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## Are reported stress and coping style associated with frequent recurrence of genital herpes?

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**Objectives:** This paper reports on the cross sectional data from the longitudinal study examining the impact of genital herpes simplex virus (HSV) infection on quality of life. In particular the report sought to study the relation between recurrence of genital HSV and coping style, mood, personality, and quality of life, among other factors.

**Setting and subjects:** 116 patients with a known history of genital herpes simplex infection attending the Department of Genitourinary Medicine at Chelsea and Westminster Hospital.

**Methods:** Psychosocial factors (stress, anxiety, depression, health locus of control, personality, social support, coping skills, and quality of life) and the reported frequency of genital herpes episodes were measured using self administered questionnaires designed to examine the relation between psychosocial status and the frequency of genital HSV episodes.

**Results:** The number of recurrences reported by patients was significantly related to the style of coping skills used. Higher recurrences were less likely to use problem focused coping skills of planning and active coping, and the emotion focused coping skills of positive reinterpretation and growth. There was a significant difference in the number of patients who believed that psychological stress was related to the number of recurrences they experienced. This belief was related to neuroticism on the Eysenck Personality Questionnaire scale, and not to any of the other measures investigated.

**Conclusion:** The findings suggest that it is the way individuals cope, and their personality characteristics rather than actual levels of psychological stress, that influence their belief in a link between recurrent genital HSV and stress. HSV may become the focus of existing concerns and be viewed as the physical manifestation of stress.

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### Introduction

Herpes simplex virus (HSV) remains latent in the sacral ganglia following the acquisition or first episode of genital HSV infection. There is a wide variability in the rate of recurrent episodes both across individuals and within individuals over time. Many factors have been suggested which might activate an HSV recurrence including sunlight, cold, concurrent infection, trauma to the skin, food allergy, heat, fatigue, menstrual cycle changes, and stress.<sup>1</sup> The view that psychosocial factors, in particular stress, play a role in triggering HSV recurrences has been a central belief of many researchers, physicians, and healthcare workers and has often been cited in the literature.<sup>2</sup> Physicians and patients with genital herpes often cite psychological stress as the most important factor in the reactivation of recurrent HSV,<sup>3</sup> with up to 86% reporting that psychological stress triggered their recurrences.<sup>4</sup> However, research in this area has failed to support this assumption, though several studies have suggested a relation in the case of those who experience most frequent HSV recurrences.<sup>5,6</sup> Stress reduction treatment has been found to produce a reduction in the number of recurrences reported in patients with severe recurrent HSV, but the results of this small study involving only four patients requires replication.<sup>7</sup>

Research using a prospective design has not shown a relation between HSV and psychological stress. Patients asked to keep a daily diary

of stress and number of recurrences did not report an elevation in stress before or during a herpes recurrence.<sup>8</sup> Other studies using a retrospective design have supported these negative findings.<sup>9-13</sup> The aim of the current investigation was to examine the relation between psychological factors, including stress, and recurrence of genital HSV, and to clarify the role stress plays in triggering HSV recurrences.

Frequent recurrences, or the ever present potential for recurrences over which an individual has no obvious control, may result in anxiety, frustration, and feelings of helplessness.<sup>14</sup> Carney *et al*<sup>15</sup> found that anxiety experienced during a first episode of genital HSV was sustained over a 12 month period in those who experienced further recurrences. The reduction of clinical recurrences by antiviral treatment with aciclovir has been shown to reduce anxiety and illness concern experienced by patients.<sup>15</sup> It remains unclear whether the anxiety produced by recurrent HSV directly contributes to the frequency of reported recurrences.

