



# Cardiac Patients in Ramadan

## Who Will Fast & Who Will Not?

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# Ramadan

- Ramadan is one of the five fundamental pillars of Islam
- During this month about 1.6 billion person fast from dawn to sunset without any food or drink



# Effect of fasting Ramadan on cardiovascular system

European journal of nutrition 2014 studied changes in cardiovascular system in fasters and non fasters and raised the following results:

→Effect of fasting on heart rate

Almost always declines or remains the same



Effect of fasting of blood pressure

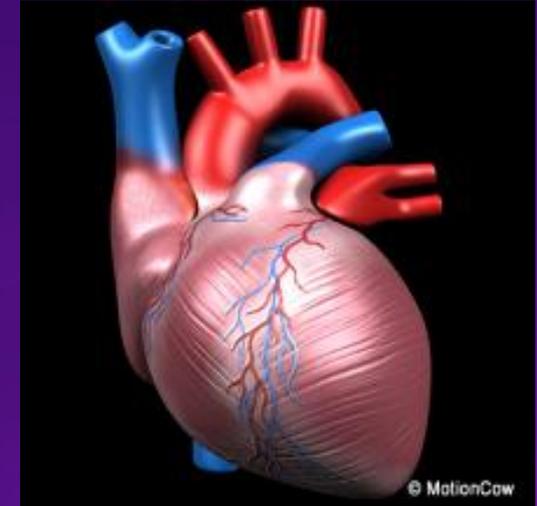
BP (S& D) remain the same or decrease





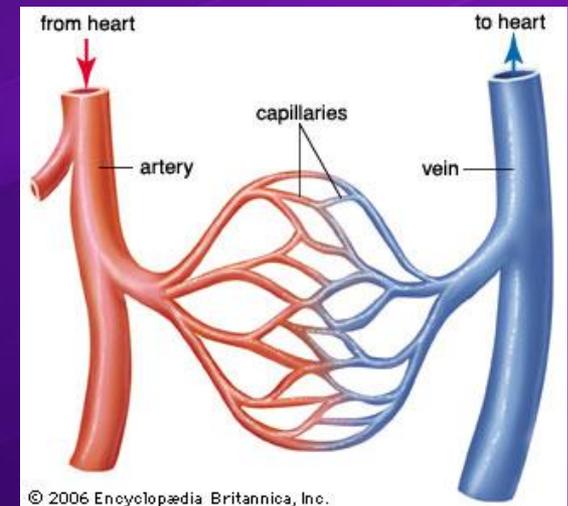
# Effect of fasting Ramadan on cardiovascular system

**Effect of fasting on cardiac pumping**  
Preserved



**Effect of fasting on vascular endothelium**

- ↑ NO significantly
- ↑ VEGF which ↑ NO, VD, angiogenesis
- ↓ ADMA significantly which decreases NO
- ↓ MDA (Biomarker of oxidation)





# Ramadan & CVD



- Although more than a billion Muslims observe Ramadan fast all over the world, there is still relatively a small number of studies on the effect of fasting Ramadan on CVD.
- Chamsi-Pasha and Ahmed 2004 recruited 86 outpatients with different kinds of CVD. They reported that 86% of patients succeeded in fasting the whole month of Ramadan, while 10.5% missed the fasting for up to 7 days and 3.5% could not fast.
- In this study no significant changes were observed in (NYHA) class in the study population during the fasting of Ramadan.
- They concluded that the majority of patients with stable cardiac disease in this cohort fasted without significant detrimental effects.



# Ramadan & health



American College of Cardiology Conference in New Orleans 2010

***Published New York Times***

Regular Fasting May Boost Heart Health 2011

## Regular Fasting:

- ↓ WT, ↓ TG, ↓ Total C, ↓ LDL-C, ↑ HDL, & ↑ HGH

(Study on 200 fasting persons and compared to non fasters)

- There was 58% reduction of risk of IHD

They reported that the same results were found in a previous larger study on 448 persons published in American Journal of Cardiology 2008

- Home et al 2011 suggested that fasting is a case of major stress and body responds by potential mechanisms that have a beneficial long term effect on risk or chronic disease

- Moreover, they noticed that lunar month comes 11 days earlier every year and this makes human body uses its hidden potentials all the year round



# Ramadan & CVD



Al Suwaidi et al. 2005 studied 465 stable cardiac patients attending outpatient cardiology clinics with different stable heart diseases including heart failure, AF, valvular & IHD observed Ramadan fast.

