

Voluntary total fasting in political prisoners — clinical and biochemical observations

W. J. KALK, M. FELIX, E. R. SNOEY, Y. VERIAWA

Abstract Thirty-three political prisoners on hunger strike (voluntary total fast — VTF) for 6 - 24 days were admitted to two hospitals in Johannesburg in 1989. They had been detained without trial for 4 - 32 months. Sound doctor-patient relationships were established by emphasis of the principle of full patient participation in clinical decision-making at every level, by rejection of police interference in patient care, and by refusal to discharge subjects back into detention. Depression and abdominal pains were the predominant symptoms. In 6 lean subjects with complete data the expected initial period of rapid weight loss was not observed. Before hospitalisation most subjects became dehydrated from inadequate fluid intake and an apparent absence of thirst. Serum creatinine concentrations were a better indication of dehydration than serum urea levels. Mild hyponatraemia was found in one-third of patients. Refeeding after 6 - 27 days of VTF was initiated with a dilute lactose-free formula diet, and was uncomplicated. Close clinical monitoring of subjects during VTF is essential, and it is recommended that prisoners should be admitted to hospital at 10% of weight loss, if not before. The health care of prisoners can best be provided by professionals independent of the police and prison services.

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Early in 1989 some 800 black South African political detainees, imprisoned throughout the country under the State of Emergency regulations, embarked on a hunger strike (voluntary total fast — VTF).¹ This event was an unprecedented act of protest by individuals who had been arbitrarily and indefinitely detained without being charged. Many had vainly exhausted all available legal processes, and remained imprisoned without having been charged or tried.

The health care of political prisoners who have embarked on VTF is complicated by a multiplicity of medical, ethical, political and individual factors.^{2,3} This challenge is compounded by the paucity of published medical information on the health effects and management of total prolonged fasting in normal weight or thin subjects. Many of the South African hunger strikers were hospitalised. This report summarises some of the experiences in the clinical management of 33 detainees, who were admitted to two hospitals in Johannesburg in 1989.

National Medical and Dental Association Detainees Service and Department of Medicine, University of the Witwatersrand, Johannesburg

W. J. KALK, F.R.C.P.

M. FELIX, M.B. B.Ch., D.O.H.

E. R. SNOEY, M.D. (Present address: Department of Emergency Medicine, Highland General Hospital, Oakland, Calif.)

Y. VERIAWA, F.C.P.

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Subjects and methods

Thirty-three men aged 17 - 37 years were admitted to hospital. They had been held in detention for periods ranging from 4 months to 32 months. Before starting VTF all subjects had been exercising regularly and were apparently physically fit; all were lean. Past medical histories included 4 cases of peptic ulceration, 4 of hypertension, 2 of epilepsy and 3 with a major affective disorder attributed to the detention.

The fasts were usually initiated among groups of detainees sharing common cells; this provided a high level of motivation and mutual support. During the first weeks of the fast their reported intake typically consisted of a teaspoon of sucrose, occasionally with a teaspoon of table salt, dissolved in a jug of tap water. Before hospitalisation the prison medical officers were responsible for their health care. The mean duration of the fast before referral and admission to hospital was 16,5 days (range 6 - 24 days). Adequate referral notes were provided in six instances. The total duration of fasting ranged from 6 to 27 days. In hospital each patient was guarded continuously by two armed policemen.

Ethical considerations and medical care in hospital

Details of the ethical approaches to VTF and some experiences have been published elsewhere.^{4,5} Briefly, hunger strikers are regarded as far as possible as ordinary patients, and detention without trial is considered a form of torture.⁶ The principle of full patient participation and consent in all clinical decisions was adhered to. Complete clinical independence was maintained, and attempts by the authorities to interfere with normal medical and nursing practices were strenuously resisted. The ethical provisions of article 6 of the Declaration of Tokyo,⁷ which deals with VTF, were explained in a 'neutral' manner: no pressure was exerted to end the fast and total confidentiality was ensured. Lastly, once the hunger strike was over the doctors responsible for these patients declined to discharge them back into prison once they had recovered from VTF. All subjects consented to clinical monitoring and to initial blood and urine tests, and those who accepted any form of therapy provided written consent. All patients agreed to the following — daily measurements of weight, temperature, pulse, blood pressure (BP) and urine ketones, and to initial haematological and biochemical measurements (6- or 18-channel Autoanalyser) and to other tests as indicated. Follow-up laboratory tests were done in a minority of patients. Every patient consented to an assessment by the Department of Psychiatry.

