

The Importance of Questionnaire Surveys in The Primary Diagnosis and Metaphylaxis of Urolithiasis

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Abstract:

Background: Urolithiasis is one of the most prevalent diseases of the urinary system, and accurate assessment of patients' lifestyles and medical histories is crucial in its primary diagnosis and prevention of recurrence (metaphylaxis). This article examines the importance of using questionnaires in the early detection and metaphylaxis of urolithiasis.

Objectives: The study aimed to identify risk factors for urolithiasis through surveys among patients with the disease, focusing on lifestyle, dietary habits, fluid intake, and genetic predisposition.

Methods: The study included 120 patients, who were grouped by age and sex, and were asked to complete a specialized questionnaire. The survey included personal information, family history, dietary and fluid intake habits, medical history, and measures taken for metaphylaxis.

Results: Among the respondents, 65% had a family history of urolithiasis. It was found that 80% of patients consumed less fluid than recommended, while 68% reported a high intake of salt and protein. Additionally, 54% of patients experienced recurrence of the disease, whereas only 40% adhered to metaphylactic measures, including controlled fluid intake.

Conclusions: Conducting questionnaires in the primary diagnosis and metaphylaxis of urolithiasis is an effective method for early identification of disease risks and for recommending preventive measures to patients. Patients who did not follow preventive recommendations showed higher recurrence rates, underscoring the need for regular medical supervision and increased fluid intake as essential preventive steps.

Keywords: Urolithiasis, urinary system, metaphylaxis

Introduction

Urolithiasis is one of the most frequently encountered urological diseases today, characterized by the formation of stones in the kidneys and urinary tract. Although urolithiasis can affect all age groups, it is most prevalent among patients aged 30-60. According to statistics, approximately 10-15% of the population experiences urinary stones at some point in their lives (Trinchieri, 2008). This disease places a significant economic and social burden on patients and seriously impacts their quality of life.

Early diagnosis and metaphylaxis (prevention of recurrence) of urolithiasis are essential. This treatment strategy includes preventive measures aimed at reducing the recurrence of stones (Türk et al., 2015). Additionally, patients' lifestyle and dietary habits have a considerable influence on the formation and recurrence of stones. Thus, collecting a thorough history and obtaining detailed information about the patient's health status are integral components of diagnosing urolithiasis.

By conducting surveys, critical factors such as patients' medical history, dietary habits, fluid intake, and genetic predisposition can be identified. Research shows that poor diet, inadequate fluid intake, and high consumption of protein and salty foods significantly contribute to the development of urolithiasis (Curhan et al., 1997). Questionnaires completed with patients may be highly effective in the primary

diagnosis of this disease as well as in establishing metaphylactic measures. Detailed analysis of patients' medical history, family history, lifestyle, and eating habits is conducted. In many cases, recurrence of the disease is associated with non-adherence to preventive measures (Assimos et al., 2016). When symptoms subside, many patients neglect their health, which increases the likelihood of stones reforming. Therefore, regular fluid intake and a proper diet play a crucial role in preventing stone formation.

Genetic factors also have a significant influence on the development of urolithiasis. Patients with a family history of the disease have a much higher predisposition to stone formation, indicating the hereditary basis of the disease (Moe, 2006). Studies indicate that modifying patients' lifestyles in metaphylaxis can significantly reduce disease recurrence.

Metaphylaxis is a set of treatment and preventive measures aimed at preventing the recurrence of urolithiasis. One of the primary challenges associated with urolithiasis is its tendency to recur. If patients do not make significant changes in their lifestyle or diet after the disease is first diagnosed, the likelihood of stones reforming remains high. Studies show that approximately 50-75% of patients with urolithiasis experience recurrence within a few years after treatment (Türk et al., 2015).

Main Objectives of Metaphylaxis

Metaphylaxis aims to reduce recurrence rates by controlling various factors, which include:

1. **Increasing Fluid Intake:** Increasing patients' daily fluid intake helps reduce the concentration of mineral salts in the urinary tract, which significantly lowers the risk of stone formation. Research shows that patients should consume 2-2.5 liters of fluid daily to ensure the dissolution of salts in the urine, preventing their accumulation (Borghi et al., 1996).
2. **Proper Diet:** Foods high in protein and salt are recognized as risk factors for urolithiasis. In particular, consuming foods rich in oxalate, calcium, and purines increases the risk of stone formation (Curhan et al., 1997). Therefore, patients are advised to adhere to the following dietary guidelines:
 - o **Reducing Protein Intake:** Especially animal proteins, as high intake increases urine acidity, accelerating stone formation. Reducing protein (especially red meat) in the diet lowers the recurrence rate.
 - o **Monitoring Salt Intake:** Excessive salt intake increases sodium levels in the body, leading to higher calcium excretion in the urine, which can cause calcium stone formation. Limiting sodium intake is essential.
3. **Pharmacological Prophylaxis:** Depending on the type and chemical composition of the stones, medications may be prescribed. For example, patients with calcium oxalate stones may be prescribed thiazide diuretics or citrate preparations to control urine pH and prevent the precipitation of salts (Coe et al., 2005). Citrates help alkalinize the urine, reducing the risk of urate and calcium oxalate stone formation.
4. **Regular Medical Monitoring:** Patients should routinely undergo urine and blood tests to monitor the levels of substances that contribute to stone formation. Ultrasound and X-rays are also recommended to monitor the appearance or increase of stones (Assimos et al., 2016).

