

The cost of erecting the stalls themselves and other incidental expenses will be defrayed from the English stall. No rent will be payable for the premises on which the bazaar will be held, and all the work in connection with it will be done voluntarily by members of the British Red Cross Society.

May we express the hope that we may count on your cooperation and that of your national Red Cross Committee, to whom a letter has also been addressed.

If you can advise us as soon as possible as to the extent to which you can help us it will greatly facilitate our task.

As soon we receive a reply from you full instructions will be sent to you as to the address to which all goods should be consigned.

We would suggest that your gifts should be dispatched not later than a date that will allow of their arrival in England by the 1st June next.

Please forgive us for making this call upon your generosity. We are only emboldened to do so by the fact that the International Florence Nightingale Memorial Foundation is, as its name implies, an International body, and is greatly in need of funds.'

GONORRHEAL VAGINITIS IN CHILDREN

I. Treatment with Estrin

By ROBERT M. LEWIS, M.D. AND ELEANOR L. ADLER, M.D.

For many years it has been recognized that the treatment of gonorrheal vaginitis in children is usually a long, difficult, and trying procedure for the physician and nurse as well as for the little patient. The great variety of remedies used in various clinics argue that none of them is satisfactory. Irrigations with various antiseptics, combined with some form of antiseptic vaginal suppository have been the usual form of treatment, but the results have not been gratifying.

Washing the vaginal surface even with a strong antiseptic solution can hardly be expected to destroy gonococci which always penetrate and lurk deep in the mucosal epithelium or subepithelial space. Given a sensitive or ill controlled child one can often only give a satisfactory irrigation after a fierce battle, a performance most distasteful to the patient and to all concerned. In the Bellevue-Yorkville study of a large number of cases the significant comment is made that treatment with mercurochrome only 'somewhat shortened' the duration of the gonorrheal infection as compared with untreated control cases. TeLinde finds the average duration of the disease to be four months, while Dr. Brunet's figures indicate a much longer average duration. Some cases persist for years. In some of our southern cities vaginitis is very common, as many as two or three hundred cases being reported to the different boards of health in a single year. Children so infected are excluded from school until cured. The hardship that this involves for both family and patient can well be imagined.

In adult women, gonococcal infection of the vaginal wall is transitory or easily cured. Here infection of the deep complicated cervical gland structure along with involvement of the tubal mucosa commonly occurs and is eradicated only by operation or after a long crippling illness. The accessory glands of Skene and Bartholin are also well developed in the adult where they serve as hiding places for gonococci.

In the child, per contra, we ordinarily find a very small tightly closed uterine body with a cervix in which the glands are rudimentary short tubules, quite unlike the deep branching cervical glands of the adult. Infection of the external surface of the cervix is the rule in cases of gonorrheal

vaginitis of childhood. Widely differing opinions are held regarding the frequency of endocervical infection of children suffering with vaginitis. My own impression is that endocervical infection is the exception and not the rule. In children, Bartholin's and Skene's glands are rudimentary and consequently very rarely become seats of infection. Secondary pelvic peritonitis is found in rare instances and actual infection of the tubal mucosa in children is almost unheard of.

The vaginal changes associated with puberty always or nearly always terminate an existing vaginitis if the infection has not previously subsided. After other pre-pubertal changes have occurred, and ordinarily before the first menstrual period is experienced, the vaginal mucosa of the normal child undergoes an abrupt change. In a week or less the child's mucosa is suddenly transformed from a delicate membrane comprising a few thin cell layers to a structure containing many layers of large cornified or partly cornified squamous epithelial cells. These large new cells are loaded with glycogen and yield lactic acid as they break down. Consequently the vaginal 'secretion' which during childhood has been neutral or faintly alkaline in reaction suddenly becomes strongly acid. As a result the vaginal bacterial flora rapidly change, Doederlein's bacillus commonly appearing at this point. All these dramatic episodes occur as the result of the internal secretion of estrin¹ which the ovary has just begun to elaborate. Estrin throughout this paper is used as a term for the follicular hormone or so-called female sex hormone. Amniotin and theelin are trade names for this hormone product.

In the laboratory, gonococci grow best in slightly alkaline media. They rarely survive in an acid medium if the acidity is greater than that represented by a pH (hydrogen-ion concentration) of 6. After the changes of puberty the acidity of the secretions becomes greater than this. In all likelihood it is this change in reaction which accounts for the destruction of the invading gonococci at puberty.

