depressing effect of colostomy has been an important contributory factor, but the chief reason, I think, is the absence of rectal function, which in those without colostomy serves as a valuable guide in the determination of the amount of treatment. Taking a broad view I am convinced that most of these patients would have been happier without colostomy and would probably have lived as long.

Summary of Conclusions

The value of colostomy in non-obstructive cases of inoperable carcinoma of the rectum is doubtful.

Except in advanced cases, x-ray treatment provides a method of restoring rectal function to a degree compatible with an active life for a considerable period without resort to colostomy. It has the further advantages of causing the minimum of discomfort and avoiding any operative procedure.

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THE VALUE OF VITAMIN B₁ IN DIPHTHERIA

BY

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In estimating the value of vitamin B₁ in diphtheria it can be argued that the general population does not receive an adequate amount of that vitamin and that the neglected case of diphtheria comes from a poor or careless home. It is possible that an acute illness may reveal a latent deficiency, and this may be accentuated by the nutriment given in diphtheria, especially glucose. The argument is strengthened by the obvious resemblance between the clinical condition produced by the toxin of diphtheria and that by vitamin B₁ deficiency, as both show anorexia, circulatory failure, and polyneuritis.

We have summarized in Table I most of the published cases of diphtheria in which vitamin B₁ has been used.

The Present Series of Cases

As the published results of the various authors are contradictory it was decided to reinvestigate the problem and check our results by controls. The cases chosen suffered from severe or very severe faucial diphtheria. They were given the usual treatment, such as anti-diphtheritic serum, absolute rest, etc.; but the test cases had vitamin B₁ in addition. The dosage was 4.5 mg. subcutem daily, the total varying from 36 mg. up to 162 mg. Both test cases and controls were given the routine hospital diets. It was considered desirable not to modify the vitamin content of these diets, which consisted of:

The Onset Diet.—Milk 3vj with glucose 5j at each meal. Water and occasional orange juice between.

The Continuation Diet.—Milk with weak tea, jelly, rice pudding made with milk, crustless bread and butter, small quantity of fresh fruit.

The Recovery Diet.—Breakfast: Egg sandwiches, tea. Lunch: Cocoa made with milk, plain biscuits. Dinner:

TABLE I.—*Published Cases of Diphtheria in which Vitamin B₁ has been Used*

Observer	No. of Cases	Type of Case	Result
Neumann (1935)	2	Post-diphtheritic paralysis	Rapid improvement—more marked than ever before observed
Peters and Cunningham (1937)	10	Severe cases of diphtheria	No effect on incidence of paralysis—2 developed paralysis of ciliary and palatal muscles; 2 others showed additional paralysis of pharynx and diaphragm, both dying. Clinical experience confirmed by experiments on guinea-pigs
Knapp (1937)	2	(a) Drunkard with severe diphtheritic paralysis of diaphragm (b) Paralysis of soft palate and diphtheritic pseudo-tubes in child 3 years old	(a) "A rapid improvement at the very last moment" (b) It was possible to relieve all symptoms within three days
Bennholdt-Thomsen (1936)	1	Severe pharyngeal diphtheria in child 4 years old, in addition to extensive paralysis of diaphragm and bronchopneumonia	Improvement after first dose; improvement continued afterwards, so that the diaphragmatic paralysis disappeared within a few days
Tecilazic (1938)	5	Paralysis of diaphragm	2 recovered; the other 3 died
	31	Examples of paralysis of palate	No effect
	24	Malignant diphtheria	Incidence and severity of paralysis much less than usual
	33	Extensive faucial involvement	
Strnad (1938)	5	Toxic diphtheria with severe myocarditis and polyneuritis	Improvement was rapid and dramatic in all cases
Reich (1938)	1	Severe post-diphtheritic pseudo-tubes with cranial nerve paralysis	Immediate improvement in mental and physical activity, which wore off in a few hours. Paralysis progressed, but diminished after 7th injection
Schiaparelli (1938)	?	Animal experiments	Vitamin B ₁ was found to have no prophylactic or therapeutic effect on post-diphtheritic paralysis. At the most it could be observed that paralysis set in later in guinea-pigs treated either previously or simultaneously with vitamin B ₁ than in control animals
Hansen (1939)	?	?	Hansen expresses opinion that vitamin B ₁ has no favourable effect in diphtheria
Feige (1939)	30 cases and 30 controls	Mixed	Average duration of paralysis in children so treated was 29.6 days, whereas in the controls it was 49 days. Two patients on vitamin B ₁ and 5 not on it died
Reinhard and Schwartz (1939)	17	Routine diphtheria	No appreciable improvement in the paralysis followed treatment with aneurin. Their results were supplemented by estimating aneurin content of urine, which fell in those developing post-diphtheritic paralysis
Kiss (1940)	3	Post-diphtheritic paralysis	Clinical recovery began in a few days and proceeded rapidly
Frey (1940)	18	Severe faucial diphtheria with more or less widespread paralysis	Seven died. Frey believed in the specific action of vitamin B ₁ on nerve supply to the diaphragm. Some of those fatal cases showed evidence of improvement in diaphragmatic movements before death

Potatoes, gravy, mincemeat, sometimes a second vegetable; rice pudding with milk. Tea: Bread, butter, jam, fresh fruit, weak tea. Supper: Hot-pot and rice, cornflakes or porridge, milk.

The home conditions of the patients were investigated, as it was hoped they would act as an index of the previous intake of vitamin B₁. The cases are summarized in Tables II and III.

