DIARRHŒA IN INFANCY.
THE highly satisfactory results which have been obtained by the Mellin’s Food diet in cases of Infantile Diarrhoea prompt us to publish the following particulars of the mixtures which have proved most successful in average cases. The accompanying suggestions are based upon careful observations and testimony which have been supplied to us over a long period by users of Mellin’s Food.
The term "summer diarrhoea" is used here to mean any intestinal disturbance of infants manifested by frequent and abnormal bowel movements. There may be more or less fever, and vomiting may or may not accompany the condition. The cause may be attributable to improper food, to excessive fermentation of food material or to an invasion of micro-organisms. The condition occurs more frequently during the summer months, and while there is a difference of opinion with respect to the direct influence of heat, it is certain that continued hot weather has an indirect bearing by lowering to a considerable extent the infant's power of resistance. There is abundant evidence that a tendency to diarrhoea is of more frequent occurrence in the case of hand-reared infants than with the breast-fed baby.

There is not at present any generally accepted satisfactory classification of the diarrhoeal diseases of infancy, at least differences when recognised are usually not clear enough to warrant any marked variation in the mixing of the food of the hand-reared infant, but enough is however known of the general treatment to anticipate quite a measure of success if the following rules are in all cases at once rigidly adhered to.
All milk should be stopped at once. The intestinal tract should be thoroughly cleaned out. Small amounts of some nourishment, other than milk, that is capable of being absorbed with little digestive effort, should be given at frequent intervals.

Nothing is gained, in fact much time is lost, by withholding nourishment for longer than twenty-four hours, and if the nutritive material is carefully selected it may be given as soon as there is evidence of the intestinal tract being free from accumulated undigested food, with the result of less rapid loss of weight and less danger of sudden prostration. There is no question as to the great value of nourishment given early in diarrhoea, but the diet must be carefully selected to serve certain purposes.

Of all the food elements, carbohydrates in the form of maltose and dextrins stand at the head as the nourishment to be selected in diarrhoea. A small amount of protein to make up for the loss of body protein is next in importance, and on account of a constant loss of salts from the tissues during an attack of diarrhoea, it is desirable to furnish alkaline salts in the diet. As the digestive powers are very low, food constituents must be chosen that are
in a condition ready for assimilation, and capable of immediately furnishing available nutrition. These food elements should be such as to protect abnormal destruction of body-proteins. The food selected should be a poor medium for the multiplication of the forms of bacteria that are likely to be present throughout the intestinal tract. This sort of nourishment may be obtained by preparing the diet according to the following directions:—

Mellin’s Food .. 4 level tablespoonfuls.
Water (boiled, then cooled) .. 20 fluid ounces.
To be given cold, or very warm (not lukewarm) in small quantities, frequently repeated. The baby’s condition will guide the doctor regarding the amount to be given, and the intervals of feeding.

The Mellin’s Food and water mixture suggested in the following formula contains the carbohydrates maltose and dextrins (no starch) and cereal proteins, and is alkaline in reaction. The caloric value is 6.2 to each fluid ounce (three times greater than barley or other starch waters as ordinarily made). The carbohydrate maltose is available nutrition, for maltose may be at once utilised without first being transformed into glycogen—a most important point in consideration of the urgent need for nutrition at this time. Utilizable carbohydrates also act as sparers of
body-protein, while the small amount of nitrogenous food in the diet, under the same protective action, is assimilable nourishment. The restraining effect of these carbohydrates upon putrefactive bacteria, and their known value in favouring a retention of fluids in the body tissues also contribute to the value of the food mixture suggested.

Skimmed Milk in Diarrhoea.

As soon as the stools lessen in number and improve in consistency and character, small amounts of skimmed milk should be gradually substituted for equal amounts of water, until the proper proportions of Mellin's Food, milk and water adapted to the age of the baby are reached.

As the fat of the milk is likely to be digested with much difficulty by infants after an attack of diarrhoea, it is usually advisable, subject to medical advice, to remove the cream from the milk until the baby has fully recovered. The fat may be gradually replaced as soon as the baby's condition warrants, by skimming less and less cream from the milk used.

Treatment in a typical case of Diarrhoea.

There is probably no better way of making this matter perfectly clear than to assume a typical case and follow out in detail the suggestions already given. The following is an example of successful treatment in a typical case of diarrhoea of infants.
A baby about three months old, with a severe bowel disturbance, may have from six to twelve or more loose, watery and foul-smelling stools daily. The first thing to be done is to clear out the intestines thoroughly by such means as the medical adviser directs, many favouring castor oil. After this a most effective procedure is to prepare a mixture of Mellin’s Food with cold water as follows:

Mellin’s Food . . . . 4 level tablespoonfuls.
Water (boiled, then cooled) . . . . 20 fluid ounces.

