The Lunar Cycle
Effects of Full Moon on Renal Colic

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Purpose: To evaluate renal colic frequency in different seasons and around full moon.
Materials and Methods: A total of 1481 patients with renal colic were studied retrospectively addressing days of a month both in solar and lunar calendar.
Results: The mean age of the patients was 57 ± 13 years. Total admissions in summer was 613; of which 288 (41%), 199 (39%), and 126 (43%) were in years 2002, 2003, and 2004, respectively. The highest frequencies in solar calendar were on days 2 (56), 20 (63), and 27 (59) and the lowest were on days 6 (36), 22 (38), 26 (34), and 31 (31). We did not find any statistically significant association according to solar calendar (P = .3). In lunar calendar, most of the admissions were on day 15 (69) and the lowest rates were on days 1 (25) and 30 (26), which was statistically significant (P = .04).
Conclusion: Renal colic frequency is not correlated with solar calendar, but its highest frequency in lunar calendar is in the middle of the month period. Although we found a correlation between full moon effect and renal tide, but this is a new window for further studies.

Keywords: nephrolithiasis, renal colic, moon

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INTRODUCTION

Human and animals physiology and behavior are subject to seasonal, lunar, and circadian rhythms. Although the seasonal and circadian rhythms have been fairly well-described, little is known about the effects of the lunar cycle.[1]

It has been shown that hospital and emergency unit admissions are correlated with the moon phases.[2] An increased incidence of acute coronary events[3] as well as intracranial aneurysm rupture and subarachnoid hemorrhage have been reported on new moon days.[4] In a review on patients admitted for seizure occurrence to an emergency unit, a significant clustering of seizures was observed around the full-moon period, supporting the ancient belief of periodic increased seizure frequency during full-moon days.[5] Roman and colleagues suggested an increase in the number of admissions due to gastrointestinal hemorrhage during the full moon, especially in men experiencing variceal hemorrhage.[6] A seasonal variation in the onset of appendicitis was also reported.[7] Takemura and associates suggested the direct influence of moonlight intensity on serum level of melatonin produced by pineal glands as well.[8]

Recently, a circadian variability has been reported for the occurrence of renal colic, with a pattern characterized by a morning peak, independent of gender and

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presence of the kidney stones. Most, if not all, renal functions, including glomerular filtration rate, urine production, and renal excretion of solutes, exhibit temporal changes leading to an increased night-time concentration of urine, which could act as a predisposing factor for the morning occurrence of renal colic attacks.[9] In an epidemiological study of urinary stone colic, days of decreasing air pressure and high temperature were frequently associated with renal colic.[10]

High incidence of renal colic signifies study in this field, but to the best of our knowledge, no survey has been performed on the association of full moon and renal colic. Renal colic admissions in periodic rhythms evoked us to study such association.

MATERIALS AND METHODS

This retrospective study evaluated a total of 1481 patients, 903 (61%) men and 578 (41%) women, with renal colic who were admitted to the emergency ward of Ghamare Bani Hashem hospital, the only renal colic care center in Khoy, Iran, from June 2002 to December 2004.

Diagnosis was made on the basis of past history, physical examination, and imaging modalities, including kidney, urinary, and bladder x-ray, ultrasonography, or intravenous urograpgy, as needed.

Subjects were divided into days of a month in solar calendar from June 21, 2002 (beginning of Persian summer) to December 20, 2004 (end of Persian autumn).

Thereafter, these dates were divided into days of a month in lunar calendar beginning in Arabic spring 1423 (2002) ending in Arabic winter 1425 (2004). Then figures were designed upon relative frequencies.

Two different statistical methods were utilized: Chi-square goodness of fit test and partial Fourier series. Conventional statistical analysis was performed using Student's *t* test for unpaired data. *P* values less than .05 were considered statistically significant.

RESULTS

The mean age of the patients was 57 ± 13 years. Figure 1 illustrates gathered data according to the frequency of renal colic admissions in different seasons. Total admissions in summer was 613; 288 (41%), 199 (39%), and 126 (43%) in years 2002, 2003, and 2004, respectively (Figure 1).

The highest frequencies in solar calendar were on days 2 (56), 20 (63), and 27 (59) and the lowest were on days 6 (36), 22 (38), 26 (34), and 31 (31) (Figure 2). No statistically significant association

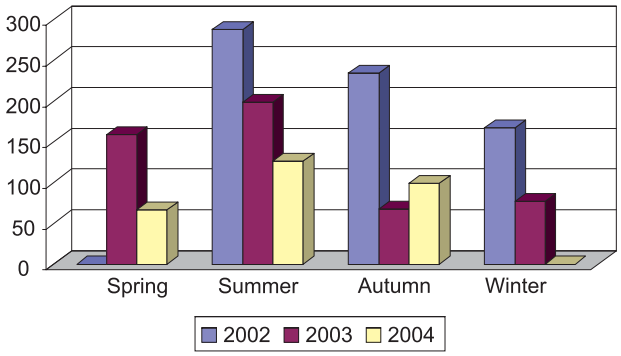

Figure 1. Frequency of renal colic admissions in different seasons.

