Herpes genitalis and circumcision

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Both genital infection by herpes simplex virus (HSV) Type 2 and the circumcision status of the male partner have been implicated in the aetiology of carcinoma of the cervix. The cervix is the major site of HSV infection in the female (Josey, Nahmias, Naib, Utley, McKenzie, and Coleman, 1966). Antibodies to HSV Type 2 have been found more frequently in patients with cervical atypia and carcinoma than in controls (Royston and Aurelian 1970; Sprecher-Goldberger, Thiry, Cattoor, Hooghe, and Pestiau, 1970). In Royston and Aurelian's study antibodies to HSV Type 1 were also tested for and found to be distributed equally among patients and controls.

The observation by Naib, Nahmias, Josey, and Kramer (1969) that the peak age for cytologically detected active genital HSV infection in the female precedes the peak age for preinvasive disease by 10 years and invasive disease by 20 years is consistent with an aetiological role for the virus. These authors found that cervical biopsies of 98 of 245 patients with cytological evidence of active HSV infection, showed a 23.7 per cent. incidence of cervical anaplasia including four cases of invasive and twelve cases of *in situ* carcinoma. This was contrasted with an incidence of anaplasia of 1.6 per cent. in a matched control group and of 2.7 per cent. in a total of 56,418 women screened over the same period.

Josey, Nahmias, and Naib (1968) also showed this difference but in eight of 46 cases the diagnosis of anaplasia antedated the initial cytological detection of HSV. Amstey and Balduzzi (1970) also found that it was not possible to conclude that there was a causal relationship between HSV Type 2 and cervical carcinoma as abnormal smears occurred before HSV was found in 69.5 per cent. of cases.

Lack of circumcision of sexual partners has been implicated as a contributory though not essential factor in carcinoma of the cervix (Wynder, Cornfield, Schroff, and Doraiswami, 1954; Auster 1965). The incidence of carcinoma of the cervix in Jewesses is low, possibly because of circumcision in the male (Hochman, Ratzkowski, and Schreiber, 1970; Pridan

and Lilienfeld, 1971). Their findings have been paralleled in Moslems to a lesser extent (Rao, Reddy, and Reddy 1959; Kmet, Damjanovski, Stucin, Bonta, and Cakmakov, 1963; Wahi, Luthra, Mali, and Shimkin, 1972). However, Dodge, Linsell, and Davies (1963) in East Africa found no relationship between the tribal distribution of carcinoma of the cervix and the practice of circumcision among tribal males. Aitken-Swan and Baird (1965) and Terris, Wilson, and Nelson (1973) found no positive association between circumcision status and cervical carcinoma. The role of both HSV and circumcision is therefore still uncertain in the aetiology of carcinoma of the cervix.

Parker and Banatvala (1967) found that three of 21 male patients (14.3 per cent.) with HSV infection were circumcised compared with 40 per cent. of all patients attending their clinic. Barile, Blumberg, Kraul, and Yaguchi (1962), in a study of U.S. Servicemen in Japan, found that only 9 per cent. of patients with penile lesions (one-third of which were due to HSV) were circumcised as compared with 68 per cent. of 47 controls.

As these studies involved relatively small numbers of patients it was thought that it might be of interest to investigate the relationship of circumcision to the occurrence of genital herpes in a larger group of men with proven herpetic infection. Herpes genitalis is generally regarded as a sexually-transmitted disease (Nahmias, Dowdle, Naib, Josey, McLone, and Domesick, 1969; Jeansson and Molin, 1970), and therefore a correlation may be assumed between the incidence of the infection in both sexes.

Material and methods

A retrospective study was devised. 214 male patients seen between June, 1970, and August, 1973, at the Whitechapel Clinic with genital herpes infection proved by culture were included in the study. A randomly selected control group consisted of 410 male patients, not suffering from genital herpes, who attended the clinic during the same period. The records of these patients were examined and a note made of age, marital status, nationality, occupation, other sexually-transmitted disease, contraceptive methods, and circumcision status. Only patients

with no foreskin or just a preputial remnant are recorded as circumcised. As the study was retrospective in nature evidence of circumcision status and contraceptive methods was lacking in some cases.

Data collected

The total number of patients in each group together with circumcision status is shown in Table I. The percentage of patients circumcised in the control group (25.4) was double that in the herpes group (12.1). This difference is significant at the level $P < 0.01$.

The nationalities of patients were fairly evenly distributed in both groups (Table II) and the percentage of those circumcised is again greater in the control group throughout. The patients from areas where ritual circumcision is performed at birth were approximately equally represented in both herpes and control groups.

The average age in the herpes group was 29.0 years and in the control group 29.5 years. There was no significant difference between the average age of

circumcised and uncircumcised patients. The marital status of the patients was approximately equally matched in both groups; 67 per cent. were single, 29 per cent. married, and the rest widowed, separated, or divorced.

Table III shows the contraceptive methods used by the two groups and their relationship to circumcision status. More patients used a condom in the control group than in the herpes group while more of the contacts of the patients used an intrauterine device, pessaries, or the pill in the herpes group than in the control group. This difference is significant at the level $P < 0.02 > 0.01$.

Table IV shows the presenting conditions of the patients in the control group. Some attended with more than one condition. It will be noted that the percentage of circumcised patients was approximately the same for each condition apart from monilial balanitis in which few were circumcised.

