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ANOREXIA NERVOSA: A SOMATIC DISORDER

BY

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The results of treatment in anorexia nervosa are poor and have not benefited from its inclusion with the psychosomatic disorders (Cobb, 1950). Indeed, the approach to treatment has recently become confused owing to the mystery which now surrounds its aetiology, at one time explained in terms which, if superficial, at least were easily understood.

In his original description of the disease Sir William Gull (1874) attributed the want of appetite to a "morbid mental state," claiming that its origin is "central and not peripheral," and that the state might be called "hysterical without committing ourselves to the etymological value of the word, or maintaining that the subjects of it have the common symptoms of hysteria." He described his patients as "wilful, often allowed to drift their own way into a state of extreme exhaustion," in this way clearly implying that the illness is largely self-induced. Samuel Gee (1907) described it as a melancholy—"no more than a high degree of the melancholy which affects so many girls about the age of puberty and for some years afterwards," arising, he said, "from a morbid excess of that craving for sympathy which is so common to all mankind, as is especially strong in the female sex." Ryle (1936), in his Schorstein Memorial Lecture, summarized the sequence of events in this way: "A psychic trauma or a foolish habit or some combination of the two results in a loss of appetite and a suppression of the menses. Starvation follows and with starvation an aggravation of the anorexia."

Ryle (1936) protested that "physicians subject to the lures of endocrinology have been tempted sometimes to find a basis for the symptoms of the disease in a primary deficiency or disharmony of the internal secretions." Psychiatrists, on the other hand, have claimed the illness in all its aspects as their own. History-taking has given way to psycho-analysis; physical findings are now ignored; and treatment has been ousted by therapy, either psychotherapy or electric convulsion, or both. Importance is attached to training in bowel habits at an unusually early age, to the relationship of "orality" to "sexuality" as in monkeys deprived of the uncus region of the brain (Sifneos, 1952), and even to the birth of Heitzi-eibib, a divine ancestor of the Hottentots, because

a girl had swallowed the sap of grass (Waller *et al.*, 1940).

These observations may be significant. Even so, anorexia nervosa is primarily a wasting disease, and when death occurs, as it does in a proportion of cases, it is directly due to malnutrition. Renourishment should therefore be the first object of treatment, and the problem is to decide how it can best be achieved.

The Patients: Their Management and Progress

Forty-nine females with anorexia nervosa were admitted to the wards of the London Hospital between 1897 and 1953, and four others are included who were admitted later (see Table).

Eleven were admitted on more than one occasion and three had previously been in hospital elsewhere. Marked weight loss and amenorrhoea were present in all, and, although many underwent extensive investigations, none showed evidence of primary organic disease. Both of the men in whom the diagnosis was made are excluded from the investigation.

Treatment.—Few patients were confined to bed, and for the majority no special diets were prescribed. The records do not reveal how much individual attention was given to each patient at meal-times, nor to what extent persuasion and discipline were applied. Dr. Stephen Mackenzie in 1897, however, let it be known of his patient, who in three years had reduced in weight from 10 st. to 5 st. 8 lb. (63.5 to 35.4 kg.)—"if she objects to food it is to be forced by means of a stomach pump." This she managed to avoid, unlike seven others, admitted later, who were intubated.

Immediate Results.—One patient who was comatose on admission died the following day. The rest were in hospital for periods ranging from 7 to 130 days, only five remaining for less than two weeks. The average length of stay was 42 days.

Treatment Without Intubation

Of those patients not intubated seven alone gained more than 14 lb. (6.4 kg.) in weight while in hospital, and in only five of these did it return to near normal. Seven patients continued to lose weight, one of them (Case 12) developing pulmonary tuberculosis during admission. It might be argued that many of those who gained a few pounds during a brief stay in hospital would have continued to improve had they remained longer. Other patients who were in for a month or more, however, showed a similar optimistic weight gain in the early weeks, only to relapse later. In assessing the value of treatment without intubation there were 57 such admissions, excluding that of the patient who died, and it must be concluded that at least 46 of them were fruitless.

