post-mortem examination was performed by Dr. H. I. Coombs. The signs were regarded as those of diabetes. The operation area was clean, without sepsis or haematoma and with no evidence of injury to the bladder or urethra. The patient would not have died if she had not been operated upon, but there is no reason to believe that the especial character of the operation was the dominant cause of the development of diabetic coma. This fatal case is not included in the series.

Of the other 50 cases, 15 have been operated upon by the obturator foramen approach for the attachment of the ends of the sling, and 35 have been operated upon using bore-holes through the pubic bones. Of the obturator foramen cases, three have not been completely cured of symptoms. The other cases of this group have been cured of their stress incontinence, but in view of the three partial failures the obturator foramen method has been abandoned. Nevertheless, 12 of the 15 cases can be regarded as completely cured, and the three cases that were not completely cured were greatly relieved. The tantalum-mesh cases belong to this group of 15. In both cases an excellent result was obtained, the patients being completely cured.

Of the 35 cases in which drill-holes have been made the results have been satisfactory. One patient, aged 60, developed a stroke six months after the operation, since when she has been incontinent, although at times before she had the stroke she was not completely free from stress incontinence. There is no doubt that this patient was a bad subject for operation, and it was always difficult to decide from the history whether she was suffering from stress incontinence, urgency, or frequency.

In one case the approach to the pubic bones was made by means of a curved incision below the clitoris. This led to the bore-holes being placed low down, and subsequently, although the urethra was well supported by the sling, a slight degree of cystocele developed above this level. Nevertheless, the patient was cured of stress incontinence although she suffered much from urgency. The case is of some interest because there is a tendency to maintain that failure to support the neck of the bladder is the cause of stress incontinence (Muellner, 1949). Except for the patient who subsequently developed a stroke, the 35 patients were all cured of stress incontinence. It was found that the younger patients were completely cured of all their urinary symptoms. The older patients, however, suffered from frequency and urgency for some time after the operation, although these symptoms gradually improved with time.

It is perhaps of some interest to record that the technical problem which caused most difficulty was to decide upon the best method of approach through the skin of the vulva to reach the pubic bones. Each method of approach that was tried had certain advantages, and it was only after very careful consideration that the incisions on the inner sides of the labia majora were selected as the most satisfactory.

In my view the operation should be regarded as an excellent method of treating stress incontinence, particularly in those patients in whom vaginal methods have failed. The technical difficulties are not very great and there seems to be no risk of injury either to the bladder or to the urethra. At first thought the operation of drilling holes in the pubic bones seems to be severe, but in practice it is simple to carry out. Preliminary work with models had shown that the correct inclination of the sling can be obtained only if the pubic bones are drilled. It was felt from the beginning that the inclination of the sling was not the best possible if the ends of the sling were brought through the obturator foramina, but as the first few patients operated upon in this way were relieved of their symptoms the method was employed for a small series of cases. The results, however, were not satisfactory in all cases and the method has been abandoned.

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STEATORRHOEA AND GLOSSITIS AFTER ILEOCOLOSTOMY

EFFECT OF SYNTHETIC VITAMINS OF B COMPLEX, AUTOLYSED YEAST, AND LIVER EXTRACT

BY

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Pantothenic acid and inositol have for many years been recognized as members of the vitamin B complex. The former has been shown to be an essential factor for many animal species, in some of which deficiency is associated with ectodermal defects, such as dermatitis and greying of the hair, and with reduced alimentary motility. Inositol is a normal constituent of all animal and plant tissues. The little that is known of its role in animal nutrition suggests that it also is related to the maintenance of ectodermal tissues. The role of both these substances in human nutrition is still unknown.

The case is here described of a man who had an ileocolostomy performed for what was most probably regional ileitis. He later developed steatorrhea and signs of avitaminoses. His symptoms were predominantly alimentary, and the opportunity was taken to observe the effect on them of pantothenic acid and inositol as well as of other synthetic vitamins and vitamin preparations.

