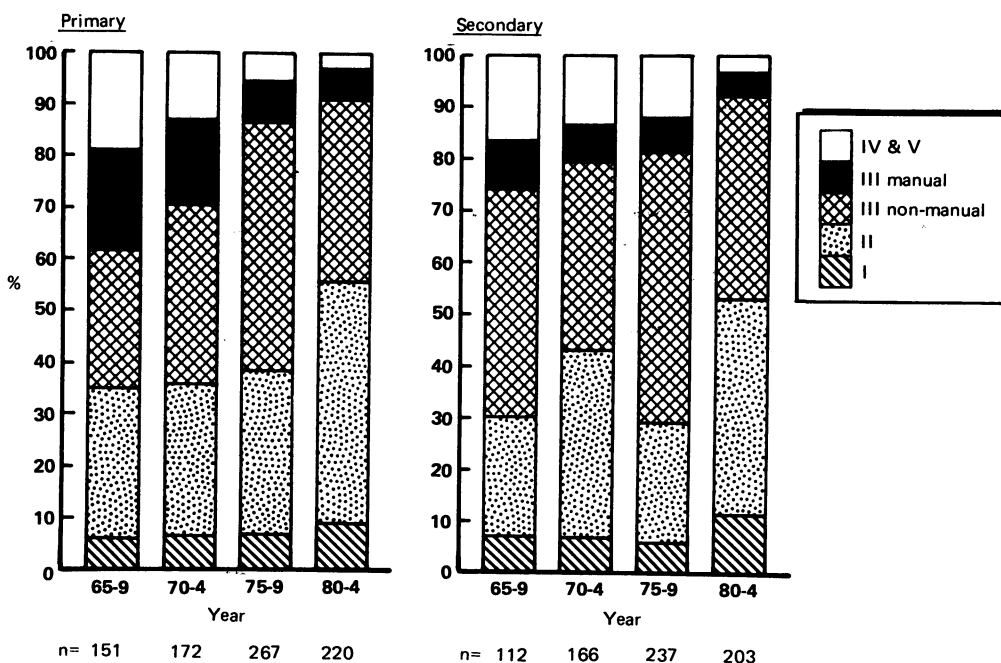


Fig Social class of patients with primary or secondary syphilis in 1965–84 ($p < 0.0005$ comparing social classes I, II, and III NM with III M, IV, and V in patients with primary and secondary syphilis).

cial classes I, II, and III NM with III manual, IV, and V). A similar trend was seen in patients with secondary syphilis.

SEXUAL HISTORY

Most women (62/85, 73%) and heterosexuals (127/231, 55%) had had one (or no) sexual partner in the three months before diagnosis compared with 362/1057 (34%) homosexuals and 29/138 (2%) bisexuals (table 2). On the other hand 437 (41%) homosexuals had had three or more sexual partners compared with only 36 (16%) heterosexuals ($p < 0.0005$) and six (7%) women ($p < 0.0005$). Of the 1195 homosexuals and bisexuals, 108 (9%) had had 10 or more sexual partners.

The proportion of homosexual men with three or more partners in the three months before diagnosis showed a significant upward trend between 1965 and 1984. Only 27% had had three or more partners in 1965-9, but this rose to 32%, 38%, and 54% in each of the next five year periods ($p < 0.0005$). This trend was not seen in bisexual or heterosexual men (table 3).

The number of homosexuals with a history of syphilis, rectal gonorrhoea, non-specific genital infection

Table 2 Number of sexual partners in patients with primary or secondary syphilis in three months before diagnosis, by sexual orientation

Sexual orientation	No (%) of sexual partners		
	0-1	2	3 or more
Homosexual men (n = 1057)	362 (34)	258 (24)	437 (41)
Heterosexual men (n = 230)	127 (55)	67 (29)	36 (16)
Bisexual men (n = 138)	29 (21)	45 (33)	64 (46)
Women (n = 85)	62 (73)	17 (20)	6 (7)

Comparing the proportion of patients with three or more partners: homosexuals v heterosexuals, homosexuals v women, bisexuals v heterosexuals, and bisexuals v women, $p < 0.0005$; heterosexuals v women, $p < 0.05$. Difference between homosexuals and bisexuals not significant.

(NSGI), or any STD all showed a significant increase between 1965-1984 (table 4). For example, the number with previous rectal gonorrhoea increased during each of the five year periods from 20% in 1965-9 to 21%, 28%, and ultimately to 33% in 1980-4 ($p < 0.0005$). Similar trends were seen for syphilis and NSGI in bisexuals. In the heterosexual group NSGI

Table 3 Proportion of men with primary or secondary syphilis who had had three or more sexual partners in three months before diagnosis, by sexual orientation and five year periods

Orientation	No with three or more partners/No with syphilis (%) in:				Difference
	1965-9	1970-4	1975-9	1980-4	
Homosexual	30/111 (27)	58/181 (32)	149/396 (38)	200/369 (54)	$p < 0.0005$
Heterosexual	15/ 83 (18)	13/ 78 (17)	4/ 47 (9)	4/ 22 (18)	NS
Bisexual	14/ 33 (42)	11/ 29 (38)	16/ 37 (43)	23/ 39 (59)	NS

