Fasting and kidney function: is it safe?

Muhammad Mohsin Riaz, Saba Mir, Ayesha Azhar, Omar Sabir, Nauman Tarif, Nabiha Rizvi, Kashif Rafique

Department of Nephrology,
Fatima memorial Hospital, Lahore, Pakistan

ABSTRACT

Fasting during the month of Ramadan is a religious obligation for Muslims. Patients with Chronic Kidney Disease may have changes in their metabolic profiles with fasting. This study explores the effect of fasting among patients with chronic kidney disease (CKD) with the possible risk of dehydration and diet induced hyperkalemia.

Materials and Methods:

This study was carried out in the outpatients department of Fatima Memorial Hospital. Fifty (50) patients were included in this study around the month of Ramadan in 2014 (June 28 – July 27).The patients were keeping their regular follow up at the Nephrology OPD. The patients were enrolled in the two weeks leading to the month of Ramadan and were followed through the Holy Month up to two weeks post Ramadan. At each visit, a thorough clinical assessment was made along with relevant lab investigations.

RESULTS

The study participants included 26 females (52%) and 24 males (48%). 36 (72%) patients observed fasting. The mean age was 51.3 + 15.9 years. The mean duration of CKD in our cohort was 4.39 + 5.66 years. Most of the patients had CKD stage IV (45.8%), followed by stage III (25%) and stage V (16.7%). Most (43.1%) of the patients had Diabetic Nephropathy as a cause of CKD followed by Hypertension (25.5%) and GN (17.6%). Most of the patients took fluids (80.4%) and fruits (84.3%) freely during the time between Iftar and Sehr. Half (49%) of the patients were on sodium restricted diet and one third (33.3%) were on protein restricted diet.

Fasting did not significantly affect Pre and Post Ramadan office blood pressure (p= 0.676), serum creatinine (p= 0.057), serum potassium (p= 0.884), serum uric acid (p=0.607), protein to creatinine ratio (p= 0.221) or degree of edema (p= 0.149).

CONCLUSIONS

It appears that fasting is reasonably safe in patients with chronic kidney disease.

Key words: Fasting, Ramadan, chronic kidney disease, kidney transplant.

Reprint request to

Dr. Muhammad Mohsin Riaz
Department of Nephrology
Fatima memorial Hospital, Lahore, Pakistan
Email:dr.m.mohsin@gmail.com

PJKD 2019(1):14-17

INTRODUCTION

Fasting from sunrise to sunset during the Islamic holy month of Ramadan is one of the five pillars of the Islamic faith[1]. It does not only involve refraining from eating and drinking but also from smoking and taking medications. Total duration of fasting can range from 10 to 18 h per day depending on the geographic location and the time of the year. Although people with chronic illnesses are advised not to fast for such prolonged period of times ,still, many patients insist on fasting against medical advice as suggested[2]. Prolonged fasting may be assoiciated with negative clinical outcomes due to changes in fluid status and noncompliance with diet and medications. There is no consensus and guidelines for patients deciding to fast and more robust studies are needed. This study explores the effect of fasting among patients with chronic kidney disease (CKD) with the possible risk of dehydration and diet induced hyperkalemia.

Materials and Methods:

This retrospective question based study was carried out in the outpatient department of Fatima Memorial Hospital. Institutional review board approval was obtained. Patients presenting to the outpatient clinic more than 2 weeks to 6 months after the end of month of Ramadan were included in this study. Fifty (50) patients who had fasted during the month of Ramadan were included in this study for the fasting years of 2014 till 2016. All investigations prior to the visit of Ramadan [within 6 months], during and after one week – 24 weeks of Ramadan fasting were documented. Importantly; the serum creatinine, blood urea, serum sodium, serum potassium, serum uric acid and urine analysis including the specific gravity and proteinuria were obtained. Clinical parameters such as blood pressure, weight and fluid status as assessed by the JVP, breath sounds and peripheral edema or ascites were documented.

Data was assessed using SPSS software and statistical significance by comparing the means of pre and post Ramadan values. P value of <0.05 was taken as significant.

