

Fasting During the Month of Ramadan in Patients with Chronic Kidney Disease: Impact on Kidney Function and Cardiovascular Outcomes

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Objectives

Fasting Ramadan is a religious obligation for Muslims who represent 20% of the world population. Fasting entails abstinence from eating and drinking for periods that may exceed 18 hours with the possibility of dehydration and hyperviscosity posing risks of deterioration of kidney function and vascular thrombosis of already diseased vessels. Very little is known about the safety of exposing CKD patients to fasting in such climatic conditions. In this study we report on a cohort of "real life" CKD patients who chose to fast during the month of Ramadan in summer of the past 3 years (without excluding patients with comorbidities if they chose to fast after explaining the possible hazards). We monitored their kidney functions and cardiovascular outcomes and compared them to a control group of non-fasting CKD patients.

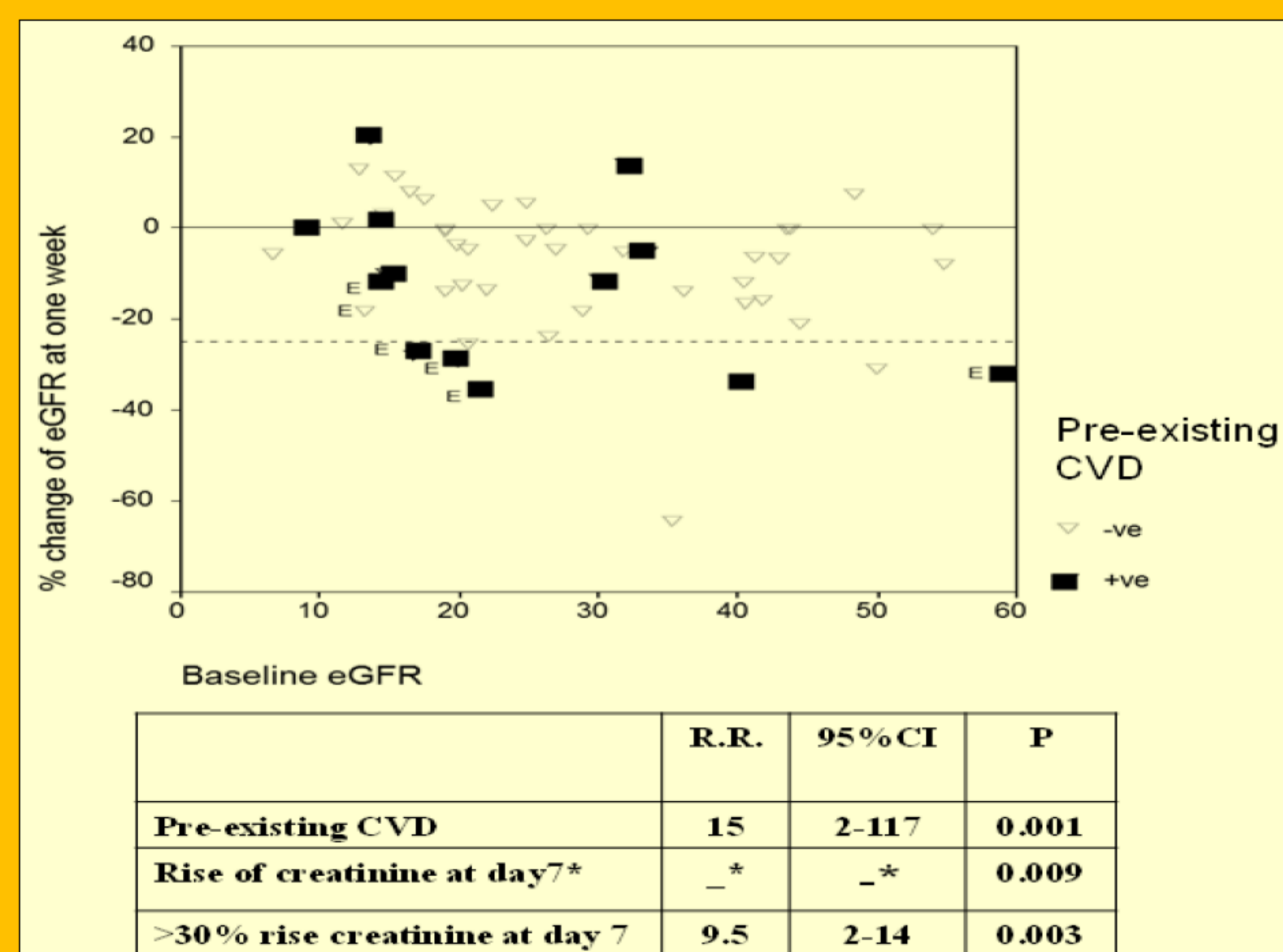
Methods

Patients were only included if they accepted and had records of stable serum creatinine showing fluctuations of <10% in at least 3 readings during the preceding 3 months and if they completed their follow up appointments. Patients with evidence of acute cardiovascular disease or active infection as well as patients on dialysis and kidney transplant recipients were excluded. Data were collected during and after the month of Ramadan on 4 occasions: 1) day 0 = within the 5 days preceding the month of Ramadan, 2) day 7 = after 1 week fasting, 3) day 30 = within 5 days after the end of the month, 4) late = 3 months after the end of Ramadan. GFR was estimated by the abbreviated MDRD equation. Serum creatinine was monitored for controls on only 3 occasions. Participants were followed during their scheduled appointments for the occurrence of cardiovascular events. These events were reported only if they were clinically overt and symptomatic then subsequently confirmed by objective investigations.

Results

Among the fasting group, serum creatinine increased at day 7 in 32 instances (60.4%). The CKD class per se was not a risk factor for the occurrence of a drop in eGFR during fasting. Marked changes in kidney functions in fasting patients defined as $\geq 30\%$ rise of serum creatinine, (which corresponded to $\geq 25\%$ drop of eGFR) occurred in 9 instances (17%) at day 7. Serum creatinine remained persistently elevated above baseline three months after the end of Ramadan in 12/52 (23%) of those who fasted, not significantly different from controls 19/54 (35%), $p=0.17$. Six adverse cardiovascular events were observed in our fasting cohort during the month of Ramadan compared to only one patient in the control group, $p=0.036$.

Figure



Covariates associated with cardiovascular events in the fasting group
CVD= cardiovascular disease. E= cardiovascular event. RR=relative risk.

Conclusions

There was an early reversible deterioration of kidney functions among fasting CKD patients that was associated with RAAS inhibitors and diuretics. Cardiovascular events occurred at a higher rate among those with pre-existing cardiovascular disease particularly those who exhibited an early rise of serum creatinine, a finding that should draw alert clinicians who are consulted by CKD patients who seek medical advice on fasting.

