

Case Report: Religious Fasting and Management Difficulties in Anorexia Nervosa

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Abstract: Individuals with eating disorders are known to use different strategies to reduce weight either by restrictive or purging behavior. Anorexia nervosa is an eating disorder that is predominately treated with psychotherapy. Cultural and religious beliefs could influence eating disorders. Here, we report a challenging case of acute anorexia nervosa management with contraindicated religious fasting during the holy month of Ramadan.

Keywords: Anorexia, Bulimia, Nervosa, fasting, eating disorder, religious fasting, body weight.

I. INTRODUCTION

Many religions pledge in fasting as part of their practices, such as in the Islamic holy month of Ramadan, the Christian season of Lent, and the Jewish holy day of Yom Kippur. Ramadan is the ninth month of the Islamic lunar calendar, during which post-pubertal, healthy Muslims must refrain from eating and drinking between dawn and sunset. The common practice is to eat two meals, one before dawn and one after sunset, known as Sahur and Iftar, respectively. The lunar calendar is based on the cycles of the moon. There are 12 lunar months, but because their length varies, this calendar cannot be linked to the seasons and varies among solar years; this is why the timing of Ramadan changes each year.

Fasting during Ramadan is one of the five Pillars (fundamental religious duties) of Islam, and apart from its spiritual aspects, many people consider Ramadan an opportunity to lose weight. Fasting is not harmful itself, but the question is what if it can act as a trigger to people at risk of an eating disorder or to accelerate eating disorder symptoms.

Anorexia nervosa (AN) is a syndrome characterized by three essential features: self-induced starvation, morbid fear of fatness, and medical signs and complications resulting from starvation. It is usually associated with a disturbed body image. The 12-month prevalence of the disorder among females is c. 0.4%, with an approximately 10:1 female to male ratio, although less is known regarding prevalence in males [1].

Unfortunately available data on the prevalence of eating disorders in Saudi Arabia is limited. One study conducted in 2015 of 425 females between 15–18 years old determined 32.9% of the sample were at risk of eating disorders, according to the Eating Attitude Test-26 (EAT-26) cut-off score of 20 [2]. However, the generality of the study is limited by its specific sample. Another study of 125 individuals, which assessed the validity of the EAT-26, found 25 cases of abnormal eating attitudes. One case was identified as anorexia nervosa by interview; no cases of bulimia were found [3]. A third study found a prevalence of 35.4% using the same test [4], whereas another study suggested a prevalence of 2% and 24% for males and females, respectively, in a sample of individuals from a different city [5]. In addition, there exists a case report of an individual with AN who died due to medical complications [6].

II. CASE REPORT

Miss A is a single, Saudi Muslim female in her 20's who was diagnosed as anorexia nervosa at the age of 15 years, based on the criteria of the Diagnostic and Statistical Manual of Mental Disorders [1].

She was brought to the hospital by her family against her will; she stated that she did not need psychiatric help. She was admitted to the psychiatric ward on the basis of safety concerns, to stabilize and restore her health and weight.

She presented with markedly low weight (BMI: 11), wasted muscles, osteoporosis, dehydration with pre-renal azotemia, and disturbed electrolyte balance. She underwent menarche at an appropriate age, but subsequently experienced amenorrhea. She also presented with enlarged parotid glands, poor dental condition, hypoglycemia, and brittle and lanugo hair. She reported eating a restricted and selective diet, inducing vomiting, pacing, and praying for hours.

The patient was investigated thoroughly.

co-assessed by Nephrology, Haematology and Endocrinology medicine and given treatment and supplements according to the need (hypokalemia, microcytic hypochromic anaemia and osteoporosis), in addition to Dietitian . Her lab work on admission is shown in TABLE I and her electrocardiogram in Fig. 1.

TABLE I: Labs upon admission (N = normal, H = high, L = low).

