

# South Asian Guidelines for Management of Endocrine Disorders in Ramadan

## Guidelines regarding management of adrenal insufficiency in the Holy month of Ramadan

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### ABSTRACT

Adrenal insufficiency is a life-threatening event, so it is recommended for patients with known adrenal insufficiency to be properly educated regarding sick-day management. In the month of Ramadan, people refrain from eating and drinking during daylight hours. It is very important for patients with adrenal insufficiency, who wish to keep a fast, to be well aware of the disease, the suitable drug to be used for that particular period, warning signs, sick-day management, physical activity, and dietary limits. This article describes guidelines for the sick-day management of patients with adrenal insufficiency, in the month of Ramadan.

**Key words:** Adrenal insufficiency, diet, drug of choice, physical activity, Ramadan, sick-day management, warning sign

### BACKGROUND

During the Holy month of Ramadan, Muslims have to fast. No food or drinks are to be taken from dawn to sunset. According to some interpretations, taking of oral medicine is also forbidden during these hours. In the evening, the fast is broken with sweet drinks and snacks. If a Muslim misses a day of fasting, (s)he has to make up for it on a later day and often pay a penalty, which is used to feed the poor. Certain people are excluded from this religious obligation to fast, including children under 12, the sick, the traveling and women who are pregnant / breastfeeding young babies/

having their menstrual period. Although sick persons are exempted from fasting, many still wish to keep the fast and force the doctor to allow them to do so. For people who are eligible/allowed not to fast in Islam, some individual still feel the obligation to pay compensation may play a role in the economically weak patient wanting to keep the fast, as also in orthodox areas, negative reactions from other people may do the same. In these situations it is better to advice these patients accordingly, to avoid adrenal crisis.

### INTRODUCTION

Adrenal insufficiency can result from structural or functional lesions of the adrenal cortex (primary adrenal insufficiency or Addison's disease) or from structural or functional lesions of the anterior pituitary or hypothalamus (secondary adrenal insufficiency). In developed countries, primary adrenal insufficiency is most frequently secondary to autoimmune adrenal disease, whereas tuberculous adrenalitis is the most frequent etiology in underdeveloped countries. Other causes include adrenalectomy, bilateral

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adrenal haemorrhage, neoplastic infiltration of the adrenal glands, acquired immunodeficiency syndrome, inherited disorders of the steroidogenic enzymes, and X-linked adrenoleukodystrophy. Secondary adrenal insufficiency resulting from pituitary or hypothalamic dysfunction generally presents in a more insidious manner than does the primary disorder, probably because mineralocorticoid biosynthesis is preserved. Acute Adrenal Insufficiency disease is characterized by gastrointestinal symptoms (nausea, vomiting, and abdominal pain), dehydration, hyponatremia, hyperkalemia, weakness, lethargy, and hypotension. It is usually associated with disorders of the adrenal rather than the pituitary or hypothalamus, and sometimes it follows abrupt withdrawal of glucocorticoids used at high doses or for prolonged periods.<sup>[1]</sup>

In the month of Ramadan, a person keeping a fast refrains from eating and drinking during daylight hours, which is approximately 15 hours. During Ramadan, the dietary pattern is also changed and in comparison to other days, people consume more oily and spicy items and sugar preparations at Iftar. Also at Iftar parties, the chances of food and water contamination are higher, due to mass production of food and usually an unhygienic practice while serving. Thus, a person suffering from Adrenal insufficiency, in order to avoid adrenal crisis, should be advised regarding food habits, drug compliance, and warning signs properly.

We recommend the following guidelines for patients suffering from Adrenal insufficiency, who wish to keep the fast.

## CHOICE OF DRUG

The preferred drug for adrenal insufficiency is Hydrocortisone, but as we know, the biological half-life of Hydrocortisone is short (half-life < 12 hours) and the fasting hours are longer (about 15 hours), therefore, longer acting glucocorticoids like Prednisolone or dexamethasone may be considered as per patient compliance during the month of Ramadan. Also a combination of prednisolone in the morning and hydrocortisone in the evening may be considered to match the cortisol day curve. If possible, this drug replacement may be started a few weeks before Ramadan and the patient should be monitored as per clinical symptoms (e.g., energy level, fatigue) and signs like blood pressure, for proper dose adjustment. The timing of corticosteroid intake during Iftar and Sahar should be adjusted in such a manner that the interval between the two doses matches the cortisol day curve as much as possible. Measurements of plasma Adrenocorticotropic hormone (ACTH) and / or serum cortisol are not routinely necessary.

In secondary Adrenal Insufficiency, mineralocorticoid replacement is not required, while in primary adrenal insufficiency the mineralocorticoid dose should be adjusted according to the corticosteroid preparation, as hydrocortisone has both glucocorticoid and mineralocorticoid activity, but the mineralocorticoid activity of prednisolone is lesser than hydrocortisone and that of dexamethasone is zero. The anti-inflammatory action of cortisol is 1 and that of prednisolone is 3, while that of dexamethasone is 26. Monitoring for dose adjustment may be done with serum Na<sup>+</sup>, K<sup>+</sup>, and blood pressure control.<sup>[2-6]</sup>

Due to consumption of oily foods and steroids, the patients should take proton-pump inhibitors, in order to prevent gastritis, if and when required.

## PATIENT EDUCATION

Patient education is an important part of management; they should be clear about warning symptoms of adrenal insufficiency, like fatigue, nausea and / or vomiting. It is also wise to share this information with the family, friends, and any caregivers, so that they can also identify signs of trouble and be prepared to act in case of adrenal crisis. The patients should be advised to carry their emergency medical information card that lists the doses of their daily medications and the names of their physician and family member(s), to call in case of an emergency. As a safety measurement, the patients should always carry a syringe and a vial of hydrocortisone or dexamethasone with them, and also safely store these at home. The patient should be able to take extra dosage of steroid if / when signs / symptoms of Adrenal Insufficiency appear but in addition family member or friend should know how to give give the steroid injection into a muscle (usually the thigh) during an episode of Adrenal crisis especially if the person is found unconscious. Following this, medical care should be sought immediately.

## SICK-DAY MANAGEMENT

The patients should be instructed to adjust the dosage (double or triple their daily dose) of corticosteroid during symptoms of stressful medical condition such as cold, flu, diarrhea or vomiting. As soon as illness is over and the symptoms have subsided they can return to taking their usual amount of medication.

## DIETARY ADVICE

These patients should try their best to have proper meals and to avoid sugars, processed starches, caffeine, stimulant drugs, and as much as nicotine as possible.

As a majority (75%) of primary adrenal insufficiency patients are 'salt-wasters', they should be advised to avoid exertional activity and to not spend more time in a hot climate during fasting hours. During non-fasting hours they should be sure to drink enough non-sugar-laden liquids and supplement them with enough salt to alleviate a dangerous situation. However, salt excess should be avoided as this may cause diarrhea. The patients should look for ankle edema, which may be due to insufficient salt, but usually disappears in about two to three days after taking adequate salt.

## PHYSICAL ACTIVITY

They should avoid or reduce excessive heat, cold, overwork, lack of sleep, and arguments. They should try to take rest for longer periods during fasting hours, with proper sleep at night, in order to reduce stress.

## CONCLUSION

If deemed medically necessary, patients should be advised not to keep a fast. But patients who refuse to follow instructions (against medical advice), must be advised regarding the suitable drugs for that particular period,

the warning signs, sick-day management, physical activity, and dietary limits. They should also be advised to treat themselves appropriately whenever a warning sign is present.

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