Treatment with Intubation

On the other hand, good immediate results were obtained in the seven patients who submitted to intubation. All gained weight, the average being 22 lb. (10 kg.) per patient; and the overall gain, in proportion to the time spent in hospital, would undoubtedly have been greater had they all been intubated early, instead of, as with some, after other methods had failed. Thus one patient (Case 14), in the first instance, was intubated for only 22 days, and, in her last admission, for only 31 days. Another (Case 20) was intubated on the 70th day of admission, and her stay could have been shortened accordingly. One patient (Case 53), on the other hand, began treatment on the third day and responded forthwith. She gained 41 lb. (18.6 kg.) in 28 days; her rapid progress is depicted in Fig. 1. All seven patients became stronger and happier as they gained weight, and the improvement in their mental outlook was as impressive as that in their bodily state. But this improvement was short-lived in one (Case 14) after her first admission, although in the end she recovered, and in another (Case 30) who eventually died (Fig. 2).

One patient (Case 52), it must be admitted, had already gained 17 lb. (7.7 kg.) in weight before being intubated, and was fed in this way for only seven days. The threat of re-intubation was undoubtedly of strong deterrent value in her case, however, thus contributing to her continued gain in weight.

Long-term Results

The four patients (Cases 50-53) admitted after 1953 have not as yet relapsed. All were treated with intubation. The two patients admitted in 1954 and 1955 are both well, and one of them (Case 51) has had a child. Another (Case 52) was admitted in March, 1957, and, while she has maintained her weight, is often away from school, due mainly to lack of parental discipline. The last patient in the series (Case 53) was discharged in November, 1957.

An attempt was made to trace the 49 patients admitted before and during 1953. This failed in seven of them, although one of these (Case 5) is known to have entered a psychiatric hospital in 1950, weighing 5 st. 12 lb. (37.2 kg.), four years after her admission to the London Hospital, and another (Case 13) was unimproved in 1945, nine years after her admission.

Deaths

Ten patients have died, including the one (Case 11) who died in hospital. Another (Case 16), who is recorded as untraced, may also have died, but information in her case

is inadequate. Two (Cases 12 and 41) died of pulmonary tuberculosis two months and nine months respectively after leaving hospital, and in neither was the initial diagnosis ever in doubt. Necropsy in Case 11 showed the body to be very much wasted. There were no other definite findings, although microscopical examination was not made.

The seven remaining patients died of inanition a few months to 17 years after admission, and anorexia nervosa persisted in all until death. One (Case 9), admitted in 1925,

FIG. 1.—Case 53. Showing response to treatment with intubation. Above: August 26, 1957, weight 6 st. (38.1 kg.). Below: October 8, 1957, weight 8 st. 11 lb. (55.8 kg.).

FIG. 2.—Case 30. Showing response to treatment with intubation. Above, January 19, 1953, weight 6 st. 1 lb. (38.6 kg.). Below, May 14, 1953, weight 7 st. 12 lb. (49.9 kg.). Patient was intubated on April 8, 1953, when her weight was 6 st. 11 lb. (43.1 kg.).

is said by her mother to have died at home two years later, and another (Case 31), first admitted in 1939, died, according to her mother, in 1949, without improving meanwhile.

Of another patient (Case 17), admitted in 1937, her family doctor writes: "I do not think she was actually psychotic. She was a walking skeleton for many years, and slipped into coma frequently. On March 2, 1953, she did this once too often and died. She was signed up as (i) hypoglycaemia, (ii) anorexia nervosa. Her weight at death could not have exceeded 5 st." (31.8 kg.).

Another patient (Case 23), admitted in 1933, "survived for only about a year after leaving hospital, dying of inanition without intercurrent infection." Yet another patient