Give two to three ounces every two or three hours, continuing until the movements are reduced in number to three or four a day, and are improved in character. This may take two or three days, or longer, according to the severity of the trouble. Meanwhile the baby is having enough food material, in suitable form, to maintain strength. Then prepare the diet as follows:

Mellin’s Food . . . . 4 level tablespoonfuls.
Water . . . . . . . . . 18 fluid ounces.
Skimmed milk . . . . . 2 fluid ounces.

Give 3 ounces every 2½ to 3½ hours.

(Skimmed milk obtained by using from the bottom pint of a quart of milk.)
After twenty-four hours, if the stools do not increase, add 2 ounces more of skimmed milk, leaving out 2 ounces of water. Continue to make such a change in the mixture every day or two until the formula is:

Mellin’s Food   ..   4 level tablespoonfuls.
Water         ..   10 fluid ounces.
Skimmed milk ..   10 fluid ounces.

Give 4 ounces every 3 hours.

At this time the proportion of fat in the mixture should be gradually increased, and this end can be best attained by removing less of the cream daily when skimming the milk, until after a few days the whole unskimmed milk is used in preparing the mixture. When this stage is reached the Mellin’s Food may be reduced to the amount advised under normal conditions.

*   *   *
TUBERCLE ENDOTOXOID IN PULMONARY TUBERCULOSIS

J. MEYER, M.D., D.P.H.

(Rietfontein Hospital, Union Department of Public Health)

Tubercle endotoxoid vaccine is prepared by Grasset by a special process (1). He has discarded antituberculosis serum and has modified his vaccine by a change from bovine to human strain, and by the addition of a new fraction "N.A.C." antigen (2). An extensive clinical trial in Native and Coloured tuberculotics forms the basis of this evaluation of the product.

DOSAGE

Endotoxoid is of fixed potency and is given by deep subcutaneous injection starting with 0.01 or 0.05 cc. once or twice a week. This dose is increased by amounts of 0.05 or 0.1 cc. until 2.0 or 3.0 cc. is reached, the latter quantity being suitable for weekly injections. This increase is dependent upon reactions and clinical condition and, where complications ensue, revision of the dosage scale is required. Similarly, in cases with extrapulmonary lesions, modification and a more gradual ascent is indicated. After stabilisation of the temperature the quantity may be increased by 0.2 or more cc. per injection. The dosage of each patient requires particular consideration especially at the commencement of treatment.

REACTIONS

The reactions resemble those seen in the administration of tuberculin and are local, general and focal in nature. Painful subcutaneous swellings following injection occur in many cases early in the course. They subside without abscess formation.

The constitutional upset is shown by rise of temperature of one or two degrees F above the usual range some 12 to 36 hours after injection. This is accompanied by headache and occasional increase in cough.

In association with this general reaction the focal reaction is probably hyperaemic, and is shown by increased moisture, occasional pain and by increase in the quantity of sputum. If this reaction is severe from too frequent or excessive dosage, bloodstaining of the sputum or frank haemoptysis may occur. This is seen particularly during the
early months of treatment. Endotoxoid is then discontinued until the sputum is free of blood and modified dosage, depending on the amount previously reached, is instituted. It is usual to recommence with 0.1 cc. weekly and increase gradually. Repeated bloodstaining is no contraindication to subsequent administration of the product. These reactions are temporary and variable, and diminish in severity with increasing amounts of the vaccine.

EFFECTS OF TREATMENT

It is preferable to start treatment in an institution where bed rest and general hospital routine with serial radiography can be carried out.

In those cases which respond to endotoxoid a considerable steady gain in weight is recorded. This occurs sooner and is greater than can be expected with usual sanatorium regime. In such patients clinical improvement and gradual stabilisation with apyrexia occurs. This is due to absorption or resolution of exudation surrounding the tuberculous lesion. It appears that the focal hyperaemic reaction is necessary to obtain such an effect. The underlying lesion or cavity becomes clearly defined and thin-walled, and may diminish in size.

Not all exudative disease responds in this manner, however, and a similar result is occasionally obtained by judicious use of tuberculin. Where there is no exudative allergic inflammation present there is but little obvious improvement. A stage may be reached beyond which the use of endotoxoid is without demonstrable effect and its continuance may be harmful. Rapid cavitation and dissemination of the disease may occur in minimal tuberculosis. This is sometimes associated with a monocytosis of 20 per cent. and marked faucial ulceration, a "monocytic angina."