## They found that

- 92.3% of patients fasted without detrimental effects
- Only 6.7% felt worse during Ramadan fast.
- 82.8% were compliant with cardiac medications
- 68.8% were compliant with dietary instructions.
- Only 19 patients needed hospitalization during Ramadan for cardiac reasons.

They concluded that, most patients with stable cardiac disease can fast and only a small group have adverse effect



# Ramadan & CVD



- Khafaji et al 2012 reported that there was no adverse effects on the clinical status of stable cardiac patients while fasting during Ramadan.
- They studied 56 patients with different stable cardiac illnesses and reported that the heart condition has not deteriorated in any of the patients.
- They found that 71.4% of the patients had no change in their symptoms during fasting, whereas 28.6% felt better.
- In a recent review of the MEDLINE literature published between January 1980 and September 2012,
- Salim et al 2013 concluded that the effects of fasting Ramadan on patients with stable cardiac disease were minimal, and such patients were able to fast, provided they complied with the recommended medication regimens and dietary advice



# Ramadan & CAD

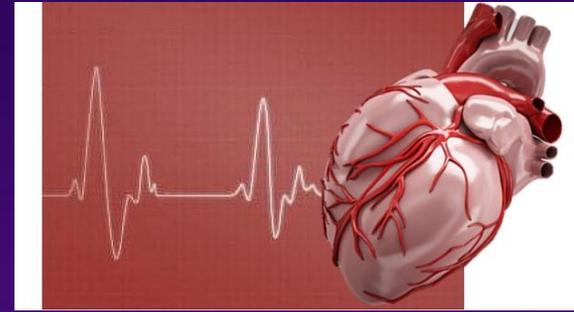


- More recently, **Mousavi et al** 2014 prospectively studied 148 patients with documented CAD and normal ejection fraction. They found that patients with CAD were able to observe Ramadan fast safely, and their symptoms were not significantly different from that of the non-fasting ones.
- In their study, none of the patients with revascularization (PTCA or CABG) who had no history of post-revascularization typical chest pain reported any chest pain during the month of Ramadan.

They concluded that patients with CAD and normal left ventricular function could fast during Ramadan.



# Do acute cardiac events increase in Ramadan?



- Several studies investigated whether Ramadan fasting has a negative effect on the incidence of admission with ACS such as AMI and UA (1999, 2004 & 2013)
- Ramadan fasting does not seem to increase the burden of acute cardiac illness.
- Incidence of acute coronary artery syndrome, acute decompensated heart failure, AF, and stroke is similar during the month of Ramadan when compared to the other non-fasting months
- The reverse was declared recently, that AMI & UA were less in people who pray Fajr and advised even non-Muslim to awake at that time and move a little to interrupt sleep at dawn time



# Do acute cardiac events increase in Ramadan?



- **Temizhan et al** 1999 investigated the effects of Ramadan fasting on CAD patients. They compared the frequency of acute cardiac events (AMI and UA) during Ramadan with the figures one month before and after Ramadan on 1655 patients treated between 1991 and 1997.
- They found that number of cases who develop ACS was significantly lower in Ramadan than before or after Ramadan.

They concluded that Ramadan fasting does not increase ACS events. However, their study had several limitations; it was not a population-based study, and only included a small number of patients.



## Do acute cardiac events increase in Ramadan?



- **Al Suwaidi et al 2004** used a database of 8446 patient with IHD admitted to a cardiology department over a period of 10 years (1991–2001). Analysis of data showed that there was no significant difference in the incidence of AMI or UA before, during or after Ramadan.
- **Also Pekdemir et al 2010** found that acute coronary events did not change significantly during Ramadan as opposed to the 30-day period after Ramadan.



