

Herpes Genitalis in a Student Population

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Increased reporting of genital herpes has led to claims in the lay press of an epidemic of herpes genitalis. In a study at Queen's University Student Health Service during a nine-month period, a first diagnosis of genital herpes was made in 5.9/1,000 students attending the clinic. Excluding those patients with recurrent illness by history, the incidence of genital herpes was 4.5/1,000. Recovery of the virus was successful in 91 percent of attempted cultures. Complications were low. Genital herpes is an important sexually transmitted disease in the student population, but claims of an epidemic are exaggerated.

Genital herpes infections are said to have reached epidemic proportions. As it is not a notifiable disease in Canada, accurate statistics are difficult to obtain. The reported incidence of all herpes viruses from 26 Canadian laboratories was double in 1981 what it had been in 1980,¹ and in a review of fee-for-service consultations in the United States from 1966 to 1979, a ninefold increase in genital herpes diagnosis was shown with only a twofold increase in other herpes infections.²

Early in 1980 a number of students presented to the Student Health Service of Queen's University with new or previously unrecognized cases of herpes genitalis. Increased coverage in the lay press describing the potential complications of this "incurable" disease had provoked considerable

anxiety in this young sexually active group. As there are few studies in the literature describing the extent of genital herpes in student populations, it was decided to measure the incidence of initial herpes genitalis in the clinic population.

Method

A study was conducted to identify new cases of herpes genitalis presenting to the Student Health Service. A form was printed to collect the pertinent data, which were recorded by the clinic physicians. When complete, one copy was kept on the patient's chart and the second sent to the principal investigator. The subjects selected were all patients presenting with symptoms of genital ulcers, vesicles, crusted lesions, or inguinal lymphadenopathy. Patients in whom the described lesions

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were discovered on routine examination for another problem were included. Diagnosis was made clinically and in most cases confirmed by culture. To find cases that may not have been submitted by the attending physician, the Public Health Laboratory was asked to send copies of all positive herpes simplex reports for cultures submitted by the Student Health Service. A chart review was performed, and those cases meeting the inclusion criteria were added.

Cultures were taken from visible lesions with a cotton-tipped swab and placed in viral transport medium supplied by the laboratory. Cultures, either taken directly to the local Public Health Laboratory or refrigerated and taken within 24 hours, were inoculated into tissue cultures and read daily for 16 days for a cytopathic effect. When the cytopathic effect was observed, further identification was made with fluorescent antibody stains. Typing for herpes simplex virus 1 (HSV-1) or HSV-2 was not available.

Results

From September 1981 to May 1982, 39 patients from a total of 6,651 students attending the clinic were diagnosed clinically to have genital herpes for the first time. The enrollment of the university was 11,359 during the study period. The incidence of first diagnosis of genital herpes was 5.9/1,000 patients for the nine-month period. Twenty-seven patients were female, 12 were male.

A review of patients' histories suggested eight female patients and one male patient had had similar lesions in the past. Assuming these patients were presenting with recurrent disease, the incidence for initial infections becomes 4.5/1,000 during the study.

Eighteen patients exhibited vesicles, 22 exhibited ulcers, and 4 presented with crusted lesions. Lesions were on the mons pubis, the labia, the vagina, the cervix, the penile shaft, and at the anus. Cultures for herpes simplex virus were positive in 29 cases, negative in 3, and not done in 7. Of the three negative cultures, two had the clinical impression of genital herpes confirmed on consultation, and the third had a positive culture later, at the time of a recurrence. Of the 7 who did not have

lesions cultured, 4 experienced recurrences, and 1 had a partner with culture-positive genital herpes.

Sexual practices were reviewed. Twelve patients had oral-genital contact as well as genital-genital contact, and one male patient with anal lesions had experienced anal intercourse one week before the onset of symptoms. In eight patients the history did not reveal any obvious source of infection. After examining the detailed history of one patient, the most likely source of herpes virus was postulated to be asymptomatic shedding from the patient's partner. This assumption could not be confirmed but was based on the denial by both partners of participation in oral-genital intercourse or a past history of genital herpes.

Two patients, one male and one female, required indwelling urinary catheters and two other patients had complicated clinical courses. One patient presented with general malaise, fatigue, fever, pharyngitis, and vulvitis, and the initial diagnosis was herpes genitalis and infectious mononucleosis. Pharyngeal and vulvar cultures were positive for herpes simplex, however, and laboratory tests for infectious mononucleosis were negative. The other patient presented at 32 weeks' gestation in her first pregnancy with typical lesions of herpes simplex on the inside of her right thigh. Spontaneous labor began within 12 hours of the clinical diagnosis being made, and she was delivered safely by cesarean section. Viral cultures grew herpes simplex virus.

