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Follow-up Study of Refractory Obesity Treated by Fasting

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The treatment of obesity by a period of fasting in hospital has achieved popularity since its introduction by Bloom in 1959, and the few reports of its long-term effects have been encouraging (Hunscher, 1966; Harrison and Harden, 1966). We present the follow-up results of fasting in patients having "refractory" obesity in whom this form of treatment has not previously been specifically studied; these are not encouraging.

Materials and Methods

The Table includes the relevant pretreatment data of the 25 patients studied. All were clinically obese, overweight by at least 40% of their standard (U.S.A. Medico–Actuarial Investigation 1912), and satisfied the criteria for refractory obesity as originally defined (Duncan *et al.*, 1960). Thus all had regularly attended the department, but their weight had either increased or remained unchanged during the six months before inpatient fasting despite the use of anorectic agents in nine subjects. All were shown by appropriate investigation to be free from endocrine disease, none was in cardiac failure, but several had complications of obesity, such as hernia, osteoarthritis, varicose veins, or flat feet.

On admission to hospital patients were given a 400–500-calorie diet for one or two days. During the subsequent fast they were allowed to drink as much water, unsweetened black coffee or tea, or acaloric fruit juices or cordial as they wished, but no solid food was permitted. A vitamin preparation (Multivite) was given routinely and mineral supplements, hypnotics, and sedatives if required. Patients were weighed every second day and encouraged to be ambulant. Estimations of the blood electrolytes, bicarbonate, and uric acid and urine tests for ketones were regularly made, but no serious biochemical changes occurred and no patient had to terminate the fast prematurely. For a few days before leaving hospital each patient took a daily diet of 400 calories. At the time of discharge all were given further instruction in an appropriate 400–1,000-calorie daily diet and were weighed in the outpatient department wearing normal clothing; this weight was taken as the weight on discharge.

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Weight Data of Fasted Patients

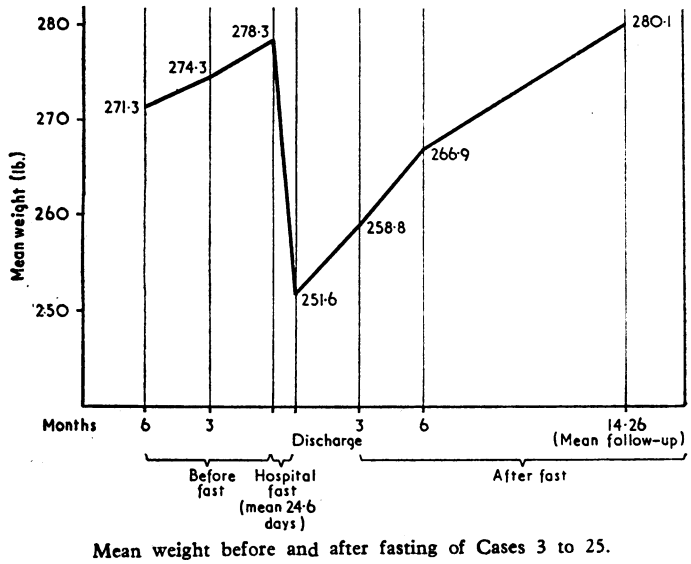
Case No.	Age	Sex	Standard Weight (lb.)	Excess Weight (lb.) Before Fast		Excess Weight At Start of Fast		Time Fasted (Days)	Weight Lost During Fast (lb.)	Excess Weight After Fast				Follow-up Period (months)	Weight Change Since End of Fast (lb.)	Latest Weight as Change From Weight Before Fast
				6 months	3 months	lb.	% standard			Immediately	3 months	6 months	When Last Seen			
1	24	F	139	61	65	61	43	18	23	38	—	—	—	—	—	—
2	48	F	144	59	60	60	42	12	12	48	56	—	—	—	—	—
3	30	M	160	224	227	230	144	40	58	172	168	202	217	7	+45	−13
4	57	F	144	90	93	94	65	31	43	51	55	63	66	8	+15	−28
5	38	M	159	77	77	78	49	34	35	43	55	68	71	8*	+28	−7
6	45	F	146	209	209	209	143	40	33	176	184	186	195	8	+19	−14
7	20	F	129	81	85	81	62	12	9	72	79	81	82	10	+10	+1
8	43	F	141	114	116	119	86	26	22	97	103	109	123	10	+26	+4
9	61	F	136	169	168	176	130	21	24	152	168	164	168	10*	+16	−8
10	55	F	145	108	112	115	79	23	24	91	107	121	123	11*	+32	+8
11	20	F	141	102	104	106	75	17	21	85	87	89	107	12*	+22	+1
12	37	M	154	115	118	120	78	21	32	88	75	79	92	12	+4	−28
13	38	F	132	110	118	124	94	27	28	96	110	126	132	12*	+36	+8
14	62	F	136	64	64	64	47	29	13	51	59	64	67	12*	+16	+3
15	51	F	117	178	181	179	153	16	19	160	175	177	191	13	+31	+12
16	50	F	134	265	267	272	203	32	42	230	238	248	266	14*	+36	−6
17	45	F	159	73	79	83	52	16	22	61	46	46	78	14*	+17	−5
18	40	F	134	132	130	134	100	15	22	112	125	131	136	18*	+24	+2
19	51	F	149	159	159	159	107	26	18	141	144	159	161	18	+20	+2
20	50	F	138	78	78	95	69	36	34	61	72	72	100	19	+39	+5
21	53	F	145	111	119	129	90	27	26	103	113	117	133	21	+30	+4
22	37	F	149	101	110	114	77	34	31	83	89	103	113	22	+30	−1
23	43	F	137	121	121	121	88	10	20	101	105	111	121	22*	+20	±0
24	33	F	130	67	70	73	56	16	16	57	91	99	105	23	+48	+32
25	39	M	170	214	218	240	141	17	20	220	219	240	321	24	+101	+81