Metaphylaxis significantly reduces the likelihood of recurrence in patients with urolithiasis. However, many patients may become negligent about their health after symptoms disappear, resulting in

inadequate fluid intake or failure to follow proper dietary guidelines, which can lead to the reformation of stones. Therefore, it is essential to regularly monitor patients and provide sufficient information on adherence to preventive measures. Such an approach can significantly reduce the recurrence rate and improve patients' quality of life (Skolarikos et al., 2015).

Preventive measures in urolithiasis metaphylaxis are the most critical step in preventing the recurrence of the disease. Nevertheless, studies show that only about 50% of patients consistently adhere to these measures (Türk et al., 2015). Therefore, it is necessary to inform patients about the importance of metaphylaxis and to encourage them to take responsibility for their health. A proper diet, adequate fluid intake, and regular use of medications are among the most effective methods of metaphylaxis.

This article focuses on studying the significance of using questionnaires in the primary diagnosis and metaphylaxis of urolithiasis. Through questionnaires administered to patients with urolithiasis, the main risk factors contributing to the disease were identified, and preventive recommendations were developed.

Research Objective.

The objective of this study is to investigate the outcomes of using questionnaires for primary diagnosis and metaphylaxis measures in patients with urolithiasis.

Materials and Methods.

This study was conducted to evaluate the effectiveness of primary diagnostic methods and metaphylaxis measures for urolithiasis. Patients with urolithiasis were surveyed to identify their medical history, lifestyle, and dietary habits, aiming to identify key risk factors and develop recommendations to prevent disease recurrence.

Participants

A total of 120 patients diagnosed with urolithiasis from January 2020 to July 2023 participated in the study. These patients, who sought treatment at the urology department of the "UROMED ABK SHIFO" Clinic in Fergana City, were diagnosed through radiography, ultrasound (US), and urinalysis.

Patient Distribution by Gender and Age

Among the 120 participants, 72 were male (60%), and 48 were female (40%).

Table 1. Patient Distribution by Age Group

Questionnaire

Design

A structured questionnaire was developed to assess the patients' medical history and adherence to metaphylaxis measures. The survey included the following main sections:

1. **Demographic Data:** Age, gender, lifestyle, and other basic demographic information.

2. Medical History and Onset of Disease: History of kidney and urinary tract diseases and family history (i.e., family members with urolithiasis).
3. Diet and Fluid Intake:
 - o Daily fluid intake (in liters).
 - o Intake of salt and protein.
 - o Frequency of consuming fruits, vegetables, and calcium-rich foods.
4. Disease Recurrence: History of previous occurrences and frequency of recurrence.
5. Metaphylaxis Measures:
 - o Whether the patient has taken preventive medications.
 - o Adherence to dietary changes and fluid intake recommendations.

Tools for Metaphylaxis.

The metaphylaxis measures included several approaches and tools aimed at preventing the recurrence of the disease:

- Increasing Fluid Intake: Patients were advised to drink at least 2-2.5 liters of fluid daily. This helps increase urine volume and reduce the concentration of salts that contribute to stone formation (Borghi et al., 1996).
- Dietary Control:
 - o Reducing Salt and Protein Intake: Patients were advised to avoid high consumption of salt and animal proteins, as these substances increase calcium and oxalate levels in urine.
 - o Limiting Oxalate-Rich Foods: Intake of rhubarb, spinach, dark chocolate, tea, and coffee was advised to be limited.
- Pharmacological Therapy:
 - o Thiazide Diuretics: Patients with calcium-based stones were prescribed thiazide diuretics, which help lower calcium levels in urine and prevent stone formation (Coe et al., 2005).
 - o Calcium Citrate Supplements: Citrate supplements were prescribed to increase urine pH and citrate levels, helping to prevent urate and calcium oxalate stones.
- Urine pH Monitoring and Alkalinization: For uric acid stones, alkali citrate supplements were used to alkalinize the urine, maintaining the acidic level of the urine within the normal range.
- Regular Monitoring and Check-ups: Patients were advised to undergo regular urine and blood tests to monitor the levels of chemicals contributing to stone formation. Ultrasound and X-rays were also recommended to track the presence and size of stones. Patients were encouraged to see a urologist at least once a year to prevent recurrence.