In four patients cultures for *Candida albicans* were positive, and one patient was being treated for condylomata acuminatum at the time of diagnosis. Cultures for gonorrhea, taken in 21 cases, were negative. Cultures were done for *Chlamydia trachomatis* in four patients, and all were negative.

Discussion

The incidence of herpes simplex virus infections is difficult to determine, as the virus can remain latent and can cause a recurrence by reactivation. One cannot be sure whether a patient presenting with lesions is experiencing a recurrent or a primary infection. For this study the diagnosis of initial genital herpes was made if there was no history of a previous similar genital lesion.

Antibody studies do not clarify the situation, since a primary genital herpes infection is the first infection by the herpes virus, type 1 or 2, in the genital region, and previous infection by herpes simplex virus in another part of the body may have stimulated an antibody response that does not prevent infection in a second site. Also, a rising antibody titer can occur in recurrent as well as in primary infection.³

Herpes simplex virus typing was not available for this study. There is good evidence that both HSV-1 and HSV-2 can cause genital herpes,^{4,6} and typing is not necessary for diagnosis. If the association of HSV-2 with cancer of the cervix is shown to be specific, typing will be of importance.

Finally, as genital herpes is not a notifiable disease, accurate assessment of its incidence and prevalence is difficult. Recognition of any change in incidence becomes tentative, since awareness of the disease may itself be responsible for the increase in case finding.

There are two reports from student health services in the literature, and these may give a better picture of the incidence of this disease in the general population than those from sexually transmitted disease clinics. The results from a student health service, however, cannot be extrapolated without reservation to the general population, as students fall within the 15- to 30-year age group, which is at particular risk for primary genital herpes because of lack of previous sexual exposure.⁴

In 1974, Kalinyak et al⁷ reported from the University of Pennsylvania the incidence of culture-positive genital herpes to be 3.1/1,000 female gynecology patients at the university student health service during a nine-month period. The incidence of clinically diagnosed cases was said to be 5.8/1,000 of the same group, but as no distinction was made between initial and recurrent disease, this may be a prevalence statistic for genital herpes. The group in this study was not a general practice population but was preselected from gynecologic outpatients. The incidence of new cases of genital herpes may be higher at Queen's University as a broader population for denominator was used. Either this higher incidence may reflect a rising incidence of genital herpes in general, or it may be that the incidence at Queen's University has always been higher. Further studies are planned to answer this question.

The second report is from the student health

service of the University of California at Los Angeles (UCLA) during the one-year period June 1975 to May 1976.⁸ One hundred forty-six patients were diagnosed as having initial genital herpes, with an infection rate of 8.4/1,000 patients attending the clinic. Diagnosis was made clinically, but in only 13 cases were cultures positive for herpes simplex virus. This study shows a higher incidence of herpes genitalis, but lacks laboratory corroboration.

Recently Chuang et al⁹ reported the incidence of genital herpes in a population-based epidemiologic study in Rochester, Minnesota, for 1965 through 1979. The average annual incidence rate of 0.5/1,000 population with the incidence peak of 1.29/1,000 in 1979 supports the view of a rising incidence of genital herpes. This study did not consider the effect of improved awareness of this illness on help-seeking behavior and diagnosis, which may lead to a false impression of rising incidence. The authors recognize that the incidence reported is minimal, as some people may have been reluctant to seek medical attention or may have had subclinical infections.

Eighty percent of cases were found in the 18- to 36-year age group, with the highest average annual age-adjusted rate of 1.97/1,000 in the 20- to 24-year age group. This rate is much lower than that found in any of the student health studies and may be due to the methods used to find cases or to different population characteristics including access to health care, education, and socioeconomic status.

The male-female ratio differs significantly from those reported by sexually transmitted disease clinics in the United States. In 1976 to 1977, 3.4 percent of men and 1.5 percent of women diagnosed in the clinics had genital herpes.¹⁰ In these clinics 67.7 percent of visits were made by men, suggesting that the women sought medical attention elsewhere. More women than men in this study had herpes genitalis, and female patients were more likely to complain of severe dysuria and local discomfort, whereas male patients were less concerned with pain, and genital herpes was occasionally discovered during examination for other conditions. These patients attributed lesions to abrasions from "too vigorous intercourse" or "catching my zipper." Cultures in these cases were positive. Male patients may be attending sexually transmitted disease clinics, or they may be less likely to seek medical attention because

symptoms are mild. The Rochester study would support the second hypothesis, as the male-female ratio was 1:1.5.⁹

The nine patients first diagnosed with genital herpes at the time of a recurrence need emphasis, as these patients may transmit herpes simplex virus unwittingly. Accurate diagnosis and appropriate precautions could help reduce the spread of infection.

