Dental defects in Trinidadians are due to improper feeding of the pregnant and lactating mother; unbalanced diet, with a deficiency of minerals, in the weaned and artificially fed child; and vitamin lack in the adult. The incidence of dental defect, as Table III shows, is very high.

TABLE III

Race	Caries Alone	Irregularity Alone	Caries with Irregularity	Pyorrhoea Alv. (very advanced)	Edentulous (One Jaw)	No. Affected
E.I. ..	48	9	14	—	2	73 (43.46%)
Negro ..	258	13	18	2	9	300 (36.5%)
Mixed ..	6	—	2	—	—	8 (50%)
Creole ..	2	—	—	—	—	2 (28.57%)
Chinese ..	—	—	—	—	—	—

Summary

Avitaminosis occurring in 1,011 consecutive apparently healthy men applying for work is described.

The racial incidence of the various manifestations is compared.

Lesions probably, though not certainly, due to vitamin lack are described and their incidence in the series tabulated.

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PSYCHOSIS ASSOCIATED WITH VITAMIN B DEFICIENCY

BY

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The case reported below is worthy of publication because it seems to be the first of the kind described in this country, and there may very well be a number of others lying unrecognized in general hospitals.

Case Report

A man aged 52 was admitted to hospital on October 8, 1941, with the following history: 1924, gastro-enterostomy; 1930, operation for adhesions; 1935, partial gastrectomy by Mr. Jennings Marshall at Charing Cross Hospital, for chronic simple ulcer. From that time there had been no further symptoms of indigestion, but in January, 1941, he began to notice a progressive loss of weight, which amounted to a stone. Six weeks later the next-door shop caught fire and "the shock of this put him to bed for six weeks, hovering between life and death." He had diarrhoea and vomiting the whole time and had lost another 13½ lb. in weight. When he got up the left leg from the knee down and the right foot were "dead." He attended an out-patient department for three months, and these symptoms improved somewhat, though he still continued to have a feeling of numbness in the legs.

A complete examination of the C.N.S. showed no abnormal signs other than bilateral doubtfully extensor plantar responses and a severe stammer. The patient said that he had always stammered slightly but that it had been worse of late. No sensory changes and no signs of peripheral neuritis or subacute combined degeneration of the cord were found. A barium follow-through showed no abnormality of the gastro-intestinal tract. Examination of blood films revealed only a very slight degree of secondary anaemia (red cells 4,530,000, Hb 81%). Six days after admission he fell down in the ward and could not get up because of the numbness in his legs; he had to be lifted into bed. On October 20 he suddenly got out of bed

and went into the courtyard, saying he must find a Bible. He said he was the wickedest man in Wales and must be punished for sleeping with his mother by being boiled in oil. He seemed to be slightly disorientated. The following day he was found sitting up in bed, staring fixedly at the middle of the counterpane, repeating monotonously and endlessly, "Oddle, oddle, oddle, oddle, oddle." He would interrupt this monologue to answer questions briefly, but would return to it immediately. He said that he made this noise because he was under compulsion from a spirit beneath the counterpane. Any other noise would do as well, and on request he substituted "Wacka, wacka" for the "Oddle, oddle." He was prepared to talk about his deadly sins and impending punishment, but showed no great interest in the subject. He was clearly orientated and gave no sign of failure of memory or intellectual impairment, carrying out mental arithmetic tests with accuracy and surprising speed. A full neurological examination disclosed signs previously not seen. The stammer, which was pronounced, seemed to have a dysarthric quality; there was definite perseveration in answering questions and executing commands. When put into awkward positions he maintained them in a katatonic way; he also showed echopraxia, clapping his hands repeatedly in imitation of the action once performed by the examiner. He was seen in consultation, and one consultant thought the deep reflexes were increased and the pupils sluggish and the diagnosis possibly one of G.P.I. Dr. William Sargent suggested a confusional state (without confusion) due to vitamin deficiency. Another consultant supported the possibility of a focal lesion in the left frontal or pre-frontal region. The patient continued in this state all day, and until a late hour that night was sitting up in bed in the darkness, saying, "Ay, ay, ay, ay, ay. . . ." This activity was not resumed after a night's sleep, obtained with a powerful sedative, though the patient said that the spirit under the counterpane was still there. Two days later his condition began to deteriorate. The abdomen became very distended with flatus, and the colon was packed with faeces. A lumbar puncture on October 28 showed a normal fluid. From obstinate constipation he passed into a state of severe diarrhoea and became dangerously ill, being put on the danger list. It was noticed that the buccal mucosa was reddened. By November 2 this state was even more marked, and the tongue was bright red, raw, and clean. He was given 100 mg. of nicotinic acid and 50 mg. of ascorbic acid thrice daily. With this treatment improvement was immediate, and by November 8 diarrhoea had ceased, he was taking food well, and was sleeping naturally. His mind was clear, though he could not remember all the mental symptoms of the past. He could recollect, for instance, saying "Oddle, oddle," but not why he had done so, nor anything about the spirit under the bedclothes or being the wickedest man in Wales. On November 29 he was returned home fully recovered. The plantar reflexes still had their same rather abnormal quality and the stammer persisted, although now obviously only a stammer.