Resolution of exudation may be accompanied by a fibrotic reaction which is beneficial but which may be excessive with traction on surrounding structures producing secondary cavitation. This has been demonstrated by serial bronchograms before and after treatment. The cavitation appears to be quiescent, but the end results of such a condition cannot yet be judged.

Collapse therapy must be started early to secure sputum conversion, otherwise further progress is slow or unlikely, and ultimately retrogression will occur. Notwithstanding satisfactory response to the product, sputum conversion is disappointing and occurs in but a minority of cases. A pleural effusion sometimes develops during treatment and a negative sputum may become positive after a small quantity of tubercle endotoxoid.
Fig. 1a: Male, 38 years. February, 1943—120 lb., bilateral tuberculosis, positive sputum.

Fig. 1b: September, 1945. Cavity with a fluid level in right upper lobe. Some clearing of exudation. Sputum positive. Weight, 145 lb. Endotoxoid, 165 cc.

(See p. 500).
Fig. 2a: 25 year old male. January, 1943—tuberculosis mainly in left lung. Sputum positive.

Fig. 2b: August, 1944. Massive cavitation in whole of left lung. Sputum positive. Endotoxoid, 133 cc. Died.

(See p. 500).
Fig. 3a: Female 19 years. February, 1943—bilateral tuberculosis. Extensive disease of right upper lobe. Sputum positive. Weight, 113 lb.

Fig. 3b: June, 1944. Marked clearing and retraction. Cavitation still present in right infraclavicular region; sputum negative. Weight, 175 lb. Tubercle endotoxoid, 171 cc. Attending outpatient clinic August, 1945; X-ray report from clinic, bilateral tuberculosis.

(See p. 500).
Fig. 4a: Male, 23 years. January, 1943. Tuberculosis, right upper lobe. Sputum negative.

Fig. 4b: August, 1944. Extensive cavitation and dissemination; faucial ulceration; monocytosis; sputum positive. Endotoxoid, 101 cc. Died.

(See p. 500).
Fig. 5a: Male, 32 years. August, 1943; cavitation in right upper lobe, and general exudation. Sputum positive. Weight, 147 lb.

Fig. 5b: September, 1945. Some resolution of exudation. Endotoxoid, 122 cc. Repeated haemorrhages and an effusion at the right base. Sputum positive. Bilateral cavitation. Weight, 160 lb.

(See p. 500).
Fig. 6a: Male, 11 years. November, 1941. Bilateral infiltration. Sputum positive.

Fig. 6b: November, 1942. Bilateral cavitation. Toxoid, 116 cc. Died.

(See p. 500).
Dr. J. Meyer: Tubercle Endotoxoid in Pulmonary Tuberculosis.

**Fig. 7a:** Female, 25 years. November, 1940. Tuberculosis in left lung with cavitation. Sputum positive.

**Fig. 7b:** November, 1942. Resolution marked.

**Fig. 7c:** November, 1943. Lipiodol shows cavitation. Patient fit and working.

(See p. 500).
Fig. 8a: Female, 19 years. May, 1943. Bilateral cavitation. Sputum positive. Weight, 85 lb.

Fig. 8b: August, 1944. Marked clearing after 105 cc. endotoxoid. Cavities still present. Sputum positive.

Fig. 8c: Cavity outlined by lipiodol on the left. September, 1945. Cavities on both sides still patent, though smaller on the left. Sputum positive. Endotoxoid, 212 cc. Weight, 106 lb.

(See p. 500).
Fig. 9a: Female, 20 years. January, 1943. Tuberculosis in right upper lobe and left midzone. Sputum positive.

Fig. 9b: October, 1943. Lipiodol. No marked cavitation.

(See p. 500).
Fig. 9c: June, 1944. Marked resolution compared with Fig. 9a. Gained 27 lb. in weight. Sputum negative. Endotoxoid, 180 cc.

Fig. 9d: June, 1944. Lipiodol showing cavitation.

(See p. 500).
Fig. 10a: Male, 24 years. January, 1944. Tuberculous cavitation in right upper lobe. Sputum positive.

Fig. 10b: November, 1944, after right phrenicectomy. Endotoxoid, 80 cc. Attending outpatient clinic, and is doing part-time work.

(See p. 500).
Fig. 11a: Male, 30 years, February, 1943. Exudative tuberculosis and bilateral cavitation. Sputum positive. Weight, 119 lb.

Fig. 11b: September, 1945. Marked clearing. Cavity patent on left side. Sputum positive. Endotoxoid, 234 cc. Weight, 160 lb.