Other psychological and social factors believed to play a role in genital HSV recurrences and stress include social support,<sup>13 17 18</sup> coping strategies,<sup>17</sup> and personality.<sup>11 19 20</sup> This paper reports on the cross sectional data from a longitudinal study examining the impact of genital HSV on patients' quality of life, and the role psychosocial factors may have in triggering recurrences. The study aimed to follow

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Table 1 Standard psychosocial measures used

Questionnaire	Psychosocial factor being measured
Hospital Anxiety and Depression Scale (HAD; Zigmond and Snaith <sup>21</sup> )	Current psychological status
Eysenck Personality Questionnaire (EPQ; Eysenck and Eysenck <sup>22</sup> )	Major dimensions of personality
Social Provisions Scale (SPC; Cutrona and Russell <sup>23</sup> )	Perceived social support
Multidimensional Health Beliefs Questionnaire (MHBQ; Wallston and Wallston <sup>25</sup> )	Health beliefs
Coping Orientations to Problems Experienced (COPE; Carver <i>et al.</i> <sup>16</sup> )	Coping mechanisms
Life Experiences Survey (LES; Sarason <i>et al.</i> <sup>24</sup> )	The impact and the number of life events in the past 6 months
The Medical Outcomes Study Instrument (MOS-36 short form Health survey (SF-36) <sup>26</sup> )	Assess current health status

Table 2 Characteristics of the whole sample, and the recruitment source subgroups

	Whole sample (n = 116)		Clinic (n = 91)		Media (n = 25)	
	n	%	n	%	n	%
Sex:						
Male	48	41.4	37	40.7	11	44
Female	68	58.6	54	59.3	14	56
Length of time since diagnosis:						
Under 1 year						
1-5 years	26	22.4	26	28.6	0	0
6-10 years	44	37.9	33	36.3	11	44
11 years and over	22	19.0	14	15.4	8	32
24	24	20.7	18	19.8	6	24
Mean number of recurrences in 6 months (range)	3.65	0-24	3.46	0-18	4.20	0-24
Mean age (years) (range)	35.31	21-69	34.23	22-69	39.24	21-66
Type of treatment:						
No specific treatment	49	42.2	30	33	19	76
Episodic aciclovir	41	35.3	35	38.5	6	24
Suppressive aciclovir	26	22.4	26	28.6	0	0

patients over a one year period as they received appropriate treatment in the clinic.

## Methods

### SUBJECTS

The study group comprised 116 men and women with culture positive genital HSV attending a genitourinary medicine clinic in central London. Subjects were recruited from two sources: the larger group (n = 91, 79%) were approached in the GUM clinic after the researcher (LC) had screened the notes and referral letters. The rest (n = 25, 22%) were recruited through advertisements in the national press, and via local radio.

### MEASURES

Demographic details (age, sex, contraception history, treatment regimen, details about herpes diagnosis, and number of recurrences)

Table 3 Characteristics of recurrence groups

	0-3 recurrences (n = 80)	4-7 recurrences (n = 22)	8-24 recurrences (n = 14)
Mean age (years)	35.53	35.23	34.71
Mean number of recurrences in 6 months (SD)	1.57 (1)	5.36 (1)	12.79 (5.41)
Treatment No (%):			
No treatment	35 (43.8)	7 (31.8)	7 (50)
Episodic	29 (36.3)	9 (40.9)	3 (21.4)
Suppressive	16 (20)	6 (27.3)	4 (28.6)
Length of time since diagnosis (No (%)):			
Under a year	21 (26.3)	3 (13.6)	2 (14.3)
1-5 years	27 (33.8)	10 (45.5)	7 (50)
6-10 years	16 (20)	5 (22.7)	1 (7.1)
11 years and over	16 (20)	4 (18.2)	4 (28.6)
Sex (No (%)):			
Male	32 (40)	9 (40.9)	7 (50)
Female	48 (60)	13 (59.1)	7 (50)

were recorded by the researcher. A battery of standardised psychological and social measures were given to the patients to complete as a questionnaire pack. Details of the measures are given in table 1. They included a measure of anxiety and depression designed to be used with general hospital populations,<sup>21</sup> a well known personality questionnaire,<sup>22</sup> and instruments to assess coping style,<sup>16</sup> perceived social supports,<sup>23</sup> recent life events,<sup>24</sup> health beliefs (Wallston and Wallston, Multidimensional Health Beliefs Questionnaire, 1978),<sup>25</sup> and health related quality of life (MOS-36).<sup>26</sup>

### ANALYSIS

Data were analysed using the Statistical Package for the Social Sciences for Personal Computers (SPSS PC).<sup>27</sup> Pearson's correlation coefficient was used. One way analysis of variance (ANOVA) was used for group comparisons.  $\chi^2$  tests were used for non-parametric group comparisons or Fisher's exact test where cell sizes were less than five.