Case Report

The patient had apparently been healthy until September, 1935, when, at the age of 21, he developed pain in the right iliac fossa. Laparotomy revealed a swollen terminal ileum and dense adhesions in this region and around the caecum. The appendix was normal. Anastomosis was performed between the lower ileum and the first part of the transverse colon. The exact length of ileum by-passed in this procedure was not recorded, but from subsequent radiological examination it was estimated to be about 24–36 in. (61–91 cm.). He had no symptoms thereafter until about twelve months later he suffered from diarrhoea, nausea, vomiting, anorexia, and abdominal discomfort over a period of about two weeks. Six months afterwards he complained for the first time of a sore tongue, and his mouth felt raw where it was irritated by his dentures. During the next five years, although abdominal symptoms never amounted to more than occasional mild discomfort across the lower abdomen, the glossitis was constantly troublesome, relieved only by repeated injections of liver extract.

Clinical and Laboratory Findings.—When I first saw the patient on July 21, 1945, he was in good general health. His tongue, however, showed general atrophy of moderate degree and was a fiery red at the tip and edges. No significant abnormality was detected in the abdomen. Blood examination revealed: red cells, 4,230,000; haemoglobin, 11.8 g.%; M.C.V., 96 μ^3 ; M.C.H.C., 29%; white cells, 7,600. A test meal showed free HCl. The fat content of the faeces was 46% of dry matter, and balance experiments revealed that he absorbed only 67%

of a daily intake of 50 g. of fat. The glucose-tolerance curve was flat. Radiological examination of the bowel revealed an irregular pattern resembling that often seen in steatorrhea. The ileocolostomy was apparently functioning satisfactorily. The loop of bowel short-circuited by the operation was patent, but was the seat of very marked stasis.

Treatment and Subsequent Course

With his co-operation the patient was closely observed over a period of almost two years. Clinical trials were carried out with the following synthetic vitamins: calcium pantothenate, inositol, folic acid, nicotinic acid, riboflavin, and aneurin. The effects of yeast extract ("marmite") and of a highly purified liver extract ("anahaemin") were also observed. Details of this treatment and the results are presented in the Table.

When the investigation was begun sore tongue had been present without natural remission for over five years. It was then found that a highly purified liver extract was effective, given intramuscularly or by mouth. Yeast extract (marmite) produced similar results, with a threshold of effectiveness at about 4 g. a day. Five courses of oral calcium pantothenate were given, and on each occasion benefit occurred in four days and complete remission of the glossitis within a week. A more rapid effect was obtained with a single intramuscular dose. Inositol on one occasion had an action on the tongue similar to that of pantothenate. Weekly courses of nicotinic acid, of riboflavin, and of aneurin, seriatim and also simultaneously, were without benefit.

Before the investigation the patient suffered mild abdominal discomfort whenever oral symptoms improved. Throughout the investigation calcium pantothenate, which cured the sore tongue, was invariably associated with abdominal colic-like pain. This was so severe as to be incapacitating when a single dose of 100 mg. was given intramuscularly. Oral liver and marmite cured the sore tongue; abdominal pain previously present did not recur while they were being given. Parenteral liver treatment had an effect similar to that of oral pantothenate in aggravating or producing abdominal symptoms. On the occasion when inositol seemed to cure the sore tongue abdominal pain disappeared, but when abdominal pain was the only symptom it was not affected by inositol. Radiological examination of the alimentary tract at the height of abdominal symptoms after the administration of 100 mg. of pantothenate intramuscularly revealed pronounced duodenal spasm and an exceedingly active and irregular spastic small bowel. There was no chemical evidence that calcium pantothenate improved absorption of fat or glucose.

Results of Treatment

Pantothenic Acid.—The uniformity of the response to calcium pantothenate on six occasions during a prolonged period of observation is regarded as justifying the conclusion that it had an effect analogous to that of other known vitamins in their respective avitaminoses. The effects of pantothenate in this man were in some respects similar to those which have been attributed to the vitamin in animals. It had a rapid curative action on his abnormal buccal mucosa (ectodermal tissue) and it increased his intestinal motility. It did not, however, restore to normal the disordered intestinal motility or improve carbohydrate or fat absorption.