General Hematology		Normal range
White blood cell count (WBC)	7.5 × 10 ⁹ N	4–11 × 10 ⁹
Red blood cell count (RBC)	3.8 × 10 ¹² L	4.2–5.5 × 10 ¹²
Heamoglobin (Hgb)	88 gm/L L	120–160 gm/L
Hematocrit	27.5 % L	37–47 %
Mean corpuscular volume (MCV)	72.5 fL L	80–94 fL
Mean corpuscular hemoglobin (MCH)	23.2 pg L	27–32 pg
Red blood cell distribution width (RDW)	19.8 % H	11.5–14.5 %
Endocrine		
Parathyroid hormone (PTH)	7.470 pmol/L H	1.600–6.900 pmol/L
Thyroxine T4	11.8 pmol/L L	12–22 pmol/L
Thyroid stimulating hormone (TSH)	2.16 mIU/L N	0.250–5 mIU/L
Routine Chemistry		
Alanine transaminase (ALT)	31 u/L N	20–65 u/L
Aspartate transaminase (AST)	21 u/L N	15–37 u/L
ALBUMIN	31.5 gm/L N	34–50 gm/L
Alkaline phosphatase (ALP)	75 u/L N	40–150 u/L
Bilirubin direct	1.22 umol/L N	0–3 umol/L
Bilirubin indirect	5 mcmol/L N	2–17 mcmol/L
Bilirubin total	5.83 umol/L N	3–17 umol/L
BUN	5.5–8.5 mmol/L H	2.5–6.4 mmol/L
Creatinine	70–84 mcmol/L N	53–115 mcmol/L
CO2	39-42 mmol/L H	21–32 mmol/L
Calcium	2.23 mmol/L N	2.12–2.52 mmol/L
Chloride	86–90 mmol/L L	98–107 mmol/L
Glucose	4.02 mmol/L L	4.07–5.83 mmol/L
Potassium	2.3–2.6 mmol/L L	3.5–5.1 mmol/L
Sodium	132–133 mmol/L L	136–145 mmol/L
Total protein	70 gm/L N	64–82 gm/L
Gamma-glutamyltransferase (GGT)	40 u/L N	5–55 u/L
Corrected calcium	2.55 mmol/L N	2.10–2.55 mmol/L
Phosphorus	1.05 mmol/L N	0.81–1.58 mmol/L
Ferritin	8.7 mcg/L L	13–15 mcg/L
Magnesium	0.74 mmol/L N	0.7–0.10 mmol/L
osmolality	277–279 mOsm/kg	285–295 mOsm/kg
Bone density scan		
Lumbar spine BMD = 0.698 g/cm (-4.0 T-SCORE) (-4.0 Z-SCORE)		
Left femoral neck BMD = 0.453 g/cm (-4.4 T-SCORE) (-4.4 Z-SCORE)		
Right femoral neck BMD = 0.434 g/cm (-4.6 T-SCORE) (-4.6 Z-SCORE)		
Impression: osteoporosis		

Heart rate	76	BPM	Sinus rhythm with short PR
PR interval	110	ms	Otherwise normal ECG
QRS duration	84	ms	No previous ECGs available
QT/QTc	364/409	ms	
P-R-T axes	60 88 65		

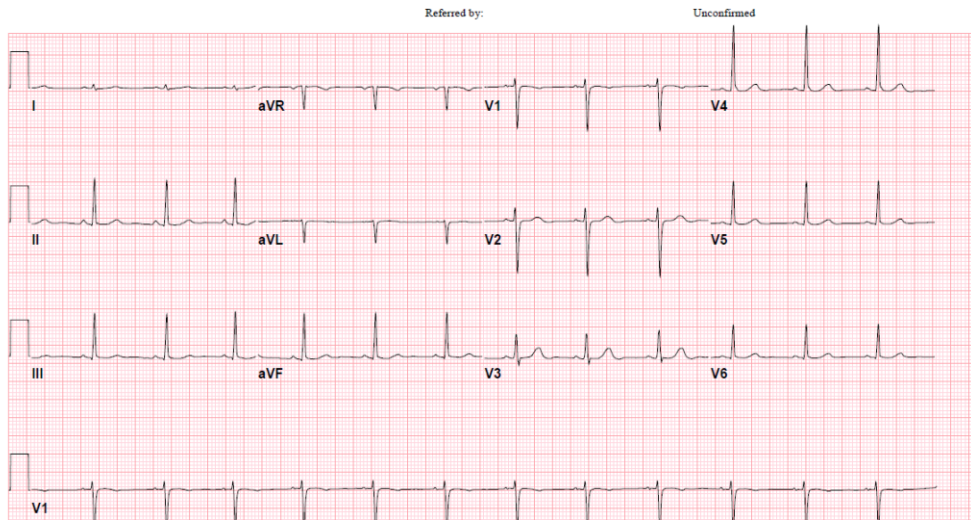


Fig 1: ECG showing normal sinus rhythm with no abnormalities.