Comment

Psychoses of a paranoid and dementing type associated with pellagra have been known for many years. More recently, American authors have drawn attention to the occurrence of neurotic and neurasthenic pictures in sub-clinical states of vitamin deficiency (Ruffin, 1941; Jolliffe, 1941) and to the occurrence of atypical psychotic states, also when characteristic pellagrous symptoms such as stomatitis, peripheral neuritis, and skin changes were notable for their absence (Spies *et al.*, 1938; Cleckley *et al.*, 1939; Sydenstricker and Cleckley, 1941). Frequently loss of weight and ill-defined neurasthenic and gastro-intestinal disturbances are prodromal symptoms. When acute psychoses occur, they are nearly always of the stuporous and delirious type and resemble closely the toxic-confusional psychoses of acute physical illness; they often occur in association with definite physical conditions, such as alcoholism or arteriosclerosis. Frontal symptoms such as spontaneous grasping and sucking movements have also, rarely, been noted and ascribed to a "nicotinic acid deficiency encephalopathy." The case described above

presents many unusual features. The patient showed symptoms suggestive of a melancholic, a schizophrenic, and an organic state, but his condition was typical of none of these. After the prodromal period the onset was hyperacute, taking place in the course of a day; apparent mental clarity was maintained throughout, and focal frontal signs of an unusual nature were seen.

It seems very probable that with the reduced dietary of wartime the occurrence of such cases will be noted more often, and there may be many lying unrecognized in the wards of general hospitals. The appearance of stuporous and delirious states for which no gross cause can be found, especially after a period of inadequate feeding, asthenia, and gastro-intestinal disturbance, should lead to a suspicion of vitamin deficiency; and the presence of focal frontal signs should not be taken as a contraindication to such a diagnosis. If there is vitamin B deficiency, dramatic improvement will be shown within a fortnight, and this establishes the diagnosis. But American authorities are of the opinion that if the condition is allowed to persist for any considerable time a permanent dementia may ensue.

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Medical Memoranda

Staphylococcus aureus haemolyticus Septicaemia Successfully Treated with Thiazamide

The rarity of recovery from sudden and acute *Staph. aureus* septicaemia (verified by blood culture) seems to warrant the report of a case treated by the oral administration of thiazamide (M & B 760). Such cases are usually fatal, except perhaps some of those of osteomyelitis in children which are in the nature of a temporary bacteraemia, although a few of these develop into a virulent and, usually, fatal septicaemia.