Further studies may determine whether the male-female ratio of 1:8 presenting with recurrent disease is correct, as this would suggest that women are the major reservoir of herpes simplex virus. This ratio may be explained again by the less severe symptoms experienced by men and during recurrences in general.

The virus recovery rate of 91 percent compares well with the general rate of 60 percent quoted by the local laboratory. Kalinyak et al,⁷ using a similar technique of sampling, reported a recovery rate of 53 percent. They justified their figure on the grounds that they sampled all lesions despite the stage of healing. For the seven cases in this study that were not cultured, the reason given was "crusted lesion, not suitable for culture." Assuming these cases were included and reported negatively, the recovery rate would be 75 percent. Certainly if the lesion is cultured early in the stage of viral shedding, recovery of virus is more likely. Reasons for the high rate may be increased publicity prompting patients to present earlier in the course of the illness, culturing technique, and improved virological services.

Few serious complications were seen in this group. Urinary retention that is due to hypotonic bladder may develop because of radiculomyelitis of the sacral nerves, which probably was the mechanism in the male patient with anal herpes.¹¹ Some of the anxiety associated with initial diagnosis has to do with fears about neonatal morbidity and mortality and the association with cancer of the cervix. Open discussion with the obstetrician of a past history of herpes genitalis and regular Pap smears may help to reduce this anxiety and the risk of these complications.

The incidence of concurrent sexually transmitted diseases was low in the study population, although screening was not carried out, and other diseases were sought only when clinically suspected. No cases of gonorrhea were found, which supports the conclusion by Lawee et al¹² that

gonorrhea and genital herpes are coincidental infections. During the study period, only 17 patients of the general Student Health Service population of 6,651 patients were culture positive for gonorrhea. This case ratio of gonorrhea to genital herpes is opposite that reported from sexually transmitted disease clinics^{9,11} and may reflect greater awareness by the public of the role of sexually transmitted disease clinics in treating gonorrhea, better screening by sexually transmitted disease clinics, or an actual difference in disease patterns in this population.

Conclusions

Genital herpes infection is a significant sexually transmitted disease in students. The diagnosis can be made readily on the basis of clinical history and appearance, but confirmation by viral culture where feasible is recommended as an important aspect of patient management.

References

1. Laboratory reports of herpes viruses in Canada—1981. *Can Dis Weekly Rep* 8:157, 1982
2. Genital herpes infection—United States 1966-1977. *MMWR* 31:137, 1982
3. Herrmann KL, Stewart JA: Diagnosis of herpes simplex virus type 1 and 2 infections. In Nahmias AJ, Dowdle WR, Schniazi RF (eds): *The Human Herpes Viruses*. New York, Elsevier, 1981, pp 343-350
4. Herpes simplex—Changing patterns, editorial. *Lancet* 2:1025, 1981
5. Peurthaler JF, Smith IW, Hunter JM: Herpes simplex virus infection of the cervix, letter. *Lancet* 2:1285, 1981
6. Barton IG, Kinghorn GR, Walker MJ, et al: Association of HSV-1 with cervical infection, letter. *Lancet* 2:1108, 1981
7. Kalinyak JE, Fleagle G, Docherty JJ: Incidence and distribution of herpes simplex virus types 1 and 2 from genital lesions in college women. *J Med Virol* 1:175, 1977
8. Sumaya CV, Marx J, Ullis F: Genital infection with herpes simplex virus in a university student population. *Sex Transm Dis* 7(1):16, 1980
9. Chuang T, Su WP, Perry H, et al: Incidence and trends of herpes progenitalis. *Mayo Clin Proc* 58:436, 1983
10. Nonreported sexually transmissible diseases—United States. *MMWR* 28:61, 1979
11. Caplan LR, Kleeman FJ, Berg S: Urinary retention probably secondary to herpes genitalis. *N Engl J Med* 297:920, 1977
12. Lawee D, Gutman M, Hrytzay M, McLachlin J: Herpes genitalis in patients attending a clinic for sexually transmitted diseases. *Can Fam Physician* 29:258, 1983