Treatment

All but 1 patient accepted short-term intravenous fluid therapy, usually 0,9% NaCl with or without glucose and thiamine, and other vitamin supplements. Some requested medication for dyspepsia and headache. The patients were advised to avoid physical exertion and keep warm. More than half the hunger strikers broke their fast soon after admission to hospital, while others continued for several more days until their release from detention had been assured. Refeeding was started with

500 ml of a lactose-free half-strength synthetic balanced feed (Ensure, Abbott Laboratories). The amount and concentration were increased over succeeding days and easily digestible meals were then added. This procedure was well tolerated by all but 1 subject who developed severe antibiotic-related diarrhoea complicated by hypokalaemia (serum K < 3 mmol/l).

Data are expressed as means \pm SD. Analysis of variance and paired and unpaired *t*-tests (2-tailed) were used in the statistical analyses.

Results

Symptomatology

Frequent physical and psychological symptoms are shown in Table I. Abdominal pains and psychiatric symptoms predominated. Two patients reported no urine output for the 48 hours before hospitalisation.

TABLE I.
Symptoms on admission to hospital in 31 detainees on VTF (clinical notes were inadequate in 2 subjects)

Symptom	No.	%
Abdominal pain (cramps/dyspepsia)	22	71
Vomiting	8	26
Constipation	8	26
Diarrhoea	4	13
Dysuria	6	19
Headaches	23	74
Depression	24	77
Insomnia	13	42
Anxiety	11	35
Nightmares	3	10
Light-headed/faint	9/13	69
Weakness	8/13	61

TABLE II.
Baseline laboratory data in patients on VTF on admission to hospital, day 1, and after 4 - 8 days of fluids with or without refeeding (significance values — paired *t*-test, *N* = 17)

	Days of hospitalisation		<i>P</i> -value
	Day 1 (<i>N</i> = 33)	Days 4 - 8 (<i>N</i> = 17)	
Sodium (mmol/l)	134,9 \pm 3,2	139,3 \pm 1,8	0,00011
Potassium (mmol/l)	3,9 \pm 0,4	4,0 \pm 0,4	NS
Urea (mmol/l)	5,9 \pm 1,8	3,1 \pm 1,4	0,00010
Creatinine (μ mol/l)	129,7 \pm 20,8	93,6 \pm 21,2	0,00013
Haemoglobin (g/dl)	16,5 \pm 1,2	14,6 \pm 0,6	0,0009
Phosphate (mmol/l) (<i>N</i> = 11)	1,04 \pm 0,29	1,07 \pm 0,15	NS
Cholesterol (mmol/l) (<i>N</i> = 9)	4,9 \pm 0,9	3,8 \pm 1,0	0,001

Physical signs

On admission to hospital nearly all subjects were found to be lean and all were considered, on clinical grounds, to be mildly or moderately dehydrated. The average oral temperature was 36,3°C, and ranged from 35°C to 37°C. Heart rate was slow in some patients, ranging from 44 to 76 beats per minute (mean 61/min). One additional patient, hospitalised later, developed transient

complete heart block after 30 days of VTF. Supine BPs were recorded in all patients and all were normal. In 13 subjects, supine BPs were available on admission and at the time of discharge at least 7 days after the resumption of eating. The mean admission BP was 102 \pm 5,4/68 \pm 8,4 mmHg and rose significantly after feeding, to 113 \pm 10,9/76 \pm 7,1 mmHg (*P* < 0,01 for systolic BP and diastolic BP). In only 6 patients was BP measured both supine and erect at the time of hospitalisation: there was a significant (*P* = 0,016) postural drop in systolic BP — supine, 104 \pm 4,6/68 \pm 11 v. 91 \pm 9,2/59 \pm 4,9 mmHg erect.