### Results

A total of 116 HSV patients (48 male and 68 female) were recruited to the study, giving a response rate of 89% of all eligible subjects. At the first assessment 49 (42.2%) were receiving no specific treatment, 41 (35.3%) were receiving aciclovir episodically, and 26 (22.4%) were receiving aciclovir suppressively. There were no significant differences between the three treatment groups for any of the psychosocial measures used. As 25 (22%) of the sample were recruited through advertisements, the two recruitment groups were compared on all measures used (table 2). No significant differences were found between the two groups of patients, and so they were treated as one subject group for the purposes of analysis. It must be noted, however, that none of the subjects recruited via the media were diagnosed recently, compared with more than a quarter of clinic subjects.

There were no statistically significant correlations between the number of recurrences reported and the psychosocial measures. As the data for the number of recurrences in the previous six months were skewed, subjects were divided in three groups: those reporting up to three recurrences, those reporting four to seven recurrences, and those reporting eight recurrences or more. This allowed parametric tests to be carried out on the data. (See table 3 for characteristics of recurrence groups.)

### PSYCHOLOGICAL AND SOCIAL FACTORS

Only results on the coping style measure (COPE) showed statistically significant differences by recurrence group. One way ANOVA showed significant differences for three coping styles: (a) active coping, (b) planning, and (c) positive reinterpretation and growth. Tukey's HSD test with a significance level of  $p < 0.05$  showed that for active coping, the difference was between the moderate and high recurrence groups, the latter reporting the lowest levels of active coping. The high recurrence

Table 4 Mean scores (SD) for COPE items by recurrence groups

	0-3 Recurrences	4-7 Recurrences	8+ Recurrences
Active	13.61 (2.73)	14.71 (1.95)	12.36 (2.47)*
Planning	12.01 (2.71)	12.86 (2.01)	11.36 (2.71)**
Suppression of competing activities	11.61 (2.83)	12.55 (2.44)	10.93 (1.59)
Restraint coping	13.23 (3.76)	14.50 (3.00)	13.14 (3.37)
Seeking social support for instrumental reasons	11.88 (2.91)	12.14 (2.83)	11.07 (3.05)
Seeking social support for emotional reasons	11.98 (3.24)	12.41 (3.11)	10.14 (3.59)
Positive reinterpretation and growth	11.71 (2.73)	12.05 (2.70)	9.79 (1.85)*
Acceptance	11.60 (2.61)	11.73 (1.98)	10.21 (1.81)
Turning to religion	5.69 (2.65)	6.05 (2.85)	5.43 (2.53)
Focus on and venting of emotions	11.11 (3.56)	11.68 (3.03)	10.21 (3.45)
Denial	5.38 (1.89)	5.41 (1.84)	5.93 (2.84)
Behavioural disengagement	6.06 (2.09)	6.50 (1.90)	6.14 (2.03)
Mental disengagement	8.29 (2.14)	8.59 (2.65)	8.43 (2.28)
Alcohol-drug disengagement	1.59 (0.94)	1.91 (0.97)	1.79 (1.05)

\*p < 0.05, \*\*p < 0.001, Tukey's HSD p < 0.05.

Table 5 Perception of psychological stress as a trigger for herpes recurrences

	Psychological stress (n = 68)	No psychological stress (n = 47)
Mean number of recurrences in 6 months (SD)	3.85 (4.20)	3.51 (4.29)
Mean number of negative life events in 6 months (SD)	4.28 (4.34)	5.21 (5.65)
Mean HAD anxiety scores	8.39 (4.04)	7.72 (3.81)
Neuroticism	14.54† (4.40)	12.23 (5.89)
Number (%) scoring above the norm on the neuroticism scale of the EPQ	47† (69)	26 (57)

\*t = 2.03, df = 112, p < 0.05.