Progress of 53 Patients with Anorexia Nervosa in Hospital and Subsequently

Case No.	State	Age	Occupation	Highest Previous Weight		Duration of Weight Loss	Weight on Admission		Days in Hospital	Weight Gain in Hospital		Method of Review	No. of Years After Admission	Condition
				st. lb.	kg.		st. lb.	kg.		lb.	kg.			
1	S.	20	Secretary	8 8	54.4	3 yrs.	5 5	34.0	18	2	0.9	A	8	S. No improvement. Refused to be seen. Still not eating
2	S.	21	Teacher			2½ "	5 11	36.7	28	Loss 5	2.3	Q	14	S. Well. 9 st. 4 lb. (59 kg.). Attributes recovery to hard work. T.D.W. 11 years
3	S.	22	Shop asst.	7 0	44.5	3 "	4 9	29.5	34	7	3.2	Q	11	S. Well. 7 st. 8 lb. (48.1 kg.). Improved after leaving hospital. T.D.W. 3 years
4	S.	16	Clerk	8 5	53.1	1 yr.	4 9	29.5	29	3	1.4	I	13	S. 6 st. 4 lb. (39.9 kg.). Improved, but still nervous. Regular work as technician
5	S.	23	Telephonist	9 0	57.2	9 mths.	6 4	39.9	130	10	4.5			Untraced. 4 years later (1950) admitted to a psychiatric hospital weighing 5 st. 12 lb. (37.2 kg.). Discharged 7 st. 10 lb. (49 kg.)
6	S.	20	Clerk	7 7	47.6	4 yrs.	4 0	25.4	47	11	5.0	I	20	S. Well. 7 st. 7 lb. (47.6 kg.). Attributes recovery to her return to church life. T.D.W. 4-6 years
7	S.	22	Typist			9 mths.	4 8	29.0	24	2	0.9	Q	21	M. Well. 6 st. 13 lb. (44 kg.). Daughter aged 16 years. Attributes recovery to "a complete reversal of mind. I must have had a lot of will-power to bring my weight down to 4 st. 8 lb." (29.0 kg.). T.D.W. 3-4 years
	S.	33					4 11	30.4	34	2	0.9			
8	S.	13	Schoolgirl			18 "	4 10	29.9	39	9	4.1	I		
9	S.	15	Nil			6 "	4 6	28.1	55	Loss 7	3.2	Q	16	Died in 1927, 2 years later, at home
10	S.	23	Secretary			18 "	7 3	45.8	10	Loss 2	0.9			
11	S.	30	?			12 yrs.	6 13	44.0	48	6	2.7			
12	S.	18	Typist			10 mths.	Extremely emaciated							Died the day after admission
13	S.	26	Clerk	9 0	57.2	7 yrs.	5 10	36.3	16	17	7.7			Died of pulmonary tuberculosis 2 months after discharge. Became febrile in 4th week of admission. Excluded from weight-gain analysis
14	S.	19	Machinist	8 4	52.6	2 "	6 6	40.8	45 (22)	17*	7.7	I	6	Traced to 9 years after admission (1945). Not improved
	S.	20					5 13	37.6	33	1	0.45	Loss 9*	4.1	M. Well. 9 st. 5 lb. (59.4 kg.). Continued to improve from last admission. Married for a year. Works regularly. Admits "I could get my own way but for that tube." T.D.W. 4 years
	S.	20					5 13	37.6	21					
	S.	21					6 10	42.6	44 (31)					
15	S.	21	Typist	10 0	63.5	3 "	6 1	38.6	21	14	6.4	I	11	S. 6 st. 6 lb. (40.8 kg.). Improved, but nervous. Works regularly
16	S.	22	?			5 mths.	7 8	48.1	12	1	0.45			Untraced. Admitted 1929. Neighbours think she died 20 years ago
17	M.	35	Housewife			6 yrs.	4 2	26.3	38	5	2.3			Died 16 years later, weighing not more than 5 st. (31.8 kg.)
18	S.	17	Typist			4 mths.	5 8	35.4	17	Loss 4	1.8	Q	16	M. Well. 11 st. 4 lb. (71.7 kg.). No children. Was sent first to a mental hospital ? schizophrenia. Subsequently developed pulmonary and renal tuberculosis
19	S.	16	"	9 8	60.8	6 "	6 1	38.6	81	47	21.3	I	17	M. Well. 10 st. 4 lb. (65.3 kg.). 2 children Recovered in hospital