Weight loss

The prefast body weights of 22 subjects were known. Weight loss on admission ranged from 6% to 22% of original weights and correlated with the duration of VTF (Fig. 1). Serial data from the start of VTF were provided in only 6 cases (Fig. 2). Overall the mean weight loss was 420 \pm 150 g per day, and appeared to be constant for the 2 weeks of observation.

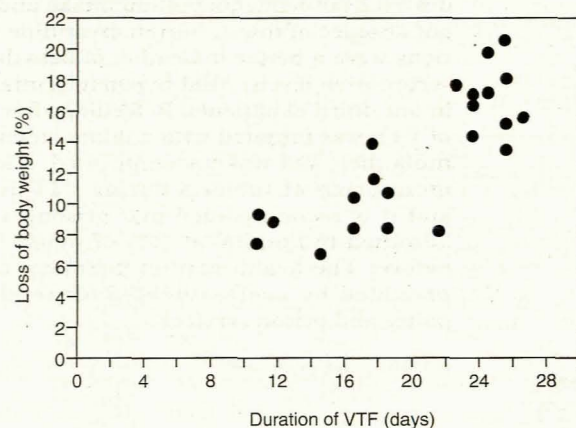


FIG. 1.
Percentage loss of initial body weight at the time of refeeding in 22 subjects.

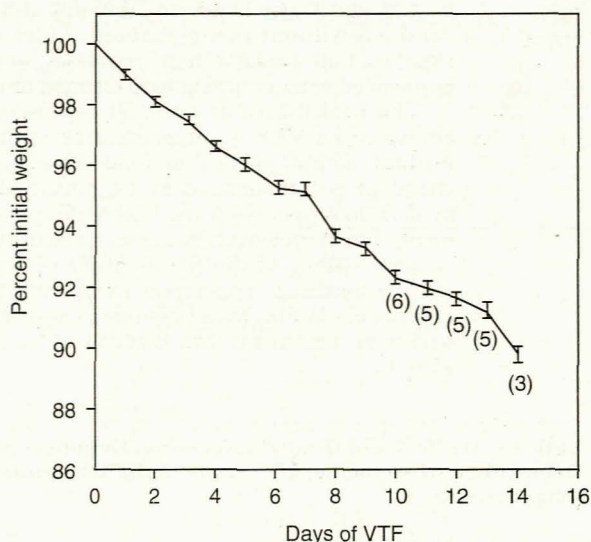


FIG. 2.
Weight loss (as percentage of initial weight) in 6 subjects in whom serial data were provided (numbers in brackets indicate the number of subjects for whom data were available after 10 days of VTF).

Laboratory data

On admission to hospital all patients had ketonuria which persisted until refeeding started. Urine was microscopically normal and cultures were sterile in the 6 dysuric patients. Ten subjects (30%) had mild hyponatraemia (serum Na < 135 mmol/l) (range 128,0 - 141,3 mmol/l). Serum osmolality was calculated according to the formula: $2 ([Na] + [K] + [Urea] + [glucose])$ (mOsm/kg) — the mean value for the group was $282,6 \pm 2,9$ mOsm/kg. Serum urea concentrations were normal (< 7,0 mmol/l) in all but 3 subjects, but serum creatinine levels were raised (> 130 μ mol/l) in 12 out of 30 (40%). Follow-up data were available for 17 subjects. These fell into 2 groups — 7 who broke their fast within 48 hours (group A) and 10 who remained on the fast for 4 - 5 days longer, until they received definite assurances about their release (group B) (Fig. 3). Serial data were available in both groups 4 - 5 days after admission and in 4 group B subjects after a further 4 - 5 days during which refeeding commenced. Fluid therapy in each subgroup was similar, thus allowing analysis of the effects of fluid replacement alone and in combination with refeeding (Fig. 3). If the serum urea levels from group B after full rehydration and before refeeding were considered 'normal' for hydrated subjects who had not eaten for over 2 weeks, and the creatinine levels in group A were considered 'normal' after fluid administration and refeeding, then serum levels of urea > 4 mmol/l and/or creatinine > 90,0 μ mol/l were probably abnormal for subjects on VTF, and indicated dehydration on admission to hospital.