Inositol.—Inositol and pantothenic acid have been shown to be related biologically, and their similar actions on the glossitis are interesting in this respect. The fact that inositol did not induce abdominal pain is in keeping with the absence of any specific effect on alimentary motility in animals.

Folic Acid.—Glossitis was not present when folic acid was used effectively in the treatment of abdominal pain. The relation of folic acid to this symptom is obscure, but it is interesting to compare this effect with the beneficial action of the vitamin on the radiological appearances of the small bowel in cases of the sprue syndrome (Darby, 1947; Ferguson and Calder, 1948).

Date	Treatment*	Results	
		Glossitis	Abdominal Pain
1945			
July 21	Before starting treatment	+++	None
" 28	Nicotinic acid, 150 mg./day for 7 days	+++	Vague
Aug. 4	Aneurin, 18 mg./day for 7 days	+++	Vague
" 11	Riboflavin, 6 mg./day for 7 days	++++	None
" 18	Anahaemin, 2 ml. i.m. (single dose)	++++ Healed by Aug. 23; recurred within a week	None; then moderately severe almost daily for 7-8 days
Sept. 1	Nicotinic acid, 150 mg. } daily Aneurin, 18 mg. } for 7 Riboflavin, 6 mg. } days	+++	Remained mild
" 8	Marmite, 8 g./day for 21 days	++++ Healed completely in 7 days	Mild: disappeared within 7 days and remained absent until December
" 29	Marmite, 4 g./day for 7 days	Still healed, but relapsed in 4 days	
Oct. 6	Anahaemin, 1 ml./day for 7 days	+++ Healed completely by 7th day	
" 13	Anahaemin, 0.5 ml./day for 7 days	Remained healed until Jan., 1946	None: vague in December
1946			
Jan. 12		+	Slight
" 19		++	Slight
" 26	Calcium pantothenate, 50 mg./day for 4 days	+++ Healed by 5th day; recurred by 10th day	Pain within 48 hours of 1st dose almost daily for 6 days; gradually lessened to 10th day
Feb. 7		+	Vague
" 9	Calcium pantothenate, 100 mg./day for 5 days	++++ Healed from 5th to 14th day; then recurred	Absent. Pain within 48 hours of 1st dose almost daily for 12 days; then less severe
" 23		+	Less severe
Mar. 2	Calcium pantothenate, 100 mg./day for 7 days	++++ Healed from 5th to 21st day; then recurred	Absent. Returned within 48 hours of 1st dose. for 12 days almost daily
" 23		+	Less severe
" 30		++	Slight
Apr. 6	Calcium pantothenate, 100 mg. i.m. (single dose)	++++ Improved by 48 hours; almost complete remission for 10 days	None, but extreme within 24 hours; lasted 3 days, then less severe
" 20	Nicotinic acid, 400 mg./day for 14 days	+++	Less severe; gradually diminished
May 4	Nicotinic acid, 50 mg. i.m. every 2nd day (3 doses)	+++	Slight 2-3 a week
" 18	Calcium pantothenate, 100 mg./day until May 26	++++ Completely healed from May 25 to 28	Vague. Severe within 48 hours of 1st dose, then almost daily
" 30	Calcium pantothenate, 75 mg. (single oral dose)	+	Pain disappeared on 29th, but was severe within 6 hours of this dose
June 1	Inositol, 37.5 mg./day for 7 days	++ Slight improvement by June 8	Pain disappeared within 48 hours of 1st dose
" 8	Inositol, 75 mg./day for 7 days	+	
" 15	Calcium pantothenate, 100 mg./day for 7 days	No further improvement Healed completely by 5th day	Absent. Recurred within 3 days; then moderately severe almost daily
" 22	Anahaemin, 2 ml. i.m. (single dose)	Still healed; remained so till July	
Aug. 3	Inositol, 37.5 mg./day for 2 weeks	+++ Marked improvement by 7th day; healed by 14th	Still severe daily
" 10		+	Vague
" 17		+	Absent
Sept.-Jan. 1947	Inositol stopped Liver extract (i.m.) from time to time	Healed Remained healed	Rarely more than day or two without mild pain, which gradually increased in December
Jan. 25	Folic acid, 15 mg./day for 2 weeks	Still healed	Daily severe. Rapid improvement. Absent from 5th day apart from mild flatulence
Feb. 8	Folic acid, 20 mg./day		Flatulence disappeared
" 15	Folic acid stopped		
" 19			Pain returned. Occurred daily
" 22	Folic acid, 15 mg. i.m.		Complete relief for 2 days; then severe as before
Mar. 1	Inositol, 30 mg./day for 7 days		No relief
" 15	Folic acid, 20 mg./day		Complete relief from 4th day

