

The epidemiology of herpes simplex Types 1 and 2 infection of the genital tract in Edinburgh 1978-1991

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Abstract

Introduction—The changing epidemiology of genital herpes in Edinburgh is described in relation to herpes simplex virus (HSV) Type 1 and herpes simplex virus Type 2 infection over a period of 14 years.

Methods—2018 episodes of genital herpes in 1794 patients over a 14 year period were assessed. Data on age, sex, sexual orientation, geographical origin and herpes antibodies were also analysed.

Results—The proportion of cases that were HSV Type 1 increased over the period from approximately 20% to over 40%. Type 1 infection is more common in the young, in women and as a primary infection.

Conclusions—HSV Type 1 is of increasing importance as a cause of genital herpes in our population. This may reflect changes in sexual attitudes and practises over the past decade.

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Introduction

Genital herpes is the commonest ulcerating sexually transmitted disease seen in the UK and is caused by infection with either herpes simplex virus (HSV) Type 1 or herpes simplex virus Type 2.¹ The clinical importance of HSV infection lies in both its ability to produce painful, disabling and recurrent disease in addition to its potential role as a co-factor in the acquisition, transmission and possibly progression of HIV disease.² We describe the changing epidemiology of genital herpes in Edinburgh with respect to viral type over a period of 14 years.

Methods

All patients presenting to the Department of Genitourinary Medicine at Edinburgh Royal Infirmary, Edinburgh between January 1978 and December 1991 with a diagnosis of genital herpes simplex infection were included in the analysis. The diagnosis of genital herpes was made on the basis of clinical appearance. Laboratory confirmation and typing was carried out by immunofluorescent staining of infected cells from Hef cell monolayers. Initially an "in-house" immunofluorescent stain was used³ until the Syva direct test became available. Serological studies were done on paired sera, collected at a 2-4 week

interval, by complement fixation using the 1:4 dilution of HSV Type 1 antigen as described previously.⁴ This test will detect primary HSV Type 1 or Type 2 infections but does not distinguish between them. Geographical site of acquisition of infection, age, sexual orientation, sex and frequency of re-attendance were also analysed with respect to HSV type. The associations between gonorrhoea, chlamydia and genital warts with HSV type were investigated.

Statistical analysis was performed using Mann Whitney, Chi square and Fisher's exact test on SPSS and Epiinfo software.

Results

Patients (n = 1794) with 2018 episodes of infection presented with genital herpes over the study period. Of these 1961 isolates were typed in 1744 patients. Demographic data were available on the following numbers of patients: geographical location in 1547 patients, age and sex in 1794 patients, sexual orientation in 1684 patients. Paired sera were available for 909 patients—414 had primary infection and 495 had non primary infection.

The number of cases of genital herpes presenting annually to the clinic increased over the study period from 84 (1978) to 159 (1991). There was, however, a dip in the prevalence of HSV in the mid-1980s before a return to the upward trend. The ratio of HSV Type 1 to HSV Type 2 infection increased significantly in the mid 1980s ($p < 0.001$) and by the end of the decade HSV Type 1 accounted for over 40% of genital herpes genital infections (fig 1). Type 1 infections were almost twice as common in women (39%) as in men (22%) by the end of the study period (fig 2) but there was no significant difference between the number of male and female patients (M:911, F:883). Female patients presented with HSV infection at an earlier age (median 24 years) than male patients (median 27 years— $p < 0.001$). No association between homosexual or heterosexual intercourse and viral type was demonstrated although homosexual men with HSV infection were older than heterosexuals ($p < 0.05$).

The geographical origin of primary perceptive infection was more often foreign (out-with the UK) for Type 2 infections (21/188—11%) than Type 1 infections (10/192—5%)— $p < 0.05$. Infections in women tended to originate more often from Edinburgh itself

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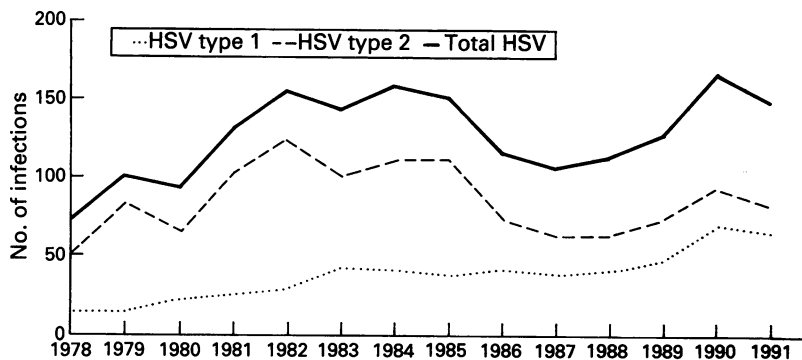


Figure 1 Prevalence of genital herpes 1978-91.