Some years ago, Edgar Allen showed that the changes of the vaginal mucosa to the adult type of structure, which normally occur at puberty, could be temporarily produced in immature monkeys by giving them estrin subcutaneously for ten days. While the endometrium also exhibited certain changes as a result of this therapy, on withdrawal of estrin the mucosae of both uterus and vagina promptly returned to the normal immature state. In no sense were the monkeys 'artificially matured.'

The same kind of vaginal and uterine mucosae as that of the treated monkeys is always found in new born girls as a result of their prolonged absorption of large quantities of maternal estrin during fetal life. This fact, along with other experimental evidence, convinced us that no risk would be run in treating girls who had gonococcal vaginitis with estrin. It seemed possible that temporarily changing the infected child's delicate vaginal mucosa to the thick structure of the adult in which gonococci do not thrive would do away with the infection. The accompanying change in the vaginal secretions from an alkaline to a strongly acid one, is probably the important curative factor. Again it should be emphasized that only a temporary change is produced, and that the stimulated structures return to normal when treatment is stopped.

In 1933 a report of eight cases of gonorrheal vaginitis treated with estrin (theelin) was published by one of us (Lewis). Of these, four were of long duration—refractory to other forms of treatment. Estrin, in the form of theelin, was given hypodermically in dosage of fifty rat units two or three times daily for ten to fourteen days. All showed the expected physiologic vaginal change as proven by biopsy and microscopic section. All improved

To the Medical Profession

"Torch" Brand
Glucose D
with
Orange and Calcium

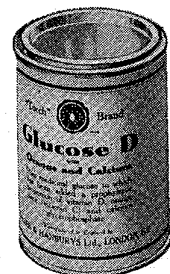
**To Fill Food Deficiencies
and Guard against Disease**

THERE are many cases of debility in which symptoms suggestive of underfeeding and rickets are combined. This is not surprising, since most foods contain more than one of the factors (calorific substances, vitamins, and salts) that are necessary for normal health, and lack of one such food in the diet may lead to a deficiency of more than one food factor.

While the well-established tonic formulæ, containing salts of iron and other mineral elements with strychnine, quinine, etc., remain the stand-by in many cases, there are numerous conditions in which these preparations should now be replaced or supplemented by substances that have been found to fill more accurately the deficiencies of the body. Modern research has greatly enlarged the resources of the physician for treating the many varieties of debility.

**Results of
Food Deficiencies**

Among the common forms of debility are (a) states of definite under-nutrition, such as marasmus and semi-starvation, and (b) conditions characteristic of vitamin deficiency, such as rickets.



In (a) debility due to undernutrition, but a few of the protean presenting conditions are headache, constipation, listlessness, anæmia, backwardness, incipient tuberculosis, failure to put on weight, absence of appetite, pyrexia, diarrhœa, and asthmatic attacks. Children with this type of debility are commonly neurotic and, on examination of their urine, ketone bodies are often found. Osman¹ states that this great group of children is really suffering from deficiency of sugar. In his experience such symptoms were often cured or prevented by addition of glucose to the diet.

Barber and Oriel have found glucose of special value in the thin, hypotonic adult in whom undernutrition is an important factor.

(b) Lack of vitamin D produces, in infants, rickets and defective calcification of teeth, probably leading to a predisposition to dental caries.² Our knowledge of the results of such deficiency in adults is less complete, though we know that vitamin D acts by regulating the metabolism of calcium and phosphorus. Dalziel and Chick,³ however, suggested that the hunger osteomalacia that occurred extensively among adults in Vienna in 1918-1920 was due to lack of fat-soluble vitamins in the diet, as cod-liver oil cured the condition, and vitamin D is now accepted as the essential agent in the cure of this disease.

What is "Torch" Brand Glucose D?

"Torch" Brand Glucose D (with Orange and Calcium) is a preparation consisting of pure medicinal glucose to which have been added orange juice, calciferol (vitamin D) in the form of irradiated ergosterol, and calcium glycerophosphate. The orange juice gives the product a pleasant flavour that is lacking in uncompounded glucose, which often needs flavouring with fruit juice to make it acceptable to the patient. Each ounce (heaped tablespoonful) of Glucose D contains the equivalent of one teaspoonful of fresh orange juice, together with 250 international units of vitamin D.

