CHLORODANTOIN CREAM IN THE TREATMENT OF VAGINAL CANDIDIASIS

by

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Introduction

Although pregnancy, diabetes and previous antibiotic therapy are specific predisposing factors in the aetiology of vaginal candidiasis, the presence of a fungus infection must be suspected in every woman complaining of vaginal irritation, malodorous, curdy white discharge, pruritus, dyspareunia and general discomfort, particularly on walking.

The numerous antifungal drugs which have been used in the treatment of vaginal candidiasis include silver picrate, acetic acid, propionic acid and various arsenical compounds. Organic synthetic dyes such as fuchsin, gentian violet and acriflavine have enjoyed popular use as antifungal agents. The principal disadvantage of these dyestuffs is that they stain clothings as well as the skin. Gentian violet, when used intravaginally, frequently causes increased irritation. Until recently, nystatin, which exerts a pronounced antifungal action against *Candida albicans*, was the only substance specific for *Candida* infection. Grewal *et al.* (1969) reported on Hamycin, also an agent with some antifungal property. Kupferberg and Doscher (1961) discovered the *in vitro* effectiveness of the hydantoin derivative, chlorodantoin, against *C. albicans* and other human fungal pathogenic organisms. They developed a new antifungal agent, chlorodantoin in lotion, solution and cream formulations. These products, in addition to possessing marked antifungal action, have a principal aesthetic advantage of being non-staining.

The present study comprises a 2-year clinical evaluation of chlorodantoin cream (Sporostacin, Ortho Pharmaceutical Ltd.) in patients having vaginal candidiasis.

Materials and Methods

Patients, with the complaint of vaginal discharge, pruritus or irritation in the vulvo-vaginal passage, attending the Gynaecological Department of this hospital, were included in this study.

Besides a detailed history and a clinical examination, vaginal discharge was obtained on two cotton tipped sterile applicators, after insertion of a non-lubricated Cusco's speculum. A wet smear of the discharge was examined microscopically for the presence of *Candida* as well as *Trichomonas vaginalis*. The second specimen of the discharge was applied to the surface of Sabouraud's glucose agar and was then inserted into a tube con-

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taining 2-3 ml. of nutrient broth. This process was always completed within 3-4 hours after taking the vaginal swab. Sabouraud's glucose agar plates and nutrient broth tubes were incubated for 1-3 days at 37°C. In case of a *Candida* positive culture, a growth of dull, white, rounded, cheese-like colonies was usually seen within a period of 1-3 days and the case was labelled as *Candida* positive.

A course of treatment consisted of 5 ml. of chlorodantoin cream inserted vaginally with an applicator twice daily for 14 days. This constituted one course of treatment. To insure complete application of the cream, careful instructions were given to the patients as to the proper insertion of the applicator into the vagina. Intercourse and douches were prohibited. Treatment was continued through the menses, if menstruation appeared during the course. The criterion for cure was three negative cultures taken at 2-week intervals, starting one week after cessation of treatment.

Observations

In this series 1,755 patients were examined who primarily had the complaint of mild or excessive vaginal discharge. These trials were undertaken after the completion of our comparative trials of Mycostatin and Hamycin against vaginal candidiasis (Grewal *et al.*, 1969). Some of the patients who were resistant to Mycostatin or Hamycin were also given chlorodantoin cream for application.

Incidence of Infection: Of 1,755 individuals examined, 614 (34.9 per cent) were positive for vaginal infection, 336 (19.1 per cent) were positive for *Candida* infection, 189 (10.7 per cent) for *T. vaginalis*, 76 (4.3 per cent) were positive for *Haemophilus vaginalis*. Only 10 (0.6 per cent) had mixed infection with *Candida* sp. and *T. vaginalis*, while only 3 (0.2 per cent) had *Candida* sp. and *H. vaginalis* (Table I). This paper deals with only the treatment of patients having vaginal candidiasis.

TABLE I

Showing Incidence of Vaginal Infection with Various Organisms

Organisms			Mixed Organisms	
Candida sp.	T. vaginalis	H. vaginalis	Candida sp. and T. vaginalis	Candida sp. and H. vaginalis
336	189	76	10	3
19.1%	10.7%	4.3%	0.6%	0.2%
Total	614 34.9%			

In the majority of cases mild or profuse vaginal discharge was the most common symptom. The characteristic thick, curdy, white discharge was the commonest type met with. Pruritus and clinical manifestations of vulvitis, vaginitis and vulvo-vaginitis were seen in more than 50 per cent of cases.