20	S.	17	Clerk	9 0	57.2	4 "	6 2	39.0	128 (42)	19*	8.6	I	5	S. Well. 8 st. 12 lb. (56.2 kg.). Continued to improve after admission
21	S.	19	Librarian]	11 6	72.6	3 yrs.	6 2	39.0	35	5	2.3	I	7	M. Well. 10 st. 9 lb. (67.6 kg.). Frightened by influenzal bronchitis and began to eat. T.D.W. 6 years
22	S.	20					5 11	36.7	28					S. Now well nourished. Thinks people talk about her. Under observation in mental hospital
23	S.	12	Schoolgirl	7 0	44.5	1 yr.	5 0	31.8	38	2	0.9	Q	5	Died a year later of inanition
24	S.	21	Clerk	16 0	101.6	5 yrs.	3 9	23.1	25	6	2.7			Died a few months later of inanition
25	S.	21	Lab. technician	9 6	59.9	2 "	5 10	36.3	19	2	0.9	Q	9	S. Hysteria simulating diffuse lupus
	S.	21		8 12	56.2	3 "	5 7	34.9	85	16	7.3			
26	S.	40	Nil			5 "	4 5	27.7	59	19	8.6			S. Died of inanition 17 years later without improving meanwhile
27	S.	41	Housework			2 "	4 4	27.2	76	12	5.4			Untraced. Admitted 1912
28	S.	18	Nil			7 mths.	5 4	33.6	36	6	2.7	Q	15	M. Well. 8 st. (50.8 kg.). 3 children. T.D.W. 2-3 years
	S.	18					6 5	40.4	7	1	0.45			
29	S.	22	Tin sorter			2 yrs.	6 4	39.9	40	2	0.9	Q	13	S. Well. 7 st. 7 lb. (47.6 kg.).
	S.	24					3 8	22.7	46	12	5.4			
30	S.	25	Farm worker	9 7	60.3	5 "	3 9	23.1	11	27*	12.2			S. Died 4 years later. Weight 4 st. 11 lb. (30.4 kg.)
31	S.	26	Nil	7 5	46.7	5 "	6 0	38.1	122 (28)	2				S. Died 9 years later without improving meanwhile
32	S.	15	Schoolgirl			2 "	4 3	26.8	47	13	5.9	Q	5	M. Well. 9 st. (57.2 kg.). Recently married. E.C.T. without benefit 1 year after admission. Leucotomy suggested but refused. T.D.W. 4 years
	S.	16					4 5	27.7	26	6	2.7			
33	S.	13	"	8 0	50.8	3 mths.	5 10	36.3	24	16	7.3			M. Well. 8 st. (50.8 kg.). 3 children. T.D.W. 2-3 years
34	S.	23	Housework			8 "	6 4	39.9	26	Loss 2	0.9			S. Well. 7 st. 7 lb. (47.6 kg.).
35	S.	19				6 "	6 6	40.8	38	6	2.7	I	15	S. 7 st. 6 lb. (47.2 kg.). Neurotic, but works regularly as shop assistant
36	S.	22	Draper's asst.			5 yrs.	5 12	37.2	46	4	1.8	I	18	M. Well. 9 st. 3 lb. (58.5 kg.). 2 step-children. T.D.W. 2-3 years
	S.	22	Shop asst.				6 3	39.5	25	13	5.9			S. Well. 11 st. 13 lb. (75.8 kg.). Leucotomy elsewhere 3 years after admission when weight 5 st. 13 lb. (37.6 kg.). Immediate weight gain. T.D.W. 8 years
37	S.	29	Clerk			10 "	6 4	39.9	18	5	2.3	I	6	Untraced. Admitted 1936
38	S.	36	"	12 0	76.2	14 "	6 13	44.0	24	10	4.5	I	5	S. 6 st. 3 lb. (39.5 kg.). Undernourished. Symptom-free. Catamenia regular. Works regularly
	S.	36					5 13	37.6	70	22	10.0			
39	S.	20	Shop asst.			1 yr.	5 6	34.5	33	2	0.9	I	6	S. Well. 7 st. 1 lb. (44.9 kg.). Anxious and easily tired. T.D.W. 6 years
40	S.	36	Governess			5 yrs.	4 13	31.3	8			Q	24	Relatives refused to disclose information; therefore presumed not to have recovered
41		22	Housework			4 mths.	5 4	33.6	48	14	6.4			Died 9 months later of pulmonary tuberculosis
42	S.	20		9 6	59.9	3 yrs.	5 7	34.9	51	11	5.0	Q	20	S. Well. 11 st. (69.9 kg.). Recovered after going to Malaya with married sister
43	S.	14	Stock-room asst.			3 mths.	6 0	38.1	23	12	5.4	I	8	S. Well. 8 st. 11 lb. (55.8 kg.). T.D.W. 1 year