RESULTS

The study participants included 26 females (52%) and 24 males (48%). 36 (72%) patients observed fasting for more than 2 weeks and were included for final analysis. The mean age was 51.3 + 15.9 years. The mean duration of CKD in our cohort was 4.39 + 5.66 years. Most of the patients had CKD stage IV (n=17, 45.8%), followed by stage III (n=9, 25%), stage V (n=6, 16.7%) and stage II (n=4, 11%). Most (n=15, 43.1%) of the patients had Diabetic Nephropathy as a cause of CKD followed by Hypertension (n=9, 25.5%) and GN (n= 6, 17.6%). Most of the patients took fluids (n=28, 80.4%) and fruits (n=30, 84.3%) freely with no compliance to avoidance of potassium rich fruits. Half (n=13, 49%) of the patients were on sodium restricted diet and one third (n=12,33.3%) were on protein restricted diet.

Fasting did not significantly affect Pre and Post Ramadan office blood pressure (140.5+26vs 130.5+23 mm of Hg), serum creatinine (2.6+1.2 vs 2.7+1.8), serum potassium (4.5+0.6 vs 4.6+0.5 mmol /L), protein to creatinine ratio(2.6+1.2 vs 2.7+1.8) or degree of edema, [$p > 0.05$ for all parameters].

DISCUSSION

Our study has limitations due to the fact that it is a retrospective questionnaire based study with a possibility of recall bias. Nevertheless, our study does highlight the fact that, it may be more beneficial, if the patients can maintain sodium restricted diet and free fluid intake after breaking the fast. Word of caution again, that our study is a small study and needs further evaluation. A recent study by Kara e et al. shows similar insignificant changes in renal function and proteinuria[4]. In their comparative study of 45 patients who fasted during the month of Ramadan no change in serum creatinine, eGFR and proteinuria was documented. They however found that elderly patients and those on diuretics had more than 25% drop in eGFR. Our findings are similar to this and a commentary by Al Khader AA, that it is expected in patients who have likely inability to concentrate urine and prolonged fasting hours will result in dehydration and its deterioration of renal functions[5].

A recent study by Imtaiz et. al. in 1841 patients on dialysis noted a higher trend of mortality during the month of ramadan[6].The authors speculated that the winter season during that time as well as dietary habits (resulting in high salt and potassium diet) could have caused increased number of deaths.

NasrAllah in an observational study of patients with CKD Stage 3- 5 had significantly more decline in eGFRduring fasting even after one week of fasting and therefore we included all those patients who had fasted for atleast for 2 weeks to observe any significant effect[7].Other studies have documented safety of fasting during Ramadan, however the longer fasting hours could potential leave the drug levels off the track and possibility of acute rejections[8-9].

There are other factors that may not be in play at a particular time, such as the weather and therefore insensible losses of fluid, since the lunar month keeps on changing and starting almost ten days earlier each year.

In conclusion our study did not show any significant change in kidney function, blood pressure and urine protein excretion with fasting of Ramadan at least more than two weeks. Further detailed studies are needed to confidently document these results.

DISCLOSURE

All the authors declared no conflict of interest.

REFERENCES

1. İn the Holy Quaran Surah AL-Baqarah (Chapter 2) Versus 183-4.

2. Sahin SB, Ayaz T, Ozyurt N, Ilkkilic K, Kirvar A, Sezgin H. The impact of fasting during Ramadan on the glycemic control of patients with type 2 diabetes mellitus. ExpClinEndocrinol Diabetes 2013;121:531-4.

3. Al-Khader AA. Ramadan fasting and renal transplantation. Saudi J Kidney Dis Transpl1994;5:463-5.

4. Kara E,ZikrullahSahin O, Kizilkaya B et.al. Fasting in Ramadan is not associated with deterioration of chronic kidney disease: A prospective observational study SJKDT 2017;28(1,68-75)

5. Al-Khader AA. Ramadan fasting and renal transplantation. Saudi J Kidney Dis Transpl1994;5:463-5.

6. Imtiaz S, Nasir K, Dhrolia MF, Hussain M, Abbas HN, Ahmad A. Mortality trend among hemodialysis patients during the islamic month of Ramadan: a 24 years retrospective study. J Coll Physicians Surg Pak. 2015 Mar;25(3):189-92. doi: 03.2015/JCPSP.189192.

7. NasrAllah MM, Osman NA. Fasting during the month of Ramadan among patients with chronic kidney disease: Renal and cardiovascular outcomes. Clin Kidney J 2014;7:348-53

8. Boobes Y, Bernieh B, Al Hakim MR. Fasting Ramadan in kidney transplant patients is safe. Saudi J Kidney Dis Transpl2009;20:198-200.

9. Einollahi B, Lessan-Pezeshki M, Pourfarziani V, et al. Ramadan fasting in kidney transplant recipients with normal renal function and with mild-to-moderate renal dysfunction. IntUrolNephrol 2009;41:417-22