* All treatment is oral unless other method of administration is specified.

In considering the effects of individual vitamins the possible biological interrelationships of inositol, pantothenic acid, and folic acid are important. Investigations on the role of folic acid and biotin were reviewed by Wright and Welch (1943), who confirmed the previous findings. It is evident that utilization of pantothenic acid depends on the availability of the other two substances, at least in the experimental animal; and pantothenic acid seems to induce intestinal synthesis of inositol (Woolley, 1942). The results of these investigations are of course not necessarily applicable to man, but they at least serve to indicate the probable complexity of the problem.

Yeast and Liver Extract.—The beneficial action of these two complex substances might at first sight be explained on the basis of their pantothenic acid content. This is by no means certain, since anahaemin is stated by the makers to contain only about 0.001 mg. per ml., and marmite only about 0.06 mg. per g. Thus 1 ml. of anahaemin per day orally (0.001 mg. of pantothenic acid) was rapidly curative, and 4 g. of marmite daily (0.24 mg. of pantothenic acid) allowed symptoms to recur. On one occasion 76 mg. of calcium pantothenate by mouth failed to cure the sore tongue, and on several occasions the administration of 100 mg. was no more effective than oral anahaemin or marmite, and the improvement was short-lived compared with the long remission which followed oral liver therapy. Finally, the effect of oral liver and of yeast extract on alimentary symptoms was different from that of calcium pantothenate. Admitting the possibility of coincidence and of natural fluctuations in the clinical state, it does seem probable that anahaemin and marmite were effective by virtue of a factor other than pantothenic acid or inositol. The minute amount of this active principle required recalls the activity of folic acid and of vitamin B₁₂ in Addisonian pernicious anaemia and in the sprue syndrome. In this case observations on folic acid did not reveal the scope of its action.

Whatever this active principle is, it seems probable that lack of pantothenic acid was responsible for the glossitis, and that administration of calcium pantothenate repaired this deficiency and stimulated bowel activity. Pantothenic acid deficiency was not responsible for the disordered bowel activity, and when this was stimulated pain resulted. As an alternative explanation it might be suggested that the administration of calcium pantothenate replaces one deficiency and at the same time aggravates other coexisting deficiencies in a manner analogous to the development of beriberi or ariboflavinosis in pellagrins treated with nicotinic acid (Sydenstricker, Sebrell, Cleckley, and Kruse, 1940).

Aetiology of the Defects

In the past, organic disease of the intestine, with or without operative intervention, has been reported in association with defective fat absorption, signs of deficiencies of vitamins of the B group, and macrocytic anaemia. In a review of the literature Barker and Hummel (1939) referred to 51 such cases. Steatorrhoea is not a commonly recorded feature of regional ileitis. Bockus (1945), in reviewing this condition, made only passing reference to occasional avitaminoses and steatorrhoea in the untreated case. Nor is steatorrhoea a commonly recorded sequel to the operative treatment of this condition; but in stressing the need for a high protein diet and liberal intake of vitamins of the B complex in order to avoid the development of serious nutritional disorders Brown and Donald (1942) gave the impression that such conditions may be more common than is indicated by the available literature.