TABLE II.—*Test Cases*

Case No.	Sex and Age in Years	Home Conditions	Patient's Condition	Vitamin B ₁	Course of Disease	Result
1	F. 6	Very poor	Very severe	40 mg. from 7th day	Very satisfactory	Recovered
2	M. 11	"	Severe	110 mg. from 9th day	Palatal and pharyngeal paralysis. Right Bell's palsy and paralysis of legs	"
3	M. 8	Fair	Very severe	80 mg. from 23rd day	Very satisfactory	"
4	M. 6	Very poor	Severe	60 mg. from 30th day	Fairly satisfactory	"
5	F. 6	Poor	"	36 mg. from 15th day	Very satisfactory	"
6	M. 6	Fairly good	"	56 mg. from 5th day	Palatal paralysis on 10th day. Pharyngeal paralysis in 5th week	"
7	M. 4	Good	"	65 mg. from 26th day	Palatal paralysis 15th day. Gallop rhythm of heart. Pharyngeal paralysis. Diaphragmatic paralysis	Died in iron lung
8	M. 2	Poor	"	34 mg. from 12th day	Very satisfactory	Recovered
9	M. 9	Fairly good	"	55 mg. from 48th day	Palatal paralysis on 43rd day. Late heart failure 48th day	"
10	M. 9	"	Very severe	52.5 mg. from 16th day	Palatal paralysis 32nd day	"
11	F. 19	Fair	"	60 mg. from 8th day	Satisfactory	"
12	M. 10	Good	"	60 mg. from 26th day	Palatal paralysis 5th day. Early heart failure 16th day	"
13	M. 10	Poor	"	121 mg. from 3rd day	Very satisfactory	"
14	M. 10	Good	Severe	152 mg. from 8th day	Heart developed a mitral systolic murmur 14th day. No heart failure	"
15	M. 14	"	Very severe	126 mg. from 2nd day	Palatal paralysis 22nd day	"
16	F. 8	Fair	Severe	135 mg. from 9th day	Satisfactory	"
17	F. 8	Good	"	100 mg. from 11th day	Very satisfactory	"
18	F. 13	Poor	"	140 mg. from 5th day	"	"
19	M. 10	"	"	162 mg. from 3rd day	"	"
20	M. 4½	Fair	"	45 mg. from 10th day	"	"

TABLE III.—*Control Cases*

Case No.	Sex and Age in Years	Home Conditions	Patient's Condition	Course of Disease	Result
1	M. 3	Fairly good	Very severe	Palatal paralysis on 14th day. General condition fair	Recovered
2	M. 7	Good	"	Palatal and pharyngeal paralysis. Paralysis of neck and legs. Late heart failure	"
3	M. 6½	Poor	"	Very satisfactory	"
4	M. 7	Very poor	Severe	Fairly satisfactory	"
5	F. 8	Poor	"	Very satisfactory	"
6	M. 7	Very poor	"	Palatal paralysis 22nd day	"
7	F. 2	Good	"	Very satisfactory	"
8	M.	Fairly good	"	Secondary streptococcal abscess. Satisfactory	"
9	M. 7	"	"	Pulse irregular	"
10	F. 15	Poor	Very severe	Bradycardia on 25th day	"
11	M. 16½	Fair	"	Satisfactory	"
12	F. 3	Good	"	Palatal paralysis 12th day. Abortive pharyngeal paralysis 47th day	"
13	M. 8	Poor	"	Very satisfactory	"
14	M. 16	Good	Severe	Satisfactory	"
15	M. 10	"	Very severe	Right strabismus 12th day	"
16	F. 8	Fair	Severe	Satisfactory	"
17	F. 13	Good	"	"	"
18	F. 8	Poor	"	"	"
19	M. 6	Fair	"	Very satisfactory	"
20	M. 5	Poor	"	Satisfactory	"

Conclusions

The impression gained from the series was that vitamin B₁ had neither a prophylactic nor a therapeutic effect on diphtheritic paralysis or the cardiovascular complications of diphtheria. The most that could be claimed was that it seemed to give the patients a sense of well-being, plus

an improvement in appetite. The sense of well-being was of doubtful value in those who were acutely ill as it tended to encourage restlessness. Vitamin B₁ helped in the convalescent stage.

Summary

Most of the published cases of diphtheria in which vitamin B₁ has been used are given in tabular form.

The action of vitamin B₁ was investigated in 20 diphtheritic cases of our own and the results checked by 20 control cases. The results are presented in tabular form.

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TREATMENT OF GINGIVITIS WITH ASCORBIC ACID

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At the Dundee Dental Hospital, during ten weeks recently, 18 out of a total of 505 new patients have been found to be suffering from gingivitis: 14 of these have been treated by us with massive doses of ascorbic acid with favourable results; 4 failed to co-operate.

The clinical features in a typical case are as follows. The patient complains of painful and bleeding gums. The bleeding is usually spontaneous, but is worse when the teeth are brushed. In 10 cases there was marked lassitude. On examination the gums are found to be red and congested. The area involved varies, but in most cases it extends from the gum margin upwards or downwards for a distance of 8 to 10 mm. On pressure the gums bleed readily, the blood flowing freely from the gum margin. In 2 cases severe sloughing of the gum was observed. In spite of the varied types of gingivitis described in the textbooks we have taken as our main criterion of this condition the prompt bleeding of the gum on pressure. This sign is of great value, as it provides a ready means of following the reparative process. In no case could the gingivitis be attributed to trauma, calculus, or the administration of drugs. There were no other gross signs of a pre-scorbutic state.

Treatment

No dental treatment, such as scaling or the use of mouth-washes, was undertaken in any of our cases. On admission the patient is given 300 mg. of ascorbic acid, and a sample of urine is collected approximately six hours,