*=Patients treated with intubation. T.D.W.=Total duration of weight loss. A=Almoner's visit. I=Interview. Q=Questionary. The numbers in brackets represent number of days intubated.

Progress of 53 Patients with Anorexia Nervosa in Hospital and Subsequently—(continued)

Case No.	State	Age	Occupation	Highest Previous Weight		Duration of Weight Loss	Weight on Admission		Days in Hospital	Weight Gain in Hospital		Method of Review	No. of Years After Admission	Condition
				st. lb.	kg.		st. lb.	kg.		lb.	kg.			
44	S.	24	Clerk	8 3	52.2	1 yr.	6 6	40.8	49	28	12.7	Q	10	M. Well. 8 st. (50.8 kg.). 1 child. T.D.W. 3 years
45	S.	27	Artist's model			1 "	6 7	41.3	81	9	4.1			Untraced. Admitted 1934
46	S.	19	Domestic servant	11 0	69.9	10 mths.	5 9	35.8	19	2	0.9	I	21	M. Well. 8 st. 3 lb. (52.2 kg.). 4 children. T.D.W. 4-5 years
47	S.	21	Clerk	7 10	49.0	15 "	5 3	33.1	28	4	1.8	Q	20	S. Well, but thin. Works regularly
48	S.	24					4 11	30.4	15	4	1.8			Untraced. Admitted 1897
49	S.	19	Housework	10 0	63.5	3 yrs.	5 8	35.4	50	13	5.9			S. Well. T.D.W. 8 years
50	S.	20	Teacher	7 3	45.8	2 "	4 12	30.8	52	4	1.8	I	21	S. Well. 8 st. 10 lb. (55.3 kg.)
51	M.	25	Typist	9 2	58.1	15 mths.	6 10	42.6	68 (53)	18*	8.2	Q	2	M. Well. 7 st. 13 lb. (50.3 kg.). Pregnant. Continued to gain from admission. 1 child aged 2 years
			Housewife				5 11	36.7	39 (35)	25*	11.3		3	
52	S.	15	Schoolgirl	6 8	41.7	8 "	5 5	34.0	47 (7)	23*	10.4	I	Mths. 9	S. Well. 8 st. 8 lb. (54.4 kg.). Defaults school
53	S.	31	Unemployed	11 0	69.9	3 yrs.	5 11	36.7	48 (28)	42*	19.1			Recent admission. 9 st. 12 lb. (62.6 kg.) after 4 weeks' convalescence

* = Patients treated with intubation. T.D.W. = Total duration of weight loss. A = Almoner's visit. I = Interview. Q = Questionary. The numbers in brackets represent number of days intubated.

(Case 24), admitted in 1943, was, according to her doctor, "of sufficient nuisance value for me to remember her. After leaving hospital she went downhill and died at home a few months later. She simply died of inanition, and there was no question of secondary infection."

One patient (Case 26), admitted in 1938, was still alive in 1953. Then her doctor wrote, "She is at present grossly emaciated, with severe chilblains of both hands and feet." She herself replied that she was fairly well, but that she dreaded the winters because of her chilblains. On January 28, 1954, she was admitted to hospital, having been found unconscious on the floor by her sister. She died within eight hours, and at necropsy death was attributed to myocardial degeneration. No other abnormality was found apart from extreme wasting of all tissues.

One patient (Case 30), who was intubated during her admission in 1953, died four years later. Her weight gradually fell to 4 st. 11 lb. (30.4 kg.) three weeks before she died, and she was finally admitted to hospital elsewhere in coma, with a blood-sugar level of 34 mg. per 100 ml. There had been at least two previous episodes of hypoglycaemic coma. Necropsy was not performed.

Follow-up of Surviving Patients

Of the 49 patients admitted up to 1953, 32 remain, and 15 of them have attended for interview and examination. Eleven others, mostly living out of London, have replied to questionnaires, and further information about them has been obtained when possible from their doctors. The relatives of one patient (Case 40) wished not to disclose her subsequent progress; one (Case 1) refused to be seen by an almoner who visited her home. Of the remaining four (Cases 22, 25, 32, and 42) adequate information has been obtained from their relatives and doctors and from other hospitals.

Twenty-three patients have recovered completely, the period of follow-up ranging from 3 to 21 years, with an average of 13 years. All are well nourished, happy, and fully employed; 12 have married and 6 of these have borne children. One patient (Case 36) was cured by leucotomy, performed elsewhere.

Six other patients reviewed 5 to 13 years after admission (average nine years) have improved. Thus five are at regular work, but are still underweight, with neurotic symptoms. These are unlikely to improve further, whereas one (Case 22), still only 17 years of age, has recently regained her normal weight, and may eventually also recover her normal mental outlook.

Three patients, on the other hand, have not improved. One (Case 1) is still poorly nourished and confined indoors, another (Case 25) is a gross hysteric, and another (Case 40), presumed from the attitude taken by her relatives not to have recovered, may have died.

Summary of Progress.—Thus out of a series of 53 patients with anorexia nervosa 10 have died, 3 have not improved, 6 have improved, and 23 have recovered. Seven are unaccounted for. The four admitted since 1953 have not as yet relapsed. These are among the seven treated with intubation; two others admitted earlier who were intubated are in the recovered group, and one who was not kept under surveillance has died.