# Ramadan & CHF



- Fasting during Ramadan does not seem to increase hospitalization for CHF. **Suwaidi et al. 2004 reported that** Ramadan fasting does not increase number of hospitalization due to CHF in a 10 years prospective study included 2160 patients. Hospitalizations with CHF were not significantly different in the months before, during, or after Ramadan.
- There were no significant changes in the NYHA class nor in any of the hematological or biochemical parameters during Ramadan fasting.
- **Nevertheless, patients with decompensated heart failure or those requiring large doses of diuretics are strongly advised not to fast, particularly when Ramadan falls during the summer.**



# Ramadan & hypertension

- Many factors may theoretically influence the blood pressure (BP) during Ramadan. These include:
  - Feeding patterns
  - Sleep changes
  - Changes in the timing of intake of medication.
- **Habbal et al. 1998** studied the consequences of Ramadan fasting on variations of BP in 99 hypertensive patients over the course of 24 h. All patients had ABPM before the fast and during Ramadan.
- No statistically significant differences were noted between these two periods regarding systolic BP (SBP), diastolic BP throughout the 24 h period.



# Ramadan & hypertension

- **Perk et al. 2001**
- Studied effect of fasting on treated hypertensive patients.
- ABPM was performed twice: Before Ramadan and during the last week of Ramadan.
- All patients continued their medications that were given once-daily.
- They found no difference between MBP before or during Ramadan.
- This was confirmed by a **Ural et al. 2008** in their study of subjects with Grade 2–3 hypertension (HTN) using combination therapy.
- Twenty-four hours ABPM was performed during and after Ramadan.
- No statistically significant difference was found between the 24 h MBP in the two periods.
- In a small study of 65 healthy subjects, **Shehab et al. 2014** found that SBP was significantly lower during Ramadan than either before or after.



## Medications in Ramadan

- Patients are encouraged to seek medical advice 1 or 2 months before Ramadan to adjust their medications if needed.
- Drugs have to be changed to single sustained release formula.
- Dehydration and electrolyte should be avoided
- Diuretics are not the first choice as antihypertensive for a fasting patient. Diuretics dosing, whether for the purpose of CHF or as antihypertensive should be adjusted during fasting especially loop diuretics with prolonged fasting during hot seasons.
- Most cardiac medications have once-daily dosing that is highly recommended **Beshyah et al 2010**



# Warfarin and Ramadan Fasting

- Ramadan fasting does not appear to influence adversely the efficacy or safety of oral anticoagulation.
- **Skailk et al 2014** reported the first study addressing the effects of fasting on warfarin therapy.
- Over a 5-year period, they studied 289 patients treated with warfarin, 106 patients fasted Ramadan months (fasting group), and 183 patients elected not to fast during Ramadan (non-fasting group).
- Thromboembolic events occurred in two (1.88%) and four patients (2.18%) of the fasting and non-fasting groups respectively.

The authors concluded that Ramadan fasting does not adversely affect the efficacy and safety of oral anticoagulation.



# Physical Activity

- Physical activity is also markedly restricted during Ramadan, and this should be modified.
- Exercise can be conveniently done after the evening meal or before the morning meal.
- Aerobic exercise such as walking or cycling is preferred

**Is Tarawih considered an exercise?**

**Yes**

Physical exertion involved in praying especially Tarawih is considered a regular maintained exercise with all types of exercise needed for all ages (stretching, strengthening and balance)



# Ramadan & smoking



- Many public health authorities have used the start of Ramadan as a spur to encourage smoking cessation
- Abstain from smoking during daytime can help abstain later on
- To make a better use of the Ramadan fast to enhance cessation, one may encourage smoking reduction as an initial step.

There is good evidence that smoking reduction programs enhance cessation.



# Take home message



- Fasting Ramadan carries no risk for patients with stable cardiac disease and they can fast safely.
- Incidence of AMI or UA is not increased by fasting.
- Ramadan fasting is a healthy non-pharmacological means for improving major cardiovascular risk factors.
- Most of the Muslims, who suffer from chronic diseases, insist on fasting Ramadan despite being exempted by religion.
- Patients with unstable angina, recent myocardial infarction, uncontrolled hypertension, decompensated heart failure, recent cardiac intervention or
- Cardiac surgery or any debilitating diseases should avoid fasting
- Ramadan is an ideal platform to target the year long life-style modification, to ensure that whatever health care benefits have been gained during this month, are perpetuated.



# Do Not Forget





**Thank You**



# Do Not Forget