Statistical Analysis of Study Results.

Data Collection: Patient responses were collected electronically and prepared for statistical analysis. Statistical Analysis: Data were analyzed using SPSS (Statistical Package for the Social Sciences). The

relationship between patients' demographic characteristics, dietary habits, and adherence to metaphylaxis measures and disease recurrence was assessed using the chi-square test. A logistic regression model was employed to evaluate the correlation between metaphylaxis measures and the rate of disease recurrence.

Results

This study involved 120 patients suffering from urolithiasis (urinary stone disease). Detailed analyses were conducted on participants regarding age, gender, duration of the disease, dietary habits, fluid intake, and adherence to metaphylactic measures. The findings are outlined below:

1. **Demographic Characteristics of Participants** The 120 patients were divided by age and gender groups. Of these, 72 were male (60%) and 48 were female (40%). The age distribution was as follows:
 - o Ages 18-30: 30 patients (25%)
 - o Ages 31-45: 40 patients (33.3%)
 - o Ages 46-60: 30 patients (25%)
 - o Ages 61 and older: 20 patients (16.7%)

These demographics show that urolithiasis is more prevalent among men, with the highest occurrence seen in patients aged 31-45.

2. **Analysis of Fluid Intake** Throughout the study, fluid intake was confirmed as a major factor influencing the recurrence of urinary stones. Survey results showed:
 - o 80% of patients (96 individuals) did not consume the recommended daily intake of 2-2.5 liters of fluids.
 - o Only 20% of patients (24 individuals) adequately managed their daily fluid intake.

This suggests that insufficient fluid intake is associated with a higher recurrence of stones, highlighting increased fluid consumption as an effective metaphylactic measure.

3. **Dietary Habits** Analysis of dietary habits revealed that 68% of patients (82 individuals) had high salt and animal protein intake. Among these patients, the formation of calcium oxalate and urate stones was observed:
 - o Salt intake: 65% of patients (78 individuals) had a high salt intake.
 - o High animal protein intake: 68% of patients (82 individuals) followed diets high in animal protein.

Despite recommendations to control diet, most patients did not adhere, which increased the risk of urolithiasis recurrence.

4. **Genetic Predisposition (Family History)** Analysis of family history showed that 65% of patients (78 individuals) had family members with urolithiasis, confirming the genetic component of the disease. Patients with a genetic predisposition showed higher recurrence rates.

5. **Recurrence of the Disease** According to the survey, 54% of patients (65 individuals) reported recurrence of urinary stones after treatment. Most of these patients were found not to follow

metaphylactic measures. Conversely, 46% of patients (55 individuals) reported no recurrence, as they adhered to metaphylactic measures (fluid intake management, dietary adherence, medications).

6. Analysis of Metaphylactic Measures Comparing patients who adhered to metaphylactic measures with those who did not, key findings emerged:

o Adherent group: Only 40% of patients (48 individuals) fully followed metaphylactic measures, including regular medication, diet control, and increased fluid intake.

o Non-adherent group: 60% of patients (72 individuals) did not fully follow recommendations, leading to higher recurrence rates.

Medications, especially thiazide diuretics and calcium citrate supplements, were prescribed to 30% of patients (36 individuals). Those treated with these medications, particularly those with calcium oxalate and urate stones, showed significantly reduced recurrence rates.

7. Medical Monitoring and Regular Check-Ups Regular urine and blood tests, as well as annual ultrasound or X-ray examinations, proved crucial in managing the disease. Among patients undergoing regular check-ups, 60% did not experience recurrence, whereas those lacking regular monitoring experienced higher recurrence rates.

Discussion

The findings indicate that, in primary diagnosis of urolithiasis, a lifestyle survey that examines dietary habits and genetic predispositions is a valuable tool. Enhancing metaphylactic measures and encouraging patients to regularly consume adequate fluids and reduce salt intake can significantly reduce disease recurrence.

Additionally, the survey results confirm that patient neglect of their health (insufficient fluid intake, improper diet) is a primary contributor to urolithiasis. To prevent stone formation and reduce recurrence, regular monitoring and preventive measures are essential.

Conclusion

The findings of this study confirm the effectiveness of metaphylactic measures—particularly increased fluid intake, proper diet, and pharmacological therapy—in the treatment and prevention of recurrence in urolithiasis. Due to insufficient adherence to recommendations, many patients experienced a high rate of disease recurrence. These results underscore the importance of metaphylaxis and suggest the need to further strengthen preventive measures.

Based on the results, the study evaluated the impact of lifestyle, dietary habits, and genetic predisposition on the recurrence of the disease. Adherence to metaphylactic measures was observed to significantly reduce recurrence rates.

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