Comment

The outcome in this as in most other reported series was largely unaffected by hospital treatment. Those patients who recovered did so of their own volition and in the fullness of time, mostly after their environment had deliberately or accidentally been changed. Only a few when questioned in retrospect could give a precise reason for recovery, and in these it was often as whimsical as the circumstance which had first precipitated the illness.

Thus one patient had been grossly underweight for six years until she developed bronchitis. It then occurred to her that if she did not eat she would die, whereupon her appetite returned and she recovered. Another, in the beginning, had tried repeatedly to diet, but had been defeated by hunger. At the age of 18 years she lost her appetite during an attack of influenza; she then succeeded in suppressing it further until her weight fell from 11 st. to 5 st. 9 lb. (69.9 to 35.8 kg.), and it remained at this level despite hospital treatment followed by four months at a convalescent home. Her eventual recovery she attributes to leaving home for domestic service; and now, at the age of 39, she frankly admits that the whole illness "was due to my own silliness in trying to starve myself."

It should not be inferred, however, that anorexia nervosa is best left to its own devices, for the mortality rate alone demands a most vigorous approach to treatment. Of the 53 patients under review, 10 died, and, although this is the highest death rate so far recorded, it has also been substantial in many other published series. The lowest weight recorded in the present series, 3 st. 8 lb. (22.7 kg.), was in a patient who recovered completely. Even so, the most emaciated patients are in greatest immediate danger, especially if their deterioration has been rapid (Emanuel, 1957).

Treatment by Psychiatric Methods

Psychiatrists almost without exception consider psychotherapy the appropriate treatment. Thus Du Bois (1949) claimed, "It is the neurosis and not the appetite that must be the prime focus of attack by the physician. Therefore psychotherapy is the major remedial agent. Little reference should be made to diet, and the family and nursing personnel are instructed to avoid talking about food or the patient's dietary habits. During the early weeks of treat-

ment psychotherapy consists of reassurance and explanation . . . and at the end of approximately three weeks it proceeds gradually to a deeper level." Yet of his 10 patients none was cured. Five remained thin and unhappy, two defaulted, and three were still under treatment. Similarly in Nemiah's (1950) series, although one patient gained 10 lb. (4.5 kg.) while in hospital, and another 20 lb. (9 kg.), there was no response from the remaining 12. Rahman *et al.* (1939) were forced to conclude, after treating 12 patients in this way, that much time and patience was required, and that the under-cover hostility met with made it difficult or impossible to establish a satisfactory therapeutic rapport.

Waller *et al.* (1940) have claimed a specific psychopathology for the illness, based on fantasies of oral impregnation which both their patients had experienced. Yet even psychiatrists are now sceptical of Waller's Freudian hypotheses (Kay, 1953), and are discouraged by the results of treatment based upon them. Kay and Leigh (1954) believe that psychotherapy is not the treatment of choice unless (1) there is no urgency, (2) a good relationship can be quickly established, and (3) the patient is able to formulate a complaint which could be used as a basis for therapy.

Whereas recent views on treatment have largely ignored its "somatic" aspect, it cannot be overemphasized that the danger to life is entirely from malnutrition or its consequences, and that the patient who succumbs does so only from starvation. But in endeavouring to reclaim anorexia nervosa it must first be established why it has strayed from the realm of somatic medicine to the borderlands of psychiatry (Cobb, 1943). The discouraging results of treatment based on general medical principles is one of the more obvious causes of its defection. Yet probably the most important is its tendency sometimes to simulate the psychoses, particularly schizophrenia, thus suggesting to physicians that it is a disease outside their competence to treat.

Neurotic symptoms and depression are common (Kay, 1953) and easy to understand. They may, in fact, be the direct outcome of inanition (Schiele and Brozek, 1948). Peculiarities of behaviour or "the perverse conceits and strange notions" described by Gee (1907), on the other hand, are more disconcerting. "One of these girls," he observed, "when she was alone in the drawing-room, was overheard to tell her parrot that she was not much longer for this world. Lost in her museful moping, she takes delight in nothing and loves to be alone, though solitude does her more harm. . . . Sometimes she will think that exercise is very necessary and will take long walks far beyond her strength, or she will try the eccoprotic powers of leaping and dancing in her bedroom before daybreak until the awakened household protest against the continuance of such preposterous therapeutics." Despite this and similar instances, Kay and Leigh (1954) have reassuringly concluded that schizophrenia and anorexia nervosa are in no way allied. Furthermore, none of the patients in the present series has developed schizophrenia or any other psychosis requiring prolonged institutional care.

