TO THE EDITOR, *British Journal of Venereal Diseases*

Sexual Transmission of *Strongyloides stercoralis* among homosexual men

Sir,

The venereal transmission of a variety of enteric pathogens among homosexual men has been well documented and includes viral (hepatitis A), bacterial (shigellosis and typhoid), protozoal (giardiasis and amoebiasis) and helminthic (enterobiasis) infections.¹ Reported here is evidence implicating the sexual transmission of a helminthic parasite, *Strongyloides stercoralis*, among gay men in Los Angeles County.

In May 1981 a 40 year old homosexual man who had had acute onset of diarrhoea, stomach pain, and fatigue was evaluated for intestinal parasite infection. *Strongyloides stercoralis*, *Entamoeba histolytica* and four nonpathogenic protozoa were identified in the faeces. The patient gave no recent history of travel to an area endemic for strongyloidiasis, and recent sexual contacts were evaluated for intestinal parasites. Specimens preserved in polyvinyl alcohol (PVA) were examined using the ethyl acetate concentration method and trichrome stained smears. More sensitive concentration methods for the recovery of *S. stercoralis* such as the Harada-Mori culture technique were not employed. Twelve reported contacts were evaluated, and larvae of *S. stercoralis* were identified in stool specimens from two (17%) of these individuals. (In addition, stools from five (42%) contacts contained *E. histolytica*.) No control group was evaluated.

The two contacts who were infected with *S. stercoralis* had no symptoms, and neither gave a history of recent travel to an area endemic for strongyloidiasis. One of the men had, however, visited Colombia three years previously and had emigrated from Brazil in 1964. This same individual, although named as a contact, maintained that he had never had sexual relations with the index case. The two initial contacts with strongyloidiasis named three additional contacts who were evaluated, but no further infections were found.

Strongyloidiasis is most commonly acquired when unprotected skin is penetrated by infective stage larvae that have developed in soil contaminated with faeces. The nematode is one of the few helminthic parasites, however, that may be transmitted directly from person to person. Although larvae most often develop to the infective

stage in soil, rapid development to the infective stage may occur within the bowel or on external skin, typically the perianal area which has been contaminated with faeces. This can result in autoinfection or direct transmission to other individuals through penetration of the skin.² Anal sex (anilingus, anal intercourse and manual-anal stimulation) as is commonly practised by gay men would appear to facilitate person to person transmission of strongyloides and sexual transmission may be more common than is currently recognized. In a survey of enteric parasites among 180 patients attending a sexually transmitted diseases (STD) clinic in New York City, *S. stercoralis* larvae were found in stool specimens from three patients, all of whom practised or anal sex.

Strongyloidiasis is often benign, although individuals with impaired cell-mediated immunity may develop an often fatal hyperinfection (disseminated strongyloidiasis).² The recent reports of Kaposi's sarcoma and opportunistic infections associated with depressed immune function in homosexual men⁴ raises some concern that the disseminated form of strongyloidiasis may occur in gay males with immune dysfunction. With its large population of recent immigrants from developing countries, Los Angeles County has a substantial reservoir of parasitic infection (including strongyloidiasis). It also has a large gay population, and there is a definite risk of sexual transmission of the more unusual parasites.

Yours faithfully,

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TO THE EDITOR, *British Journal of Venereal Diseases*

β -lactamase producing *Neisseria gonorrhoeae* in Rome, Italy

Sir,

Although the incidence of infection with penicillinase producing *Neisseria gonorrhoeae* (PPNG) has been increasing since the appearance of PPNG in 1976, these strains had not been isolated in Italy. A retrospective study of 213 strains of *N. gonorrhoeae* isolated in Rome from January 1980 to April 1981 was carried out to determine their susceptibility to penicillin, tetracycline, and spectinomycin. Isolation and identification of the strains were carried out according to standard methods.¹⁻³

Antimicrobial susceptibility tests were performed by the agar dilution method. The inhibitory concentration 50% (IC₅₀) was determined on proteose No 3 agar (Difco) supplemented by 2% haemoglobin (Difco) and 1% supplement VX (Difco) containing 4.0, 1.0, 0.25, 0.06, and 0.015 IU/ml penicillin (Erba); 3.2, 0.8, and 0.2 μ g/ml tetracycline (Lepetit); 32 and 16 μ g/ml spectinomycin (Upjohn). The inoculum was prepared by suspending an overnight culture on Thayer Martin medium in 5 ml of saline diluted to give a turbidity corresponding to 10⁸ colony forming units (cfu)/ml. The plates containing the antimicrobial agents were inoculated with 1 μ l of this suspension. In each test series the three World Health Organisation international reference strains of *N. gonorrhoeae* III, V, and VII were included as controls. The results are read applying the Kärber sum to determine the IC₅₀.⁴

The table shows IC₅₀ values of penicillin and tetracycline for strains of *N. gonorrhoeae*. The strains with IC₅₀ of $\leq$ 0.0047 to 0.038 μ g/ml penicillin and $\leq$ 0.10 to 0.80 μ g/ml tetracycline were considered sensitive, those with IC₅₀ of 0.053 to 1.20 μ g/ml penicillin and 1.13 to 3.20 μ g/ml tetracycline were considered less sensitive, and strains with IC₅₀ of 1.70 to $\geq$ 4.8 μ g/ml penicillin and 4.50 to $\geq$ 46 μ g/ml tetracycline were considered resistant.

All strains with an IC₅₀ $\geq$ 1.20 μ g/ml of penicillin were tested for β -lactamase production by the chromogenic test with cephalosporin 87/312 (Glaxo).⁵ In each test series a known β -lactamase producing and non- β -lactamase producing strain were included. Three strains resistant to penicillin were β -lactamase producing; one strain was resistant to penicillin and to tetracycline and one was resistant to tetracycline.

TABLE *IC*₅₀ of penicillin and tetracycline for strains of *N gonorrhoeae* isolated in Rome

Penicillin		Tetracycline	
Concentration (µg/ml)	No (%) strains inhibited	Concentration (µg/ml)	No (%) strains inhibited
≤0.0047-0.038	117 (54.9)	≤0.10-0.80	206 (96.7) (sensitive)
0.053-1.20	92 (43.2)	1.13-3.20	5 (2.35) (less sensitive)
1.70-≥4.80	4 (1.9)	4.50-≥6.40	2 (0.95) (resistant)

The first strain of PPNG in Rome was isolated in January 1980 from a 25 year old male homosexual who had had a sexual contact in Thailand a week before developing symptoms. The isolate was sensitive to tetracycline and spectinomycin. In June 1980 another PPNG strain was isolated from a 33 year old man who had not been abroad; this isolate was also sensitive to tetracycline and to spectinomycin. The third PPNG strain was isolated from a 43 year old man who had a sexual contact in Rome in October 1980. This strain was found to be sensitive to tetracycline and resistant to 16 µg/ml, but sensitive to 32 µg/ml, of spectinomycin.

By a rapid agarose gel electrophoresis method⁶ two different plasmids were

demonstrated in each PPNG isolate. Moreover a third plasmid of higher molecular weight was found in the strain acquired in Thailand. The non-PPNG strain resistant to penicillin and to tetracycline showed only a plasmid in common with the PPNG strains.

Yours faithfully,

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