(See p. 500).
The treatment has no effect on tuberculous otitis, laryngitis or enteritis. It will not delay or prevent the development of these or meningitic or miliary conditions which progress to their usual fatal termination. It may flare-up an early tuberculous bone or joint, and may prove of temporary benefit in some cases of lupus. It has a similar therapeutic action to tuberculin in some cases of massive glandular disease in Natives.

**DURATION OF TREATMENT**

There is no indication of the amount or the stage at which tubercle endotoxoid vaccine should be discontinued. The dosage of two cc. twice weekly after two years or so becomes irksome, and similar results could possibly be obtained by smaller amounts with increased concentrations of the vaccine, the fixed potency of which becomes a disadvantage.

Radiographs of illustrative cases are shown in Figs. 1-11, pp. 501-506 and 547-552.

**DISCUSSION**

Grasset's endotoxoid has been used in all types of tuberculosis. It is of some value in an occasional early acute bilateral case of cavitation or caseation with surrounding exudation. Its effect is best where the patient shows some degree of resistance, and where there is allergic exudative inflammation present. Exudation disappears, fibrosis and retraction may gradually occur, and a concise anatomical picture of the underlying lesion is obtained upon which collapse measures can be instituted to secure cavity closure and sputum conversion.

Frequent examination by serial radiography is necessary to gauge effect and to find the optimal period for collapse. The treatment will maintain a few patients in good health and without obvious progression, but careful examination by modern methods will demonstrate that the disease is not healed and biological sputum tests will confirm this. Its continued use in clinics without specific control is not recommended. In action and effect it is similar to the tuberculins, but it is easier to administer and probably less toxic. It is possible that cases which respond to endotoxoid will similarly react to tuberculin or other antigenic stimulus.

Acute contra-lateral spread with cavitation will occur in spite of endotoxoid, and complications and extrapulmonary lesions develop during treatment. In bronchial tuberculosis and in productive or fibroid disease it is without demonstrable result. It may reactivate a healing
or quiescent focus with disastrous dissemination. Its general use in minimal tuberculosis, and in infants and young children is unsatisfactory. The recent modification of the vaccine has, however, lessened the incidence of severe allergic reactions.

The treatment is an antigenic stimulation and acts by hyperaemic focal reaction, an effect of which may be absorption of exudation with promotion of drainage from the lesion. The focal reaction may be excessive and cause haemoptysis. There is evidence of formation of fibrous tissue. It is impossible to forecast any individual response to the product, and surprises and disappointments go hand-in-hand. The poor sputum conversion relegates endotoxoid into an individual category, while the production of secondary cavitation is disquieting. Its use as a placebo is unwarranted.

CONCLUSIONS

1. Tubercle endotoxoid vaccine may cause resolution of acute allergic exudative tuberculous processes. A variable degree of pulmonary and pleural fibrosis may be associated.
2. Its effect is limited. It will not prevent progression of the disease.
3. It has no value in extrapulmonary complications and in fibroid phthisis.
4. It will produce severe allergic effects in tuberculous individuals.
5. The length of treatment is variable and undecided.
6. Its action is uncertain and unpredictable.
7. Tubercle endotoxoid is unsatisfactory for widespread use.

ACKNOWLEDGMENTS

Thanks are due to Dr. Grasset for valuable help and unlimited quantities of his vaccine, and to Miss A. W. Molyneux, R.N. (S.A.), in charge of Tuberculosis and Radiological Departments, for generous assistance.

REFERENCES

BELLADENAL

Antispasmodic and Vagal Sedative

- Emotional tension
- Angina pectoris
  (Interval treatment)
- Peptic Ulcer
- Biliary Colic
- Spastic Colitis
- Dysmenorrhoea

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Appendix: Physiochemical Properties of the Blood
CALCIBRONAT

combines

the central sedative effect of bromide with the anti-allergic and anti-exudative effects of calcium.

It affords adequate sedation with less bromide and is practically free from side-effects.

Post-concussional syndrome
Nervous circulatory disorders
Itching and weeping dermatoses, especially urticaria
Vasomotor rhinitis and other allergic conditions
Hyperexcitability, insomnia, melancholia, depression

Granules     Effervescent Tablets     Ampoules

Normal daily dosage, 1 to 3 level tablespoonfuls of granules or 1 to 3 effervescent tablets. When a rapid, powerful action is needed, 10 ml. of the ampoule solution should be injected every day or every other day.
The majority of hypnotics in use today for the treatment of insomnia suffer from a relatively small therapeutic ratio and from the fact that they often give rise to unpleasant after-effects on the following day. Moreover, habituation to these drugs occurs very frequently. In Plexonal, a recently introduced hypnotic preparation, these difficulties appear to have been largely overcome by the addition of small amounts of dihydroergotamine and scopolamine to selected barbiturates; in this way, the action of the barbiturates is potentiated, so that smaller amounts are required.