She required daily Potassium IV for several weeks due to extremely persistent hypokalemia, in respect of which organic causes were excluded. During this regime, she received daily monitoring until she completely abstained from vomiting and regained normal potassium levels, after which she continued with a maintenance dose.

The patient used to ask for extra days of fasting before Ramadan, and demand to fast during Ramadan continuously, arguing that is compulsory in Islam and that she cannot be prevented otherwise it would be considered a sin. She was continuously reassured by the managing team while receiving cognitive behavioral therapy. No pharmacological intervention used apart from the previously mentioned supplements. Her input and output, physical activity, and weight were tracked on daily basis, with rewards for minor achievements and withdrawal of privileges if she refrained from eating or vomited like having more activities at the ward, extra time for voluntary praying and more food options.

She used to argue about her management plan or diagnosis of anorexia nervosa, and defend having a low weight. With time, she became less argumentative, more cooperative, and reached her goal weight before the end of Ramadan and was able to fast. She was discharged after gaining c. 13–14 kg (BMI: 16.8) upon family request, with instructions regarding the importance of maintaining weight and possible health hazards with starvation, following-up with a medical facility, and continuing psychotherapy. Her labs upon discharge are shown in TABLE II.

TABLE II: Labs upon discharge

General Hematology	
WBC	5.2×10^9 N
RBC	4.1×10^{12} L
Hgb	107 gm/L L
HcT	34 % L
MCV	82 fl N
MCH	26 pg L
RDW	33.1 % H
Endocrine	
PTH	8.96 pmol/L H
Routine Chemistry	
ALT	60 u/L N
AST	27 u/L N
ALBUMIN	32.6 gm/L L
ALP	88 u/L N

BUN	9.3 mmol/L H
Creatinine	55 mcmmol/L N
Bilirubin direct	0.89 umol/L N
Bilirubin indirect	3 mcmmol/L N
Bilirubin total	3.7 umol/L N
CO2	28 mmol/L N
Calcium	2.33 mmol/L N
Chloride	105 mmol/L N
Glucose	4.9 mmol/L N
Potassium	4 mmol/L N
Sodium	141 mmol/L N
Total protein	62 gm/L L
GGT	52 u/L N
Corrected calcium	2.48 mmol/L N
Phosphorus	1.74 mmol/L H
Magnesium	0.84 mmol/L N
Osmolality	296 mOsm/kg H

III. DISCUSSION

Anorexia nervosa is an eating disorder that is treated primarily with psychotherapy, unless medications are needed. Patients with this disorder are often argumentative and rationalize their restricted eating behaviors, such as by reference to religious rituals that involve either fasting or physical activity — as did the patient in the case study reported here.

Anorexia nervosa may even be contrary to tenets of the Islamic religion, as illustrated by the following quote from the prophet Mohammed PBUH, “No person fills a vessel worse than their stomach. A few mouthfuls that would suffice to keep their back upright are enough for a person. But if he or she must eat more, then he or she should fill one third [of their stomach] with food, one third with drink and leave one third for easy breathing.” This actually means to be modest with food intake, not the patient’s interpretation to have small meals.

In Islam patients should not be allowed to refrain from food as long they are at risk; they can be reassured that there are other ways of practicing religion without fasting, such as non-physical prayer, or the community service. Patients should be afforded the opportunity to discuss these options with a religious leader for advice and guidance. Islam is flexible regarding fasting during Ramadan; the wellbeing of medically ill patients is mandatory and a priority. Patients who are medically compromised, those at risk of unfavorable consequences if fasting, or who require oral medications, nasogastric tube, or parental supplementation during daytime are allowed to not fast and fast later for the same number of days when they are no longer at risk. Patients who are sane, but medically compromised and permanently at risk while fasting are allowed to not fast and instead to feed one poor individual for each day that would have otherwise been assigned to fasting.