Subsequent to a positive culture for *C. albicans* all cases were treated. This communication is based on 156 patients in whom clinical evaluation and follow-up was carried out for over a month after the treatment with chlorodantoin cream. Drop outs have been excluded. Ninety-two cases (58.3 per cent) were clear of infection in 4-14 days of twice daily ap-

plication of the cream. Symptomatic improvement occurred very promptly in several cases following the first application of the cream, and this seemed to be a good indication that the medication would prove effective. Although there were exceptions, generally an increasing improvement during the first week of therapy signified complete clearing of the infection during the following week. Twenty-two more had negative cultures after the second course (73.0 per cent treated); while 13 had negative cultures after the third course with an overall cure in 127 (81.4 per cent) (Table II).

TABLE II

Results of Trials with Chlorodantoin Cream on Vaginal Candidiasis

Total number of patients treated	Number of patients treated with			Failures
	I course	II course	III course	
156	92	22	13	29

Cure rate 81.4 per cent

Only 18 patients failed to obtain any clinical improvement, while a further 11 appeared to improve during the first few days of treatment, but the infection flared up thereafter and did not respond further.

Besides 92 patients who were cured with a single course, 8 patients, although symptomatically relieved, continued to have a positive culture following 3 courses of treatment. Three patients, though negative for culture even after one course of treatment, continued to have symptoms even after 3 courses of treatment.

Of 7 patients who did not respond to Mycostatin therapy, 4 were successfully treated; 2 with single course, one with two and one with three courses. One gynaecological and two obstetrical patients did not respond at all. Several patients commented on the rapid disappearance of burning and irritation.

In only 2 out of 156 patients treated with chlorodantoin cream did reaction occur, which was mild.

Discussion

Lapan (1959), Nathanson (1960), Mendel and Bone (1961), Breen (1961), Clow (1962) and Gerrard (1962) found 14 days' course of treatment with chlorodantoin lotion/solution/cream as effective in both obstetrical and gynaecological cases. They found that the drug was comparatively more effective in gynaecological than in obstetrical patients. Cure-rate varied from 86 to 100 per cent. Mendel and Bone (1961) claimed 60 per cent cure in pregnant and 78 per cent cure in non-pregnant patients with 1-3 courses of therapy.

The use of this compound, chlorodantoin, in the treatment of vaginal candidiasis offers the advantage of simplicity, patients' acceptance and rapid relief of symptoms, together with a high percentage of culture-free cures. Its use was controlled by the microscopic examinations and culture of vaginal discharge on media, both for the initial diagnosis and for the termination of therapy. Whenever possible, this drug should be continued until the cultures are negative.

The results of Sporostacin therapy were uniformly good. The rapid symptomatic

relief and white non-staining property of the cream was remarked upon by many of the patients who had been subjected to other methods of treatment for the same infection. Although other medications are available for the treatment of vaginal candidiasis, this will take its place with them as one of the rapidly effective and dependable compound. The incidence of side reactions to this drug was minimal.

Summary

1. Out of 1,755 patients with a complaint of mild or excessive vaginal discharge, 614 (34.9 per cent) were positive for vaginal infection. Of these, 336 (19.1 per cent) harboured *Candida* sp.; 189 (10.7 per cent) *T. vaginalis;* and 76 (4.3 per cent) *H. vaginalis.* Only 10 (0.6 per cent) had mixed infection with *Candida* sp. and *T. vaginals* while only 3 (2.2 per cent) had *Candida sp.* and *H vaginalis.*

2. Out of 156 patients given 1-3 courses of chlorodantoin cream, cure was obtained in 127 (81.4 per cent) patients; there being 29 (18.6 per cent) failures.

3. Out of 7 patients who did not respond to Mycostatin therapy, 4 could be successfully treated.

4. Side effects were minimal.

5. This compound is a welcome addition to our armamentarium for the treatment of vaginal candidiasis, because of the results obtained and also due to the patients' acceptibility.

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