Uses

In Childhood

Sugar, calcium, phosphorus, and vitamin D are found in milk, so that, in children, a dislike for this foodstuff, for example, may lead to deficiency of the factors under discussion.

The combination of glucose with vitamin D is particularly desirable when glucose is given for conditions due to ketosis ("acidosis"). In ketosis the aim is to increase the intake of carbohydrate and to reduce that of fat, but, since natural vitamin D is contained only in fats, that procedure necessitates the giving of supplementary doses of this vitamin.

In hot weather, particularly, the intake of fat is low. Thus a serious deficiency of vitamin D may occur in children who are under treatment with cod-liver oil and refuse it in warm weather.

In Adult Life

The indications for the use of Glucose D in adult life are chiefly conditions of undernutrition, especially when there is loss or capriciousness of appetite, so that the supply of fats is inadequate.

In Pregnancy and Lactation

In pregnancy there is a generalized drainage of the mother's food-stores, and this drainage seems to affect particularly the supply of vitamin D, so that osteomalacia is liable to occur. Moreover a distinct acidosis has been found to accompany toxæmias of pregnancy (e.g., hyperemesis gravidarum, eclampsia, and pre-eclamptic states) and the **intravenous** use of glucose has gained favour in their treatment. Glucose D (**by mouth**) is therefore an ideal **prophylactic** against the occurrence of these pathological conditions in pregnancy. In lactation the drainage, particularly of vitamin D, continues, and Glucose D is, therefore, still valuable.

In Convalescence

In convalescence the concentrated and easily-absorbed form of nourishment provided by Glucose D will give a marked stimulus to rapid recovery.

Administration and Dosage

"Torch" Brand Glucose D is essentially intended as a prophylactic in conditions demanding an extra stimulus to nutrition, rather than as a medicament in definite, fully-developed disease. It is not, of course, suitable for intravenous or subcutaneous injection: for these methods of administering glucose, Injection Solution of Glucose, "Azoule" Brand, should be used.

The usual doses are, for children, a dessertspoonful twice daily, and for adults, a tablespoonful two or three times daily; but these amounts may, of course, be varied to suit the requirements of individual cases.

References :

¹ *B.M.J.*, 1929, vol. i, p. 150.

² *Medical Research Council Special Reports Series*, No. 159; *Lancet*, 1931, vol. ccxxi, p. 696; *B.M.J.*, 1931, vol. ii, p. 614.

³ *Lancet*, 1921, vol. cci, p. 842.

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clinically until repeated smears showed an absence of pus and gonococci. Two of these cases recurred. Of the two, one was cured by further treatment with theelin.

Since then a number of reports of the successful treatment of vaginitis with estrin have been published from different clinics. Some failures have also been called to our attention. To us it seems evident that while many cases can be rapidly cured by this method, a certain percentage will result in failure. Even quinine will not cure all cases of malaria.

The results of treatment with estrin since 1933 in the vaginitis clinic at Bellevue Hospital, New York City, are of interest and can be summarized in a general way. (The Milbank Foundation generously financed a study of gonorrheal vaginitis on the children's medical service of Bellevue Hospital, Department of Pediatrics, New York University College of Medicine.) The active work has been carried on by Drs. Helen Owen, and Eleanor L. Adler. Thanks to the courtesy of Dr. C. Hendee Smith one of us (Lewis) has been associated with this study in an advisory capacity.

Large amounts of amniotin were generously given to the clinic in different preparations by E. R. Squibb and Sons.)

Very large doses of amniotin—literally thousands of rat units—given by mouth to a number of cases, caused no vaginal change in any of them and did not affect the course of the infection.

Doses of 50 to 100 rat units of ethylene glycol amniotin, given daily by hypodermic, yielded some results, but not very satisfactory ones. When the dosage was increased to 300 R.U. daily the vaginal response and curative effect was much greater.

Recently TeLinde and Brawner² announced the remarkable results obtained in their clinic at the Johns Hopkins Hospital with vaginal suppositories of gelatin containing 75 R.U. of amniotin (estrin). Their patients were treated at home, coming to the clinic for observation. The mother of the infected child was taught to cleanse the external genitalia only, and at night to insert the amniotin suppository in the patient's vagina just as she went to bed. Of seventeen cases of vaginitis treated in this manner, twelve were apparently cured and remained cured while under observation for periods varying from 1 to 4.5 months. On an average in the twelve after 13.1 days of treatment the vaginal response was evident. Smears became negative for pus and gonococci and so remained after an average of 17.8 days of treatment. The remaining five cases were apparently cured, but later recurred. A second course of treatment relieved their discharges and yielded negative smears. At the time the paper was written only two weeks after the last treatment was given, all remained apparently well.