CLINICAL HISTORY OF CASE

The patient, a man aged 65, had on January 4, 1941, a very mild sore throat and moderate temperature which subsided in a day or so, although he looked ill out of all proportion to the supposed condition. He then ran a night tem-

M. tetragenus. The blood was agglutinated against *B. typhosus* H and O, paratyphoid A, B, and C, the Salmonella group, and *Brucella abortus*, with completely negative results. A study of the leucocyte and differential counts is given in the table. It will be noted that the initial count shows a poor total response to leucocytosis but a high proportion of immature neutrophil cells. These are increased tenfold and evidently indicate a severe drain on the leucocyte reserve. Their reversion to nearly normal is seen on March 11. On January 22, when under the full influence of thiazamide, the satisfactory leucocytic response is clearly evident.

On January 15 the urine was acid, pH 5.5, with a moderate cloud of albumin, specific gravity 1024, and a deposit showing occasional leucocytes, epithelial cells, and mucus. The chlorides were reduced to 0.3% (normal 0.8 to 0.85%). This gave rise to a suspicion of pneumonia, possibly deep-seated, but clinical examination entirely failed to confirm this. The albumin was presumably due to renal congestion.

PROGRESS UNDER TREATMENT

Treatment was started on January 17. Eight 0.5-gramme tablets of thiazamide were given four-hourly for six doses, then six tablets four-hourly till the morning of the 24th; each dose was accompanied by 50 mg. of nicotinic acid to prevent unpleasant effects. This was in the main highly successful. There was no vomiting and the patient complained only of the amount of fluid he had to drink—namely, three pints in twenty-four hours. Altogether 82 grammes of thiazamide was given, all by the oral route. The temperature, which had been fluctuating between 100° and 102° F., fell to normal on January 24. There were no rigors during this period, but the pulse rate was 100 to 120. A blood culture taken on January 22 remained sterile after six days' observation and subculture.

Clinical recovery was complete, and the only sequelae were a patch of numbness in the front of the right thigh and right foot-drop (peripheral neuritis), which was gradually subsiding when the patient was seen on May 7, and has since completely subsided. A temporary neutropenia also was disappearing. This, too, was most likely a drug effect.

COMMENTS

In this case there seems a fair probability that the throat was the primary source of infection, despite the fact that cultures on January 14 showed no staphylococci, probably owing to too recent local treatment. But the organisms had already entered the blood stream, since they were recovered therefrom. In the blood-culture technique used the length of time taken for development is a useful indication of the degree of infection. The worst cases develop in about twelve hours and the mildest in five to six days. In our case a growth was obvious in glucose broth after forty-eight hours, indicating a fairly heavy infection (10 c.cm. of blood to 50 c.cm. of broth).

It is hoped that this short record will encourage others to use thiazamide in such cases. It is significant that the treatment

Table showing the Leucocyte and Differential Counts

Type of Cell	14/1/41		22/1/41		31/1/41		11/3/41		7/5/41		Normals	
	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total
Mature neutrophils..	48	4,512	58	9,744	59	4,602	41	1,968	57	3,192	61.5	4,612.5
Immature " ..	38	3,572	27	4,536	20	1,560	10	480	10	560	4.0	300.0
Basophils ..	0		0		1	78	0		0	0	0.5	37.5
Eosinophils ..	1	94	0		2	156	3	144	2	112	2.0	150.0
Lymphocytes ..	12	1,128	14	2,352	16	1,248	44	2,112	27	1,512	28.0	2,100.0
Monocytes ..	1	94	1	168	2	156	2	96	4	224	4.0	300.0
	100	9,400	100	16,800	100	7,800	100	4,800	100	5,600	100	7,500*

* Varying 10% either way.

perature of 99° to 100° F. and had rigors at night on several occasions. During this period (January 14) a blood culture taken with glucose broth showed, after forty-eight hours' incubation, a profuse growth of *Staph. aureus haemolyticus*. This was verified by subculture on to blood agar. At this time a throat swab showed a growth only of pneumococci, haemolytic and non-haemolytic types of the *M. catarrhalis* group, and

was wholly oral. *Staph. aureus haemolyticus* septicaemia need not now so often connote a death sentence, and that sinking feeling which it engenders in both clinician and bacteriologist is now relieved by a new hope. Many lives will surely be saved which formerly would have been lost.

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