Before Plexonal was introduced into therapy, the mutual potentiation of the various components had been convincingly demonstrated by Baer (1951) in a carefully conducted clinical investigation; a similar synergism between barbiturates, belladonna and ergotamine had already been observed several years previously by Rothlin (1934). Plexonal is equally satisfactory as a hypnotic and as a day-time sedative, and clinical trials have yielded excellent results. Binswanger (1951) has published an account of its use in 80 patients, mostly psychiatric cases, and he emphasizes its broad spectrum of action, the absence of side-effects and after-effects and the fact that neither tolerance nor addiction develops on prolonged use. He found it particularly convenient that the dosage can be readily adjusted to suit individual needs and that the preparation can be given in divided doses during the night without the risk of “hangover” on the following day. According to Boss (1951), unpleasant after-effects are not experienced even by patients previously found to be hypersensitive to short-acting barbiturates. It has been shown by Schneider (1952) that, using Plexonal, sleep can be satisfactorily induced with smaller quantities of barbiturates than when the usual hypnotics are employed. At the same time, Plexonal has a rapid onset of action, induces sound, refreshing sleep, and is rapidly eliminated (Baer, 1951; Walter, 1953).
Plexonal is equally effective in patients with organic nervous diseases and in those with autonomic disturbances (WALTER, 1953). It has also been employed with good results in post-operative insomnia. SCHERER (1953) gave Plexonal to 114 patients who had suffered various kinds of injury or had undergone abdominal operations. In only 4 cases was the hypnotic action inadequate. In 75% of the patients, sleep was induced within about half an hour and lasted 6 to 8 hours. The patients awakened refreshed on the following morning and did not experience the slightest after-effects. Naturally, Plexonal does not take the place of an analgesic. On the other hand, NYMGÅRD (1953) found it to be valuable in elderly patients with psychomotor hyperfunction, even in cases refractory to other medicaments. KOWALSKI (1953) has described the beneficial action of Plexonal in insomnia due to pre-operative anxiety; recovery following operations and during the puerperium was also assisted by sedation with Plexonal. HOLTZER (1953) obtained excellent results in pavor nocturnus in nervous children.

The average hypnotic dose in adults varies between 2 and 4 tablets. If necessary, the dose may be increased up to 6 tablets and, as already mentioned, the total dose may be divided up into smaller fractions given at intervals during the night. This is particularly useful in elderly, arteriosclerotic patients who tend to re-awaken after a short period of sleep (BINSWANGER, 1951).

N. B. Plexonal is marketed in India, Pakistan and Burma as Plessonal.

KOWALSKI F. (1953): Praxis 42, 82.
ROTHLIN E. (1934): Schweiz. med. Wschr. 64, 188.
The syndrome of irritable colon, sometimes called the irritable bowel syndrome, is one which can readily lead to a mistaken diagnosis and for which needless operations are often performed. According to Miskimon (1954), who has published a report on 700 cases seen in private practice, the presenting symptom is usually abdominal pain (a dull sensation of fullness or sharp, colicky pain), most frequently at the flexures or in the region of the sigmoid. Other symptoms are meteorism, the feeling that evacuations are incomplete, ineffective straining at stool, and the passage of hard, scybalous stools, especially after administration of a warm-water enema. Some patients have constipation, some diarrhoea and others have normal, regular defecation; in most patients the pattern of bowel activity and characteristics of the stools are constantly changing. As a rule, there is evidence of other gastrointestinal irritability, with delayed cardiac sphincter opening time and, frequently, ulcer-like pains or pains suggestive of cholecystitis, etc. The pains occur intermittently, with symptom-free intervals between episodes, and recurrences are usually associated with overwork and emotional stress. Accompanying symptoms such as hyperhidrosis, flushing, cold hands, hypotension and bradycardia, which are frequently present, are indicative of a disturbance in autonomic regulation, especially parasympathetic predominance.

Although certain neurotic traits may be present, the patients can seldom be classed as true cases of neurosis. Most of them are of the perfectionistic, striving type — active, ambitious, over-conscientious individuals who attempt too much and are constantly afraid that they will be unable to give satisfaction to their employers or that they will not succeed in reaching the goal they have set themselves.