On hearing of TeLinde and Brawner's success with suppositories the same method was adopted at Bellevue. Here our results were satisfactory as compared with any other method of treatment, but not so strikingly successful as those just mentioned.

Of twenty cases treated, fifteen responded satisfactorily with the development of negative smears in from ten to thirty-seven days. Twelve of these became negative in less than twenty-four days.

Of these fifteen, thirteen cases have remained negative for from three weeks to three and one-half months. Two cases recurred.

The remaining five cases have no vaginal discharge but still yield Gram-negative diplococci on smears. In all cases where the infection persists in spite of several weeks of treatment, cervicitis is suspected and found or ruled out by inspecting the cervix.

Clinically, in nearly all cases vaginal discharge and the resulting genital irritation vanishes or greatly decreases ten to fourteen days after treatment

is begun. So striking is this effect that the anxious mothers are ordinarily delighted.

Treatment of gonorrheal vaginitis with estrin suppositories seems far and away the most effective of any method now at our disposal. In addition to being effective it has enormous advantages over other local or hypodermic treatments in that it is easily given and is not disturbing to the child. To obtain benefit the physician makes sure that the vaginal mucosa has responded to estrin therapy. This can be done in several ways. If the response is well marked the gross appearance of the genitalia will be sufficient evidence. Vaginal smears for epithelial content may be misleading. Biopsy of a minute portion of the mucosa on microscopic section gives conclusive proof. Much simpler is it to test the vaginal secretions or washings with normal salt solution for increased acid below 6 with a color indicator. If the secretions are acid the desired change has been brought about. Treatments with suppositories should always be continued for at least two weeks after an apparent cure has been obtained. Extraordinary precautions to prevent the exposure of other girls should of course be taken, although the chance of spreading the infection must be slight after the vaginal discharge ceases.

The complete disappearance of pus and gonococci from vaginal smears taken at weekly intervals over a number of months—with cultures if possible—serve as a criterion of cure in all cases. Late recurrences are fairly common. Such cases must be given another course of treatment—although fortunately recurrent cases commonly yield to this kind of therapy more quickly than do those taken up de novo. In none of our cases was there any evidence of any harmful effects resulting from the treatments with estrin.

CONCLUSIONS

We believe that: (1) Estrin suppositories are a safe remedy for gonorrheal vaginitis; (2) the treatments are easy to give and comfortable for the patient; (3) vaginal discharges and vulval irritation are usually quickly relieved; (4) many cases of gonorrheal vaginitis are cured by the method described; (5) we do not now know any other treatment that yields as good results.

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- ¹ LEWIS, R. M.: Study of Effects of Theelin on Gonorrheal Vaginitis in Children. *Am. J. Obst. and Gynec.*, October 1933, pp. 181-186.
- ² TELINDE, R. W. and BRAWNER, J. N., JR.: Experiences with Amniotin in Treatment of Gonococcal Vaginitis in Children. *Am. J. Obst. and Gynec.*, October, 1935, pp. 512-523.

II. The Nursing Care

BY ELINOR MOYLE, R.N.

The general nursing care of children who have gonorrheal vaginitis is familiar to most nurses, since we see these patients in the hospital, in institutions for children, and in the home. Moreover, this phase of the nursing care differs little under the various forms of specific treatment, consisting as it does chiefly of measures to improve the general health of the child. These measures include a nourishing diet, liberal fluids, and rest in bed if the temperature is elevated. Local cleanliness is essential. To ensure this, the vulva should be sponged frequently with a solution of boric acid, or pitcher douches of the same solution may be given. Vaginal douches, so common a feature of most methods of treatment for gonorrheal vaginitis, are not required during the course of estrin therapy.

In addition to these hygienic measures it is commonly felt that some precautions should be taken against spread of the infection to the patient's eyes. The fear of such spread is apparently exaggerated, for although vaginitis and ophthalmia occasionally occur in the same child, it is almost