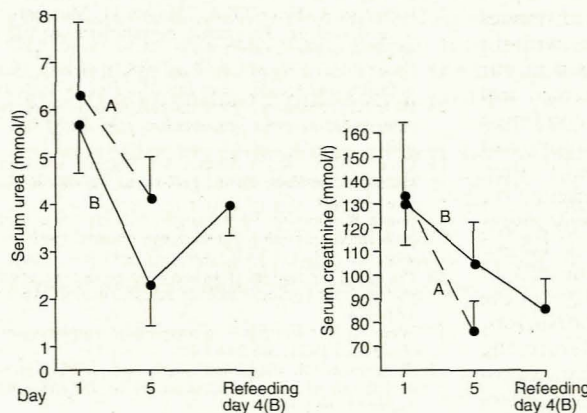


FIG. 3. Changes in serum urea and creatinine levels in patients who accepted food and intravenous fluids within 48 hours of hospitalisation (A - N = 7) and those who initially refused food but accepted intravenous fluids (B - N = 10) (\dagger v. day 1, $P < 0,0001$, v. group A, $P = 0,0041$; * v. day 1, $P < 0,012$, A v. B, $P = 0,0040$).

Psychiatric assessments

All patients underwent formal psychiatric assessments. Depression was diagnosed in 24 (77%), and of those 4 (12%) had suicidal ideation. In several cases pre-existing psychiatric symptoms were exacerbated by VTF. Many of the features noted were similar to those of the post-traumatic stress syndrome.⁸

Follow-up

All subjects were eventually released from detention, most with severe restriction orders limiting their freedom of movement and association. None was discharged from hospital back into detention.

Discussion

The doctors involved in the immediate care of the fasting prisoners interpreted Article 5 of the Declaration of Tokyo to mean that the fasters' decisions concerning any treatment, including possible later efforts at resuscitation, would be respected.⁴ In the event, all started eating within a few days of hospitalisation and terminal care was not an issue. Nevertheless, they were continually informed about their objective physical condition and participated fully in all therapeutic decisions. This approach, and the insistence on clinical independence, formed a sound basis for trusting 'patient-doctor' relationships.

The clinical and metabolic changes during well-supervised VTF have already been reviewed.^{3,9,10} Our patients had many of the typical somatic symptoms of total fasting¹⁰ as well as symptomatology attributable to their imprisonment. In addition, 75% were significantly depressed, 4 with suicidal ideation. All had several features of post-traumatic stress disorder.⁸ Their helplessness during the detention without trial, the uncertainty of its duration, and the failure of appeals to the courts for their release may have contributed to the high prevalence of psychological disturbances. Imprisonment under these circumstances has been classified as psychological torture.⁶ In some instances it was noted that VTF had aggravated pre-existing symptomatology. Several subjects accepted continued therapy from a clinical psychologist after discharge from hospital. Despite the high prevalence of depression, these prisoners retained the determination to continue VTF for up to 4 weeks and were effectively 'empowered' by positively influencing their future (and, as it happened, the State of Emergency and national politics).

The average daily weight loss in the 6 subjects with prison data, 420 g/day, was similar to that recorded overall in non-obese subjects on VTF.³ There was, however, no demonstrable initial phase of rapid weight loss,^{3,9,11} possibly because these individuals were so lean to start with. The early fall in weight during total starvation is mainly caused by fluid loss and may be proportional to the degree of obesity.¹¹ There was a tendency towards mild hypothermia and relatively low heart rates, in keeping with the reduced basal metabolic rate associated with fasting.¹²