* Patients subsequently defaulted.

Patients subsequently reported to the department as outpatients at intervals of four weeks or less; they were weighed on the same scales wearing as nearly as possible the same clothing as previously, were interviewed by one of us, were offered further dietary advice, and given every form of encouragement to adhere to their diet. Twenty-two received an anorectic agent at some time during follow-up.

Results

The results are given in the Table. Two patients (Cases 1 and 2) defaulted from follow-up almost immediately. The mean weight loss of the other 23 patients was 26.7 lb. (12.1 kg.) during a mean fasting period in hospital of 24.6 days. Since leaving hospital all have gained weight, the mean increase being 28.5 lb. (12.9 kg.) when last seen (see Figure). One patient (Case 12) deserves special mention; he made strenuous and partially successful efforts to keep his weight down by intermittent outpatient fasting, but lost his job, became depressed, required psychiatric help, and eventually had to be readmitted for further inpatient starvation.



Mean weight before and after fasting of Cases 3 to 25.

The mean duration of follow-up to the time of the last visit was 14.26 months; only 13 patients continued to attend the clinic, the others having defaulted (see Table).

Discussion

Many obese patients referred to a weight-reduction clinic do not report again (Stunkard and McLaren-Hume, 1959; Seaton and Rose, 1965). A variable proportion of the others do lose weight satisfactorily but the remainder do not and either stay overweight or increase in weight. In some of these latter patients further weight loss may be achieved by the use of anorectic agents, unusual dietary regimens, or formula diets (Munro *et al.*, 1966a, 1966b; Seaton and Duncan, 1963), but the effect of such measures is almost always temporary.

Starvation in hospital is a satisfactory and safe method of rapid weight reduction (Drenick *et al.*, 1964; Thomson *et al.*, 1966), and in the two reported follow-up studies it was thought to be relatively effective as a long-term measure. In the larger of these studies (Hunscher, 1966) only 50% of the 709 fasted patients replied to the postal inquiry, there was no medical follow-up, and the results must therefore be interpreted with caution. Similarly, 21% of the 62 patients in the other series (Harrison and Harden, 1966) defaulted within the first year of follow-up and only 24% of the 33 still attending after two years weighed less than before admission. Neither study was restricted to patients with proved "refractory" obesity, and the reports did not give sufficient data about weight change.

All our patients with refractory obesity lost weight when starved in hospital, but within some months of returning home most regained all the weight so lost. Of the 15 subjects followed up as outpatients for at least a year, only four when last seen weighed less than they did before fasting; the only patient who weighed substantially less achieved this at the expense of his mind and job. Moreover, about half the fasted patients sooner or later defaulted from follow-up (see Table) though they had regularly attended the department, usually for several years, before the period of fasting.

However, it must be appreciated that patients in the present study fasted for, on average, 25 (10–40) days, those of Hunscher for 14 (4–28) days, and those of Harrison and Harden for only 10 days. Though all our patients lost an appreciable amount of weight during the fast they were still considerably overweight when they left hospital, as probably were those in the other two follow-up studies.

Obese patients might derive a greater long-term benefit from such a relatively short period of fasting were it undertaken soon after their first referral to a weight-reduction clinic and before their obesity became refractory. On the other hand, patients with established and refractory obesity who had been fasted for much longer until they had reduced in size to a weight within 10% or so of their standard might be more satisfied and encouraged by the result and have a greater incentive, or find it easier, to keep at that desirable weight. The expensive and prolonged occupation of valuable hospital beds would, however, be justified if the long-term results proved satisfactory.

In our view the extremely disappointing long-term effects of a relatively short period of fasting in patients with substantial and refractory obesity indicates that such treatment should be offered only to those who immediately require to lose weight, if only temporarily, because of some additional medical reason such as increasing dyspnoea, cardiac failure, or important elective surgery.

Summary

Twenty-five patients with refractory obesity were fasted in hospital for an average of 25 days and, as expected, all lost weight. Within some months of going home most have regained the weight so lost and many previously regular attenders have defaulted. These unsatisfactory results indicate the need for further studies to evaluate the long-term use of fasting in obesity.

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