Table 4 History of sexually transmitted disease (STD) in men with primary or secondary syphilis, by sexual orientation and five year periods

Orientation	Disease	No (%) with given disease in:				Difference
		1965-9	1970-4	1975-9	1980-4	
Homosexual		n = 147	n = 220	n = 456	n = 431	
	Syphilis	23 (16)	36 (16)	99* (22)	137† (32)	$p < 0.0005$
	Urethral gonorrhoea	46 (31)	90 (41)	187* (41)	180* (42)	NS
	Rectal gonorrhoea	30 (20)	47 (21)	129* (28)	143 (33)	$p < 0.0005$
	Non-specific genital infection	14 (10)	63 (29)	152 (33)	168 (39)	$p < 0.0005$
	Any STD	89 (61)	158 (72)	364 (80)	360‡ (84)	$p < 0.0005$
Heterosexual		n = 93	n = 82	n = 54	n = 25	
	Syphilis	2 (2)	5 (6)	4 (7)	1 (4)	Too few
	Urethral gonorrhoea	16* (17)	31 (38)	17 (32)	5 (20)	NS
	Non-specific genital infection	5* (5)	9 (11)	8 (15)	5 (20)	$p < 0.02$
	Any STD	28* (30)	40 (49)	23 (43)	12 (48)	NS
Bisexual		n = 44	n = 45	n = 52	n = 46	
	Syphilis	1 (2)	7 (16)	9 (17)	10 (22)	$p < 0.02$
	Urethral gonorrhoea	17 (39)	25* (57)	18 (35)	12 (26)	NS
	Rectal gonorrhoea	3 (7)	4* (9)	7 (14)	6 (13)	Too few
	Non-specific genital infection	3 (7)	13* (30)	17 (33)	15 (33)	$p < 0.01$
	Any STD	21 (48)	32 (71)	37 (71)	30 (65)	NS

*Excluding 1 patient, information unknown. †Excluding 4 patients, information unknown. ‡Excluding 2 patients information unknown.

was the only STD to show a significant ($p < 0.02$) increase.

Discussion

Considerable changes have occurred between 1965 and 1984 in the types of patients attending this clinic with primary or secondary syphilis. The changes in social class and nationality probably reflect changes in consulting patterns in the district. The changes in sexual orientation and history of STDs may, however, reflect true changes in the epidemiology of the infection.

Homosexually acquired infections have long been recognised. Only in the past 30 years, however, has the importance of homosexually acquired syphilis been documented.⁵⁻⁹ A study at St Mary's Hospital, London, in 1954 found that 8% of men with gonorrhoea or syphilis were homosexual,⁵ and reports from Copenhagen and New York in the early 1960s showed that a quarter of the men with syphilis were homosexual.^{6,7} In 1967, after publication of the report of the Committee on Homosexual Offences and Prostitutes in 1957 (The Wolfenden Report),¹⁰ homosexuality became legal in England and Wales, and in 1971 the British Co-operative Clinical Group reported that 46% of the cases of primary and secondary syphilis in men in the UK were homosexually acquired. In five central London clinics homosexuals accounted for 73% of cases of syphilis.⁹ A second report in 1977 showed that the percentage of homosexuals in the country as a whole had increased from 46% to 54% and in the five central London clinics from 73% to 77%.¹¹ Our study confirms this upward trend and shows that it continued into the 1980s. Indeed, of the 503 men with primary or secondary syphilis diagnosed in 1980-4, 483 (96%) were homosexual or bisexual. In central London syphilis has become almost exclusively a homosexual disease. This increase appears to be related to the increasing amount of sexual activity in homosexual and bisexual men in recent years as evidenced by the greater proportion with multiple sexual partners and previous STDs. This clinic is clearly not representative of the country as a whole, but the percentage of women attenders has decreased nationally from over 18% in 1965-9 to 12% in 1980-4, which suggests that the proportion of homosexual men has increased.

In recent years the human immunodeficiency virus (HIV) epidemic has led to a decline in sexual activity in homosexuals.¹²⁻¹⁷ This decline has led to a decrease in gonorrhoea in both New York and London.^{15,16} The number of men with primary and secondary syphilis in the UK has also shown a dramatic decline from 1457 in 1980 to 699 in 1985 (CDSC, personal communication).

Bisexual men represented a sizeable and relatively constant percentage of male attendances. This 11% of men is potentially an important source of infection of women, and considerable concern has been expressed

about this group in relation to the spread of HIV. This figure is, however, probably an overestimate, as not all the bisexual men would necessarily have put female sexual partners at risk.

In summary, this study has highlighted the enormous changes that have occurred in the epidemiology of syphilis during a 20 year period in the population attending this clinic. In the late 1960s the "average" male patient with primary syphilis was equally likely to be British or non-British and homosexual or heterosexual, half these men gave a history of an STD and 60% were from social class I, II, or III NM. In the early 1980s the "average" patient was homosexual, British, middle class, had suffered from multiple previous STDs, and had had many sexual partners. With the advent of the HIV epidemic and the recent decrease in the number of cases, the changes in the next 20 years are likely to be even more dramatic.

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