Studies of bodyweight and eating patterns during Ramadan found that fasting during Ramadan resulted in significant weight difference before and after Ramadan (-1.24 kg; 95% CI: -1.60, -0.88 kg) in both genders (-1.51 kg for men and -0.92 kg for women). However, most of the weight lost was regained within a few weeks after Ramadan [6]. Another study reported weight loss among males during Ramadan, but no change in females [7]. One study investigated the effects of fasting during the Ramadan on appetite and eating behavior in adolescents. The EAT and Bulimic Investigatory Test, Edinburgh (BITE) were administered within the weeks before and after Ramadan. Test results before and after Ramadan were not be statistically different, which led the researchers to conclude that observance of Ramadan did not seem to have an impact on the eating behavior of adolescents. Limitations of the study were its small sample size (63 females and 16 males) and only that 10th graders were evaluated [8]. Savas et al. [9] also evaluated the effect of Ramadan on eating behavior in obese women and found that fasting did not seem to have an effect on attitudes toward eating.

Regarding the effect of fasting on eating disorders (EDs), Akgül et al. [10] suggested that culture-based contributors play a major role in EDs. They reported in a case series that during 2012 and 2013, a total of 23 patients were diagnosed with an ED. In 2012, 4 of the 12 patients and in 2013, 4 of the 11 patients were diagnosed with an ED during or shortly after Ramadan. The trigger was associated with Ramadan fasting for all four cases in 2012 but only two in 2013 . They agreed

that clinically significant effects on eating behavior in the general population may not be observed solely as a result of Ramadan, but critically, Ramadan may be an important trigger in the adolescent population among those who already have a predisposition to an ED, or may intensify and accelerate the signs and symptoms for patients with an extant eating pathology.

Another case series by Bhadrinath [11] reported findings regarding AN in Asian adolescents. Two of the three patients' symptoms became more severe during Ramadan. One patient had accelerated weight loss and began vomiting after the big meals during Ramadan. Another patient was noted to have an increase in weight loss that coincided primarily with Ramadan. These results are consonant with a study of bulimia nervosa (BN) that compared individuals with BN to a group without eating disorders, to assess the influence of a prolonged food deprivation period on emotional states and food cravings. Food cravings increased for both groups as a function of food deprivation, and this effect was significantly greater for the BN group than the group with no eating disorder [12]. Another study tracked c. 500 adolescent females, to assess the effect of fasting on the onset of BN. Participants were required to abstain from oral intake for approximately 24 hours or more in order to compensate for weight gain due to overeating. The results supported the hypothesis that fasting is a strong predictor of bulimia [13]. In contrast, a study that examined eating disorder symptoms and other adverse events during alternate day fasting (ADF) in 59 individuals with obesity over 8 weeks found decreased bingeing, improved self-image, and no changes in purgative behaviors or fear of fatness, but increased restrictive eating [14]. This suggests that dieting may help control unrestrained eating behaviors, but possibility is constrained by the fact that individuals with obesity were included, not individuals with eating disorders. Klemple et al. [15] compared the effect of an alternate day fasting high-fat diet (45% fat) and an ADF low-fat diet (25% fat) in 32 individuals with obesity over 10 weeks regarding weight loss and cardio-protective effects. Both ADF diets produced weight loss (ADF-HF: 4.8% \pm 1.1%, ADF-LF: 4.2% \pm 0.8%).

For some patients with an eating disorder, Ramadan is the one month they can openly starve themselves because not only is fasting enabled, it is rewarded. This proves to the individual that they are able to fast, which leads to their continued use of fasting after the month of Ramadan is over. For others, breaking the fast during Ramadan contributes to a feeling of loss of control with respect to food, which may lead to purging the food taken in during this time [16].

Individuals with AN are part of a larger culture that may contribute to their beliefs or behavior and vice versa. This could be a factor that perpetuates the illness, as reported in two cases in Saudi Arabia who were prematurely discharged by their families [5], [17]. In one case, the discharge was due to cultural beliefs and difficulty in accepting the diagnosis [17].

IV. CONCLUSION

Despite the flexibility of religions such as Islam with regard to fasting, some individuals insist on fasting or may use it as a culturally accepted excuse to practice weight reduction. Given the information summarized here regarding the effect of fasting on weight and eating disorders, this may represent a challenge in some cultures. As such, it is necessary to establish guidelines for fasting in those with eating disorders who live in religious cultures like Islam, Christian and Judaism, taking into consideration psychological and physical consequences. It is important to determine whether a patient is sufficiently stable for fasting, considering the duration and severity of the eating disorder, and the duration of their eating stability. In addition, one must take into account the length of fasting and when it might be considered to be harmful. Concurrently, it may be possible to use the desired behaviour (i.e., fasting) in the treatment process as a motivator to avoid the undesired behaviour.