Conditions such as alimentary and peritoneal tuberculosis and extensive infiltration by lymphosarcoma or lymph-

adenoma may interfere with absorption in a mechanical fashion, but the occurrence of steatorrhoea and deficiency states in association with local disease or stricture is not so readily explained. Whether the effects are due to reduction in the absorbing surfaces or whether there is in addition some other disturbance—e.g., in the bacterial flora—which might interfere with the requirement for optimal absorption is not known. In favour of some additional factor is the observation that massive resection of the intestine in man is compatible with survival and good health. Prioleau (1943) reported such an instance which followed the removal of about 12 feet (3.65 metres) of small bowel and 1 foot (30 cm.) of large bowel. Elman and Read (1945) reported extensive resection of the small bowel and the right half of the large bowel with subsequent gain in weight and normal alimentary function on an unrestricted diet. From a review of 257 cases in which over 6 feet (1.83 metres) of small intestine had been removed Haymond (1935) concluded that resection of over half (11 feet (3.35 metres) in the average individual) was likely to give poor results.

In the present case no bowel was removed and the extent of the disease was relatively small, yet some time after operation, when activity of the disease was no longer evident and when the previously abnormal portion of bowel was found to be patent, steatorrhoea and avitaminoses were well established. It is impossible to be certain that the disease and the ileocolostomy and the subsequent illness were related as cause and effect, but in the past intestinal strictures have been found to cause similar disturbances, which on occasion have been cured by removal of the affected part. Barker and Hummel (1939) described the case of a man aged 56 who developed a megaloblastic anaemia and a sore tongue after ileocolostomy for "non-specific ileitis." The by-passed loop of small bowel and colon was left as an alternative channel for alimentary contents as in the present case.

The clinical and haematological features of sprue were described by Wintrobe (1942) in a patient in whom extensive resection of intestine had been performed. Temporary improvement occurred when at a later date a blind loop of bowel was removed. Watson, Cameron, and Witts (1948) mention the occurrence of megaloblastic anaemia without steatorrhoea following ileo-ileostomy performed to by-pass a subacute obstruction from regional ileitis. The possibility again arises that in some instances at least a factor other than reduction in surface may contribute to the development of deficiencies. A possible mechanism in such circumstances is by the alteration in the bacterial flora. This raises the old idea of "intestinal toxæmia," but in a new form.

Horster (1935) was able to induce anaemia and hepatic damage in dogs by the production of strictures or blind pouches in the intestine, and to prevent these changes by the oral administration of trichlororesol. In addition he made the interesting observation that intramuscular injection of liver extract ("campolon") was equally effective. Watson *et al.* (1948) showed that in rats the production of blind loops in the small bowel often resulted in macrocytic anaemia which responded to treatment with liver extract (anahaemin). The development of this anaemia appears to be in some way related to dilatation of the loop and stagnation of its contents.

Marrow smears made from rats with macrocytic anaemia showed normal or increased cellularity, with an increase in the proportion of earlier red cell precursors. Although none of these corresponded exactly to the megaloblasts of human pernicious anaemia, in some cells the arrangement of nuclear chromatin was looser than normal and there

was occasionally seen a nuclear pattern approaching that of the typical megaloblast. It is at least possible that in these animals and also in the cases discussed alimentary stasis in the loop led to an alteration in the bacterial flora of the intestine and disturbed the elaboration or utilization of essential vitamins. It is also possible that the liver extracts in experimental macrocytic anaemia, and yeast and liver extracts in the present case, had an effect analogous to that of folic acid and biotin, which have been shown to reverse many deficiencies produced in the experimental animal by sulphaguanidine or sulphasuxidine.

Summary

The case is described of a patient who developed steatorrhoea and persistent glossitis and stomatitis after ileocolostomy for probable regional ileitis. The oral manifestations of the case were controlled on separate occasions by calcium pantothenate given orally or intramuscularly, by inositol given orally, by yeast extract (marmite), and by oral or intramuscular administration of a highly refined liver extract (anahaemin).

Calcium pantothenate was effective against the glossitis but invariably aggravated abdominal symptoms, particularly when given intramuscularly. Anahaemin given parenterally produced abdominal pain in less degree. Given by mouth, anahaemin, marmite, and also inositol cured the sore tongue but did not provoke abdominal discomfort. Folic acid relieved the colic, but its action on the tongue could not be determined because glossitis was not present at this time. Neither fat absorption nor glucose absorption was improved by the administration of calcium pantothenate. Nicotinic acid, riboflavin, and aneurin had no effect on the glossitis or on the abdominal symptoms.