Most patients were thought to be dehydrated on admission to hospital and some 70% had symptoms attributable to hypotension. Initial supine BPs of the subgroup tended to be low, and systolic BP fell on standing in all those in whom it was measured. BPs were also much higher once rehydration and refeeding had started. The clinical assessment of dehydration may, however, be difficult and reliance is often placed on the measurements of serum concentrations of urea and creatinine. During dehydration serum concentrations of urea rise in the face of normal creatinine levels, and increase in creatinine indicates renal tubular damage as a result of reduced kidney perfusion.¹³ Urea synthesis falls during prolonged starvation¹⁴ and serum levels are low in normally hydrated individuals. Serial laboratory data and rapid clinical improvement after fluid supplements indicated that all but 1 patient (initial serum urea 1,3 mmol/l) were probably dehydrated. Based on observations of these subjects we propose that clinically important dehydration should be suspected in subjects on VTF if serum urea levels exceed 4 mmol/l and/or creatinine levels are greater than 90 - 100 μ mol/l.

In the first week of fasting there is a fall in total body water, associated with a marked early natriuresis,¹⁵⁻¹⁷ which may persist at levels up to 15 mEq/24 h after 2 weeks of total food and salt deprivation.^{11,17} These sodium losses, combined with a degree of dehydration and only water intake, may have been sufficient to

explain the hyponatraemia observed in one-third of our patients. Comparable hyponatraemia has been reported in 1 apparently well-hydrated subject on VTF.¹⁰ The present data point to the need for sodium supplements to prevent hyponatraemia during VTF. On the basis of published reports it seems that an intake of sodium chloride of about 15 mmol/day (e.g. 1 - 1.5 g, one-quarter to half a teaspoon per day) is likely to prevent hyponatraemia without inducing clinically important hypokalaemia.¹⁷ Higher salt intakes may accelerate potassium loss.¹⁶

Frommel *et al.*³ reported that normal-weight subjects on VTF found it difficult to drink adequately after 4 - 5 weeks of fasting. Several of our dehydrated patients also claimed that they did not feel thirsty and were apparently satisfied with 2 - 3 cups of water a day or less, but only after 1 - 2 weeks of VTF. The reasons for this apparent loss of thirst drive are not known. Refusal to drink was not a stated part of their hunger strike. Calculation of serum osmolality in the 10 hyponatraemic subjects revealed values below 290 mOsm/kg in all, despite supranormal serum creatinine concentrations in 7 of them. At these levels the osmolar stimulus to drink is low.¹⁸ On the other hand, the raised plasma angiotensin-II levels associated with dehydration and hyponatraemia should have been a powerful stimulus to drink.¹⁹

Thirty-two patients accepted intravenous therapy with fluids containing sodium chloride; hyponatraemia was rapidly corrected. When glucose was given as well, thiamine was administered concurrently as Wernicke's encephalopathy has been reported during VTF.^{3,20}

Most studies on total fasting have been well supervised and involved obese subjects. In some instances these fasts were continued for many months without apparent ill effects. The conditions of detention of our patients, perhaps a poor prison diet, their stressed and depressed mental state, and their leanness, combined with poor medical supervision, seemed to compound the hazards of VTF and may have contributed to their rapid physical deterioration. From our experience we recommend that all subjects on VTF be closely monitored clinically from the start. A fluid intake of 1.5 - 2 litres of water supplemented with small amounts of sodium chloride is advised. A weight loss of 10% of the initial weight is an indication for hospitalisation. Intercurrent stresses during fasting accelerate the metabolic rate to supranormal levels and enhance protein catabolism.²¹ Remediable conditions, such as infections, should be vigorously treated in subjects on VTF. Death is associated with a body nitrogen loss of 30 - 50%.²¹

The recent hunger strikes have highlighted the harmful effects of detention without trial, a practice which has been condemned by all health organisations in South Africa. Deficiencies in prison medical services

have also been highlighted. As suggested for the UK,²² the health care of all prisoners in South Africa, including those on hunger strike, can best be provided by professionals working independently of the prison and police services. Undoubtedly a hunger strike by political prisoners presents additional medical and ethical problems not encountered by well-supervised fasters at home or obese patients in hospital.

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