

TECHNICAL PAPERS

Vaginal Absorption of Penicillin

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Vaginal suppositories containing 100,000 units of penicillin in a base of cocoa butter¹ were used on 20 patients divided into three groups: (1) nonpregnant women complaining of profuse leucorrhea and/or pruritus, (2) pregnant women a few days or weeks before delivery, and (3) women recently post partum. Two hundred thousand units were inserted at one time, and at least three serum levels of penicillin² were determined at intervals ranging from $\frac{1}{2}$ to 8 hours afterward.

Group 1. Nine nonpregnant patients with vaginitis or chronic cervicitis, with a profuse discharge and/or pruritus, were treated. All patients experienced relief following penicillin treatment. Two patients had *Trichomonas* infections. In one, the organisms were still found after treatment, but, as in the other, the symptoms were absent. At least three serum levels were determined on all patients: in 5 patients, after $\frac{1}{2}$ hour levels ranged from .312 to 1.250 units of penicillin/cc. of serum with an average of .687 unit; in 9 patients, after 1 hour, from .039 to 1.250 units with an average of .655 unit; in 4 patients, at 3 hours, from 0 to .156 unit with an average of .068 units; in 7 patients, at 4 hours, from 0 to .312 unit with an average of .120 unit; in 4 patients, at 6 hours, from 0 to .156 unit with an average of .039 unit; and in 3 patients, levels at 8 hours showed no concentration. As the necessary concentration for streptococcus control is considered to be .039 and for staphylococcus, from .078 to .1 unit, the critical amount was present in these patients for an average of 6 hours. There was a slightly higher rate of absorption in the patients who were near the end of their menstrual cycles and in two menopausal patients. One exception was a patient whose cycles were usually of about 28 days, and who on the 12th day had the high concentrations of .625, 1.250, .625, .312, and .156 units at $\frac{1}{2}$, 1, 2, 4, and 6 hours, respectively.

Group 2. Four patients who were awaiting delivery were tested for absorption at $\frac{1}{2}$, 1, and 4 hours after treatment. Of the three patients who were within two weeks of term, two showed no absorption of penicillin, and the third showed levels of .156, .039, and .078 units at the above intervals. One woman who was $2\frac{3}{4}$ months short of term showed an absorption similar to that of nonpregnant women.

Group 3. Seven patients who had recently delivered were tested for absorption after receiving 200,000 units of penicillin. Results were similar to, even slightly better than, those in the nonpregnant patients of Group 1. Four patients, 10 days post partum, had high concentrations in their blood: at $\frac{1}{2}$ hour,

levels ranged from .625 to 1.250 units with an average of .938 unit; at 1 hour, from .625 to 1.250 units with an average of .781 unit; and at 4 hours, from 0 to .156 unit with an average of .063 unit. One patient, 9 days post partum, had no concentration at $\frac{1}{2}$ hour and only .019 unit at 1 and 4 hours. Two patients, respectively 14 and 35 days post partum, showed moderate levels ranging from .312 to .039 unit at $\frac{1}{2}$ hour, .312 to .312 unit at 1 hour, and 0 to .039 unit at 4 hours.

Summary. Except during the last two months of pregnancy, penicillin is easily absorbed from cocoa butter suppositories in the vagina, ordinarily to give therapeutic blood levels for from 4 to 6 hours. Penicillin in the dosage used seems to have a good effect on vaginal infections. In nonpregnant women, during the ovulation phase, considered as including days 14 ± 2 in the ordinary menstrual cycle of about 28 days, absorption seemed to be somewhat diminished. Higher levels were found in patients who were near the end of their menstrual cycles and in two patients who were menopausal. Patients who were very near term absorbed little or no penicillin, whereas patients 10 days post partum showed excellent absorption.

Tumors in Intrasplenic Ovarian Transplants in Castrated Mice¹

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Investigations concerning the influence of steroid gonadal hormones on carcinogenesis have revealed many significant relationships. On the other hand, much less is known of the action of pituitary hormones on the development of tumors, although such relationships have been studied by injections of different pituitary preparations and by observing the effects of hypophysectomy on tumor-bearing animals or animals given carcinogenic substances (10). Recently, Pfeiffer and Hooker (9) obtained small local overgrowths of testicular interstitial cells in mice of the A strain that were given daily injections of pregnant mare's serum for several months. These growths resembled early stages in the development of the interstitial cell tumors that have been induced in estrogen-treated mice of this strain. The difficulty of obtaining purified and standardized gonadotropic hormones, and the formation of anti-hormones, have impeded adequate study of the long-term effects of gonadotropins.

It has been shown that many estrogenic and androgenic hormones are inactivated when circulated through the hepatic portal system (12). Furthermore, the intrinsic production of gonadotropins is increased subsequent to castration, as determined by urinary or hypophyseal bio-assays, or in experimental parabiosis of an intact with a castrated animal (4). The

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