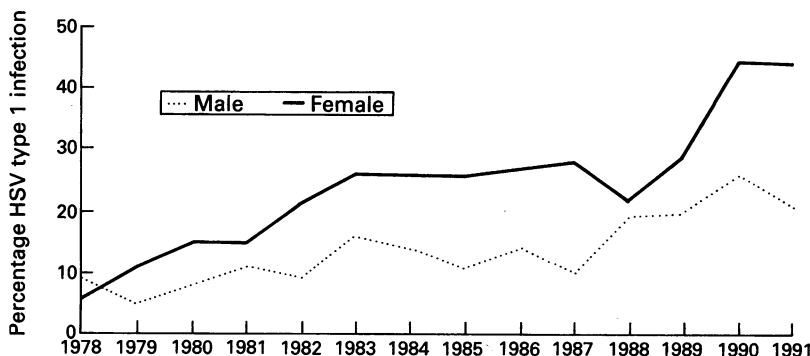


Figure 2 Sex distribution of HSV Type 1 infection.

(161/224-72%) compared with those in men (101/163-62%)— $p < 0.01$.

A diagnosis of primary genital herpes confirmed by serology was strongly correlated with HSV Type 1 infection (204/279 (73%) cf. 201/608 (33%) for HSV Type 2— $p < 0.001$, nine untyped). Primary infection was commoner in younger patients ($p < 0.001$) and in women (241/414 (58%) in primary infection cf. 244/495 (49%) in non primary infection— $p < 0.01$) (table).

Five patients with primary HSV infection due to HSV Type 2 were also infected with *Neisseria gonorrhoeae* at the time of diagnosis whilst no primary infection with HSV Type 1 was associated with gonococcal infection— $p < 0.05$. There was no significant difference in concomitant infections with either chlamydia or genital warts between HSV 1 and HSV 2 infections.

Conclusions

The annual incidence of genital herpes infection almost doubled over the 14 year study period from 84 to 159 but the greatest

Table The relationship between age with sex and primary infections

Age group (years)	No primary infections (% age of age cohort)	No female infections (% age of age cohort)
Under 20	54 (68%)	64 (81%)
20-24	173 (53%)	194 (60%)
25-29	109 (44%)	129 (52%)
Over 29	78 (30%)	98 (38%)

increase occurred in HSV Type 1 infections which increased fourfold in the same time period. The increase in genital herpes over the past decade has been noted in other parts of the UK,⁵⁻⁷ but the reasons for HSV Type 1 becoming a more common cause of genital herpes remain unclear. Possible explanations include changes in sexual behaviour of the population and/or changes in viral pathogenicity. Changes in sexual practises are difficult to measure but an increase in oral sex is likely to have occurred within the study period as this was widely advocated as a form of "safe sex" to reduce the transmission of the human immunodeficiency virus (HIV). The reduction in clinic attendances for HSV observed in the mid-1980s may also be related to safer sexual behaviour secondary to the perceived threat of HIV infection. The associated reduction in the incidence of gonorrhoea⁸ may also have been secondary to increased condom usage but condoms are probably seldom used during oral sex. In one study⁹ of patients with first episode genital herpes 13% of women and 7% of men had HSV isolated from the pharynx with 36% giving a history of oral sex and 7% of cases of genital herpes caused by HSV Type 1. The pharyngeal carriage rate of HSV Type 1 will obviously vary between populations and within populations over time.¹⁰ In addition the acquisition of HSV Type 1 is now less common in early childhood¹¹ leaving young sexually active adults at greater risk of infection since they lack protective antibody.

We found that female patients were twice as likely to present with an HSV Type 1 infection and this association between HSV Type 1 and women has been described previously.^{6,7} The higher occurrence in women may relate to reporting differences as the more severe clinical infection seen in women^{9,12} is more likely to present to a clinic. However, the approximately equal numbers of men and women in the study is against reporting bias of this sort. Additionally although recurrent herpes is more common with Type 2 infection⁶ viral subtype is not correlated with the severity of initial infection.¹

As has also been demonstrated by others^{7,9} we found that women present at an earlier age with genital herpes than men. Primary genital herpes confirmed by serology was significantly more likely to be Type 1 in origin.

An association between HSV and gonorrhoea has been noted by Wentworth *et al*¹³ but the increased incidence of concurrent gonorrhoea in HSV Type 2 infections is of interest and may reflect the differing routes of acquisition of the two viral subtypes. It also supports the concept that the rise in HSV Type 1 infection is secondary to an increase in fellatio and cunnilingus with their associated lower risk of acquiring cervical or urethral gonorrhoea.

In conclusion there has been a rapid increase in the incidence of HSV Type 1 genital herpes in Edinburgh over the past decade which may reflect changes in sexual practice

within the community. Young female patients are particularly likely to have Type 1 as compared with Type 2 infections and this is of relevance when counselling patients with regard to their subsequent risk of recurrence.

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