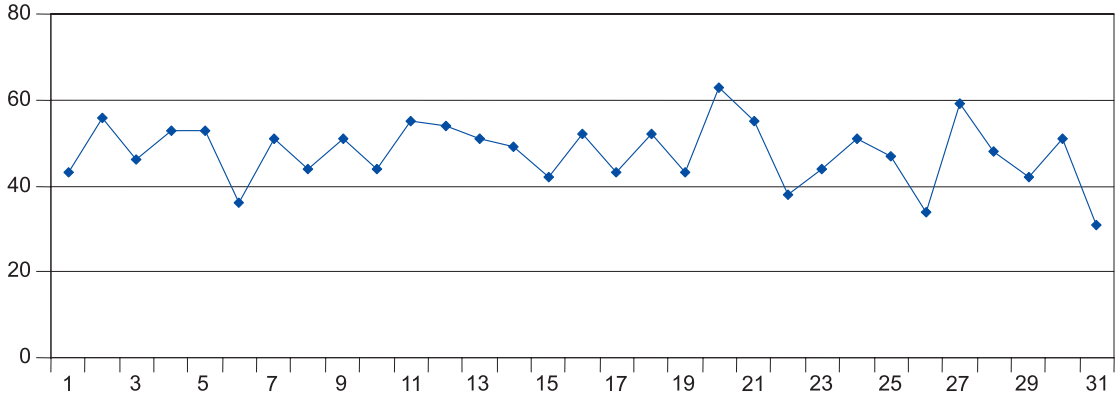

Figure 2. Renal colic admissions according to solar calendar

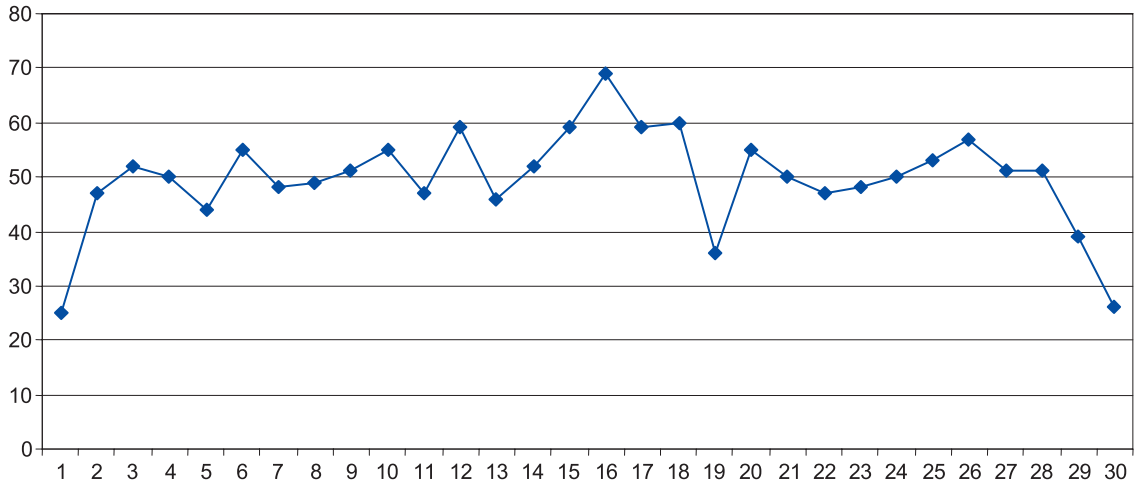

Figure 3. Renal colic admissions according to lunar calendar

was found according to solar calendar ($P = .3$). As Figure 3 shows, most of the admissions were on day 15 (69) and the lowest rates were on days 1 (25) and 30 (26), which was statistically significant ($P = .04$).

DISCUSSION

Our study shows that the highest rate of admissions occurs in summer because of sweating and volume contraction and the lowest rate is seen in spring. In the study by Perez and colleagues, the incidence was also significantly high in summer and low in autumn.[10]

In our study, the Persian (solar) calendar has no association with lunar cycles. Due to loss of any effect of full moon on solar months, we did not expect regular arrangement in incidence.

Based on our findings, the highest and lowest levels of renal colic admissions were around full moon (days 14 to 17) and the extreme days of lunar month, respectively.

This may be explained by full moon effect on tide of seas. Water accounts for 60% of body weight and also 60% of our planet contains water. Therefore, if the moon can change the weather and cause tides, why can not it affect our renal beaches? a belief that challenges stiff criticizers.

Due to independent nature of renal colic manifestations from psychological situations, we can not relate clinical symptoms to "Full Moon Madness". Therefore, this study opens a new window toward other aspects and invites scientists to enter discussion and begin surveys on moon effect to distinguish science from superstition. Although the exact mechanism of the moon influence on humans and animals awaits further exploration, knowledge of this kind of biorhythm may be helpful in police surveillance, medical practice, and investigations involving laboratory animals.

CONCLUSION

A variety of studies have paid attention to the association between full moon effect and popular beliefs. Although herein seems that episodes of renal colic can be correlated with full moon effect, but more studies with greater number of subjects are needed for propagation of this idea.

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CONFLICT OF INTEREST

None declared.

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