In the herpes group 71 patients had another condition at the same time as their HSV infection: 36 had NSU, thirteen had gonorrhoea, and 22 had various

TABLE I Total number of patients and circumcision status

Group	Total	Circumcised		Uncircumcised		Unknown	
		No.	Per cent.	No.	Per cent.	No.	Per cent.
Herpes	214	26	12.1	162	75.8	26	12.1
Control	410	104	25.4	263	64.1	43	10.5

TABLE II Nationality

Group	Total	U.K. and Eire				Caribbean				Others			
		Circumcised		Circumcised		Circumcised		Circumcised		Circumcised		Circumcised	
		No.	Per cent. of total	No.	Per cent.	No.	Per cent. of total	No.	Per cent.	No.	Per cent. of total	No.	Per cent.
Herpes	214	122	57.0	20	16.4	52	24.3	2	3.8	40	18.7	4	10.0
Control	410	239	58.3	59	24.7	82	20.0	12	14.6	89	21.7	33	37.1

TABLE III Contraceptive methods and relationship to circumcision status

Group	Circumcision status	Total	Contraceptive method									
			None		Condom		Pill		IUCD and pessaries		Not known	
			No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
Herpes	Circumcised	26	14	53.8	1	3.9	1	3.9	3	11.5	7	26.9
	Uncircumcised	162	99	61.1	13	8.0	21	13.0	3	1.9	26	16.0
	Unknown	26	15	57.7	3	11.5	6	23.1	0	0	2	7.7
	Total	214	128	59.8	17	7.9	28	13.1	6	2.8	35	16.4
Control	Circumcised	104	61	58.6	11	10.6	13	12.5	0	0	19	18.3
	Uncircumcised	264	167	63.3	36	13.6	23	8.7	1	0.4	37	14.0
	Unknown	42	28	66.7	4	9.5	2	4.8	0	0	8	19.0
	Total	410	256	62.4	51	12.4	38	9.3	1	0.3	64	15.6

other conditions, including trichomoniasis, monilial balanitis, genital warts, and latent treponemal disease.

Table V shows the patients' occupations which

TABLE IV *Presenting conditions of control group patients*

Condition	Total	No. circumcised	Per cent. circumcised
No disease found	78	17	21.8
Gonorrhoea	93	21	22.6
NSU or PGU	142	42	29.6
Monilial balanitis	28	2	7.1
Other conditions	114	36	31.6
Total	455*	118	25.9

*Some patients included in more than one category

were equally represented in both groups. Again, the percentage of circumcised patients was greater for all occupations in the control group than in the herpes group.

Discussion

Terris and others (1973) have described the inaccuracies of recording circumcision status from the patient's history alone. All the data regarding circumcision status in this study were taken from the findings by the medical staff on examination.

The significant difference in circumcision rate between the herpes and control groups would seem to provide evidence that there is a relationship between genital HSV infection and absence of circumcision. Comparing each individual condition in the control group (Table IV) with the herpes group, it was found that other conditions commonly seen in the Whitechapel Clinic did not have the same relationship to absence of circumcision, apart from monilial balanitis which is well known to occur mainly in uncircumcised males.

The finding (Table III) that patients with genital HSV infection used a barrier method of contraception less often further suggests an association between genital HSV infection and carcinoma of the cervix. Melamed, Koss, Flehinger, Kelisky, and Dubrow (1969) found a significantly increased prevalence of carcinoma of the cervix in patients using

oral contraceptives compared with those using a diaphragm, while Terris and Oalmann (1960), Boyd and Doll (1964), and Aitken-Swan and Baird (1965) found that patients using barrier methods had a lower incidence of carcinoma of the cervix than those using no contraceptives. This finding was not confirmed by Winder and others (1954) and Rotkin and King (1962).

The data in this study are purely retrospective and it would be of value to confirm these results with a prospective study. However, there does appear to be a positive relationship between absence of circumcision and genital HSV infection in the male.

Morgan (1965) described circumcision as barbarous, of no value to health, and resulting in decreased sexual pleasure in the male. It may well be that, if genital HSV infection is confirmed to be of major importance in the aetiology of carcinoma of the cervix, we may have to turn to routine circumcision at birth to reduce the risk of genital HSV infection and hence the incidence of carcinoma of the cervix.

Summary

214 patients with genital herpes infection proven by culture and a control group of 410 other patients were included in a retrospective study devised to investigate the relationship of circumcision to genital HSV infection in the male.

The percentage of patients circumcised in the control group was significantly larger than in the herpes group ($P < 0.01$). This was not found to be the case for other sexually-transmitted diseases apart from monilial balanitis. There was also a significant difference in contraceptive methods in the two groups, barrier methods being used less often than other methods in the herpes group and the reverse in the control group.

It is concluded that there is a positive relationship between absence of circumcision and genital HSV infection, but that a prospective study should be undertaken to confirm these results.

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TABLE V *Occupations*

Group	Total	Seamen and transport workers			Skilled manual workers			Unskilled manual workers			Shop and office workers			Other groups		
		No.		Circumcised	No.		Circumcised	No.		Circumcised	No.		Circumcised	No.		Circumcised
		No.	Per cent.		No.	Per cent.		No.	Per cent.		No.	Per cent.		No.	Per cent.	
Herpes	214	24	3	12.5	50	5	10.0	45	3	6.6	56	12	21.4	39	3	7.7
Control	410	57	12	21.0	109	28	25.7	84	16	19.0	94	28	29.8	66	20	30.3

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