It is suggested that the action of the yeast and liver extracts was due not to their content of pantothenic acid but to the presence of some other factor or factors which restored existing deficiencies in a more balanced manner, leading to improvement in both oral and alimentary disturbances.

The possible mechanism of the development of the steatorrhoea and the associated avitaminoses is discussed, and it is suggested that alteration in alimentary flora and consequent reduction in the availability of essential factors may be at least partly responsible.

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Since local health authorities are having difficulties in providing ambulance services, the Ministry of Health has asked hospital boards and management committees to review their arrangements for calling on ambulance services, to see whether fewer calls can be made. The greatest increase in calls has been for sitting cases taken by car to and from out-patient departments. The Ministry would like hospitals to hold clinics at times that fit in with the local bus services, and to arrange for out-patients living near together to attend for treatment at about the same time. The circular also points out that patients, even stretcher cases, can be comfortably conveyed long distances by rail instead of by ambulance or car.

THE PROGNOSIS OF CERTAIN HYSTERICAL SYMPTOMS

BY

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Thirty years ago MacCurdy (1918), discussing the treatment of hysteria, said that any physician with enough sympathy, interest, and common sense could obtain good results in many of these cases. He was referring only to the immediate outcome, and it is now agreed that even without the above requisites most doctors can get rid of a hysterical symptom. The present psychiatric view is that this is not always desirable, nor does it really help the patient, as he or she remains ill-equipped to stand up to the future strains that life is bound to impose.

This report is a simple account of what has happened to a number of patients who showed clear-cut hysterical symptoms, who were treated in a rather superficial way, and who have been followed up from four to six years after discharge from hospital.

Material

One hundred cases presenting various types of hysterical symptom were selected from 212 consecutive cases labelled as hysteria. All were seen either as in-patients or as out-patients in two large civilian general hospitals from 1939 to 1943. The selected cases were followed up from four to six years, to the beginning of 1947.

The selection was made by taking only those cases showing clear-cut, isolated, and easily recognizable symptoms, so that the symptomatological prognosis could not be mistaken. The cases not included showed a more diffuse and complicated symptomatology, often with objective and subjective disorders of sensation. Each of the selected cases showed one of the following symptoms: amnesia, aphonia, blindness, fits, paralysis, tremor, or vomiting, and the prognosis was very simply judged on the presence or absence or replacement of this symptom after a given time and on the rapidity and frequency of relapse, if any, during this time.

The follow-up was successful in 90 of these cases, the remaining 10 being untraced. The actual material for study is therefore 100 cases with immediate results and 90 with a follow-up.

Definition.—Hysteria is here used to describe a form of psychoneurosis in which an emotional problem has been wholly or partly avoided by the development of a physical symptom which in itself may be symbolic of the presumably unconscious motivation, thus differing from other

Table Showing Analysis of Cases and Results of Follow-up

Symptom	No. of Cases	Condition on Discharge		Follow-up Results, 1946 (4 to 6 Years after Discharge)				
		Rec'd	Not Impvd.	Well	Impvd.	Unchanged (at Work)	Worse	Not T'cd.
Amnesia ..	23	23	0	17	1	0	2	3
Aphonia ..	29	29	0	19	8	1	0	1
Blindness ..	3	3	0	3	0	0	0	0
Fits ..	6	2	4	2	0	1	1	2
Paralysis ..	23	18	5	18	0	2	2	1
Tremor ..	10	10	0	4	0	4	0	2
Vomiting ..	6	5	1	3	0	0	2	1
Total ..	100	90	10	66	9	8	7	10

psychoneuroses in which the symptoms are coloured by a fixed or diffuse anxiety or tension, and from malingering, in which the motivation is conscious.

Analysis of Cases.—The accompanying Table gives a simple analysis of the cases according to the symptoms.