Hurst's Method of Treatment

The best results of treatment have been claimed by Ryle (1936), Ross (1936), and Hurst (1939), based on almost identical principles. These principles were most clearly enunciated by Hurst, who said that with explanation, firmness, and good temper the most resistant patient could be persuaded to consume a full meal, her progress thereafter being uninterrupted. Hurst, however, gave no details of the results he obtained, and Ryle, while stating that in the majority of well-handled cases recovery is complete, did not deal specifically with the immediate outcome. Many of his cases were in fact mild. Thus in 11 of his 46 female patients, who did not have amenorrhoea, the criteria for diagnosis were not fulfilled; and having traced 37 patients, 17 of the 21 who had recovered had not required institutional treatment. All 19 of Ross's patients, on the other

hand, increased weight by at least 14 lb. (6.4 kg.) during admission.

But the ineffectiveness of Hurst's method in the hands of others and the difficulties entailed have never been adequately stressed. It was doubtless employed in many of the patients in the present series with results which were almost wholly discouraging.

Treatment with Intubation

All seven patients who were intubated gained weight, an average of 22 lb. (10 kg.) per patient, and their condition on discharge from hospital was good. Forty-four patients, on the other hand, not treated in this way gained an average of only 9 lb. (4.1 kg.) per patient, only seven gaining more than 14 lb. (6.4 kg.). Berkman *et al.* (1947) cautioned against intubation on the premise that the aggressive treatment of patients who are extremely emaciated might prove disastrous, and it has been used only inconsistently and in extreme cases by others (Rahman *et al.*, 1939; McCullagh and Tupper, 1940; Farquharson, 1941).

The method, however, has obvious advantages. Because little active co-operation is sought the initial resistance is never as great as to normal feeding, and at this stage the more enfeebled the patient the easier it is in any case to overcome (Lasègue, 1873). Furthermore, the protracted ordeal of each meal is avoided, and because calorie intake can readily be made to exceed requirements the rate of recovery is always maximal. The patient should still be encouraged to eat at meal-times despite the postprandial discomfort and superadded anorexia of prolonged starvation (Fenwick, 1880; Carlson, 1916). Meanwhile as weight inevitably increases so may depression and other nervous symptoms disappear (Schiele and Brozek, 1948; Keys *et al.*, 1950).

One patient in the present series, who was successfully intubated, died four years later, thus emphasizing the need for close liaison with the family doctor and all others concerned in the patient's care. In this way intubation may have to be employed repeatedly on patients who will eventually recover, but meanwhile the more recalcitrant are saved from dying of inanition.

Treatment with Leucotomy

A few patients resist medical treatment in any form. They constitute Ryle's (1936) psychotic group with inadequate personalities, but who at first are indistinguishable from their fellows. Anorexia in these, if they survive, persists indefinitely, and their treatment presents the greatest problem. In some the response to leucotomy has been excellent (Sargent, 1951; Sifneos, 1952; Mallinson, 1953; Sands, 1953), although Carmody and Vibber (1952) stressed that it should be considered only in refractory cases and in those who are frankly psychotic or of the obsessive compulsive group. Two patients in the present series recovered spontaneously after having been refractory for 8 and 11 years, and the selection of cases needing leucotomy is therefore still difficult.

Summary

The progress of 53 patients with anorexia nervosa has been studied, during and after their stay in a general hospital.

In-patient treatment was ineffective except in those who were intubated. Follow-up shows that 10 patients have died, 8 of them solely of malnutrition, others of the same severity recovering spontaneously after a varying number of years. Twenty-three patients have recovered completely.

The importance of the nutritional aspect of treatment should be stressed, and, whereas leucotomy may rarely be required, specialized psychotherapy is not indicated.

I am grateful to the physicians of the London Hospital for permission to study and publish their cases, and I am particularly

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TWO CASES OF COW'S-MILK ALLERGY

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Acute allergic reactions to cow's milk in infancy are uncommon enough to justify a description of two cases that presented problems in diagnosis and management. In particular, the occurrence of ascites in one case deserves mention as a sign not previously reported.