Additional cross-cultural psychiatric research is needed to determine appropriate management strategies for patients with anorexia nervosa in religions that incorporate fasting as an elective or compulsory worship, including determining ways of involving the patient's environment as a positive reinforcer.

REFERENCES

- [1] 5th ed. Arlington: American Psychiatric Association; 2013. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders.
- [2] Eating Disorders among Female Adolescents in Jeddah Arwa Fallatah , Maram Al-Hemairy ,Halah Al-Ghamidi Supervisor: Dr.Wafaa Elarousy SCIENTIFIC COOPERATIONS MEDICAL WORKSHOPS 21-22 July, 2015, Istanbul - TURKEY
- [3] al-Subaie AL, al-Shammari S, Bamgboye E, et al. (1996). Validity of the Arabic version of the Eating Attitude Test. Int J Eat Disord 20(3):321-324.

- [4] Abd El-Azeem Taha AA, Abu-Zaid HA, El-Sayed Desouky D. (2018). Eating disorders among female students of Taif University, Saudi Arabia. *Arch Iran Med* 21(3):111–117.
- [5] Bano R, Alshammari E, Shahida Banu S. (2013). A study on the prevalence and severity of eating disorders among the young population of Hail City in Saudi Arabia. *Global J Res Anal* 2(6). doi: 10.15373/22778160 .
- [6] Al-Habeeb AA, Qureshi NA. (2005) Anorexia nervosa: emphasis on its medical complications. *Neurosciences (Riyadh)* 10(4):312–317.
- [7] Sadeghirad B, et al. (2014). Islamic fasting and weight loss: a systematic review and meta-analysis. *Public Health Nutr* 17(2):396–406.
- [8] Kul S, et al. (2014). Does Ramadan fasting alter body weight and blood lipids and fasting blood glucose in a healthy population? A meta-analysis. *J Relig Health* 53(3):929–942.
- [9] Erol A, Baylan G, Yazici F. (2008). Do Ramadan fasting restrictions alter eating behaviours? *Eur Eat Disord Rev* 16(4): 297–301.
- [10] Savas E, et al. (2014). Do Ramadan fasting restrictions alter eating behaviours in obese women? *J Relig Health* 53(1):135–40.
- [11] Akgul S, Derman O, Kanbur NO. (2014). Fasting during Ramadan: a religious factor as a possible trigger or exacerbator for eating disorders in adolescents. *Int J Eat Disord* 47(8):905–910.
- [12] Bhadrinath BR. (1990). Anorexia nervosa in adolescents of Asian extraction. *Br J Psychiatry* 156:565–568.
- [13] Moreno-Domínguez S, Rodríguez-Ruiz SM, Fernández-Santaella C, et al. (2012). Impact of fasting on food craving, mood and consumption in bulimia nervosa and healthy women participants. *Eur Eat Disord Rev* 20(6):461–467.
- [14] Stice E, Davis K, Miller NP, et al. (2008). Fasting increases risk for onset of binge eating and bulimic pathology: a 5-year prospective study. *J Abnorm Psychol* 117(4):941–946. doi:10.1037/a0013644
- [15] Hoddy KK, Kroeger CM, Trepanowski JF, et al. (2015). Safety of alternate day fasting and effect on disordered eating behaviors *Nutr J* 14:44. doi: 10.1186/s12937-015-0029-9
- [16] Klempel MC, Kroeger CM, Varady KA. (2013). Alternate day fasting (ADF) with a high-fat diet produces similar weight loss and cardio-protection as ADF with a low-fat diet. *Metabolism* 62(1):137–143. doi: 10.1016/j.metabol.2012.07.002
- [17] <http://www.scienceofeds.org/2015/04/10/not-so-fast-is-there-a-connection-between-religious-fasting-and-eating-disorders/>
- [18] Alsubaie AS, Samiah A. (1994). Anorexia nervosa: a Saudi version. *Saudi Med J* 15(2):165–168. <https://smj.org.sa/index.php/smj/article/viewFile/17351/9205>