†χ<sup>2</sup> = 3.142, dfl, p < 0.05.

group had significantly lower scores than the other two groups in relation to planning and positive reinterpretation (see table 4). In general, high scores on active, planning, and positive reinterpretation are regarded as favourable and useful coping styles, and it is of interest to see that the highest recurrence group had the lowest use of these styles.

There were no significant differences between the groups for the Hospital Anxiety and Depression Scale, the Social Provision Scale, the Multidimensional Health Beliefs Questionnaire, the Life Experiences Survey, the Eysenck Personality Questionnaire, and for any of the MOS Quality of Life items.

PERCEPTION OF PSYCHOLOGICAL STRESS AS A TRIGGER FOR HERPES RECURRENCES

Sixty eight patients (58.6%) reported that they believed psychological stress was a possible trigger for recurrences of genital HSV. However, this group did not report significantly more recurrences or a higher number of negative experiences in the previous six months. They did not differ significantly from the group that did not believe in the role of stress as a trigger for recurrences on any of the psychosocial measures except one: those who perceived stress as a trigger had significantly higher scores on the Neuroticism scale of the EPQ (t = 2.03, df 112, p < 0.05) (table 5).

Discussion

In this study no relation was found between the frequency of reported recurrent episodes of genital HSV and psychological stress as measured by the anxiety and depression scales and by the number of recent negative experiences. Subjects with a high number of reported episodes did not have a lower quality

of life than those with fewer episodes. Anxiety, depression, health locus of control, personality, and social support were not related to the reporting of genital HSV recurrent episodes. These data accord with the growing number of studies that have not found a relation between the frequency of recurrent genital HSV episodes and stress.<sup>8-13</sup>

We found that those who report a high frequency of recurrences of genital HSV are less likely to use the problem focused coping strategies of planning and active coping. Planning is thinking about how to cope with a stressor and involves devising action strategies, thinking about what steps to take, and how best to handle a problem. Active coping involves taking active steps to try to remove or relieve a stressor or alleviate its effects. It involves initiating direct action, increasing one's efforts and trying to execute a coping attempt in a stepwise fashion.<sup>16</sup> This study shows that those who report a higher number of recurrences are also less likely to use the coping skill of positive reinterpretation and growth. This is a form of emotion focused coping, aimed at managing distressing emotions rather than the stressor itself.<sup>16</sup> Our finding is consistent with the view of Folkman and Lazarus that emotion focused coping is important in adjusting to health problems and involves decreasing feelings of fear and threats to self esteem.<sup>28</sup> If active steps to cope with stress are not taken, individuals may become overconcerned with what they believe to be a physical manifestation of that stress, the frequency of recurrences of HSV, rather than the actual cause of their stress. If they are not able to cope with the emotional distress that results from it, the believed link between stress and genital HSV may strengthen.

The majority of patients in the study believe in a direct causal relation between stress and genital herpes recurrences, supporting previous reports.<sup>4</sup> This group also scored significantly higher on the neuroticism scale of the Eysenck Personality Questionnaire. This is a stable personality trait that does not change over time. Those scoring highly on the EPQ neuroticism scale are likely to be more anxious, prone to worrying, moody, and depressed. They are likely to have sleep disturbance and to suffer from various psychosomatic disorders. Genital herpes could be seen by such individuals as the physical manifestation of stress, a belief reinforced by healthcare workers and some published reports. As stress is a commonly reported symptom, it is likely that a recurrence will at some time coincide with a period of stress, reinforcing the belief in a causal relation.

In conclusion, in attempting to help individuals experiencing recurrences of genital HSV, efforts to alter their coping style in the direction of greater use of problem and emotion focused strategies are more likely to be of value. In addition, the role of personality factors in relation to health beliefs needs to be further investigated.

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