Case 1

The patient, a female infant, was delivered by caesarean section after a 38-weeks' pregnancy. She was the first child of healthy parents and there was no family history of allergy. The neonatal period was uneventful. She was fully breast-fed until 3 weeks of age, when she was given a bottle feed of dried milk ("ostermilk No. 2"). Immediately after this feed she vomited, and the next day developed diarrhoea with much mucus but no blood in the stools. Rapid deterioration with fever, intense irritability, and further vomiting led to her admission to the Children's Hospital, Birmingham, on July 26, 1956, within 48 hours of the first feed of cow's milk.

On admission she was shocked with peripheral cyanosis, a fever of 103° F. (39.4° C.), pulse rate of 160, and respiration rate of 50. Her cry suggested pain. The abdomen was distended and tympanitic, but no other signs were found.

Investigations.—Cerebrospinal fluid, normal. X-ray examination (Dr. R. Astley) of chest, normal; of abdomen: "The small and large intestines are fairly full of gas, with

a few small fluid levels. In addition there is some diffuse opacity, and the abdominal distension is not entirely due to intestinal gas. Consistent with peritonitis." Paracentesis abdominis: clear straw-coloured fluid obtained without difficulty; microscopy showed some red cells, a few endothelial cells, and lymphocytes; no organisms were seen or cultured. Blood count: haemoglobin, 100% (14.8 g. per 100 ml.); W.B.C., 6,600 per c.mm. (metamyelocytes 1%, myelocytes 3%, polymorphonuclears 35%, eosinophils 1%, lymphocytes 54%, monocytes 6%). Urine, normal. Blood urea, 19 mg. per 100 ml. Stool: many fat globules, no pathogens isolated. Blood culture: *Staphylococcus albus* (contaminant).

Before paracentesis a diagnosis of primary peritonitis had seemed likely, but the nature of the ascitic fluid ruled this out. In the absence of a diagnosis the patient, who presented the picture of an overwhelming infection with intense toxæmia, was treated with oxygen, subcutaneous fluids, penicillin, and streptomycin. Her condition improved quickly and within a few hours of admission she tolerated oral feeds of 5% dextrose in 0.18% saline. The following day the fever had settled and she had gained 11 oz. (340 g.), but was still passing loose green motions with much mucus. The improvement continued and on the second day after admission quarter-strength feeds of dried milk (half-cream national dried milk) were started. Within a few hours she became ill once more; bile-stained vomits and frequent watery stools led to a weight loss of 6 oz. (170 g.). The pyrexia recurred, the abdominal distension increased, and a fine erythema appeared on the trunk and face. At this point the diagnosis of cow's milk allergy was first suggested. Consequently streptomycin and penicillin were discontinued and the feed was changed to expressed breast milk. The resulting improvement was dramatic; the fever settled, vomiting ceased, the motions became normal, abdominal distension subsided, and she started to gain weight.

Tests were undertaken to confirm the diagnosis of cow's milk allergy and, if possible, find a substitute for cow's milk: (1) *Scratch tests* on Infant*: breast milk, negative; half-cream national dried milk, positive; evaporated milk, positive; goat's milk, positive; "soyolk" (soya-bean milk), negative; "nutramigen" (a synthetic food in which amino-acids and simple peptides have been obtained by enzymic hydrolysis of casein), negative; "allergilac" (dried milk from which most of the lactalbumin has been removed and acid added), negative. (2) *Passive transfer test* (Prausnitz-Küstner reaction)*: Serum taken from the infant was injected intradermally into the mother's forearm; 24 hours later a drop of milk to be tested was placed on the skin areas thus treated and a scratch made through each drop. Control tests were carried out in untreated areas on the opposite forearm:

	"Treated" Areas	Control Areas
Breast milk	Negative	Negative
Half-cream national dried	Positive	"
Evaporated milk	"	"
Soyolk	"	"

These tests confirmed the diagnosis of cow's milk allergy, but, as will be seen, were of no help in choosing a substitute.

During the next three weeks she was fed on expressed breast milk and gained over a pound (450 g.) in weight; the stools remained normal and she did not vomit. Four weeks after admission she was given a 6-oz. (170-ml.) feed of breast milk containing approximately 0.5 g. of soyolk powder. Within an hour of the feed she vomited copiously. The following day a similar feed had the same effect. The next day she tolerated a feed containing nutramigen in the

* "Positive" signifies appearance within 10 minutes of a weal and surrounding area of erythema greater than 2 cm. in diameter. "Negative" signifies absence of weal and little or no erythema. (Separation of test results into these two categories presented no difficulty.)