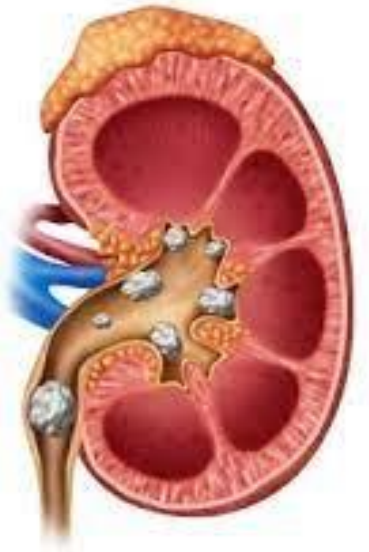
Kidney stones



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Scope

- Definition
- Clinical manifestation
- Risk factors
- Non pharmacologic intervention
- Pharmacologic intervention
- Myth & Fact
- Herbal medicine

INTRODUCTION

Kidney stone disease (nephrolithiasis) is a common problem in primary care practice. Patients may present with the classic symptoms of renal colic and hematuria. Others may be asymptomatic or have atypical symptoms such as vague abdominal pain, acute abdominal or flank pain, nausea, urinary urgency or frequency, difficulty urinating, penile pain, or testicular pain.

CLINICAL MANIFESTATIONS

Asymptomatic stones — Patients may occasionally be diagnosed with asymptomatic nephrolithiasis when an imaging exam of the abdomen is performed for other purposes or when surveillance imaging is performed in those with a prior history of stones.

CLINICAL MANIFESTATIONS

Symptomatic stones

Pain

Symptoms may develop when stones initially pass from the renal pelvis into the ureter. Pain is the most common symptom and varies from a mild and barely noticeable ache to discomfort that is so intense that it requires **parenteral analgesics**. The pain typically waxes and wanes in severity and develops in waves or paroxysms. Paroxysms of severe pain usually last 20 to 60 minutes. Pain is thought to occur primarily from urinary **obstruction** with distention of the kidney capsule. Consequently, pain due to a kidney stone typically resolves quickly after passage of the stone.

CLINICAL MANIFESTATIONS

Symptomatic stones

Hematuria

Gross or microscopic hematuria occurs in the majority of patients presenting with symptomatic nephrolithiasis (but is also often present in asymptomatic patients). Other than passage of a stone or gravel, this is one of the most discriminating predictors of a kidney stone in patients presenting with unilateral flank pain. One study, for example, found that two-thirds of patients with a ureteral stone had hematuria.

CLINICAL MANIFESTATIONS

Symptomatic stones

Other symptoms

Other symptoms that are commonly seen include nausea, vomiting, **dysuria, and urinary urgency**. The last two complaints typically occur when the stone is located in the distal ureter.

Complications

Nephrolithiasis may lead to persistent kidney obstruction, which could cause permanent kidney damage if left untreated.

If urine is infected proximal to the obstructing stone, this is a urologic emergency that requires rapid decompression either by a **ureteral stent or a nephrostomy tube**. This is a situation in which a patient could become septic very quickly if left untreated.

Staghorn calculi themselves do not typically produce symptoms unless the stone results in urinary tract obstruction or an infection is the cause of the staghorn calculus. However, they can lead to kidney failure over years if they are present bilaterally. **One study found that deterioration in kidney function occurred in 28 percent of patients with staghorn calculi over an eight-year period**

Incidence

North America: 1-3%

Europe: 3-9%

Asia : 1-5 %

Saudi Arabia: 20%

Middle east and southeast Asia: Stone belt

EPIDEMIOLOGY

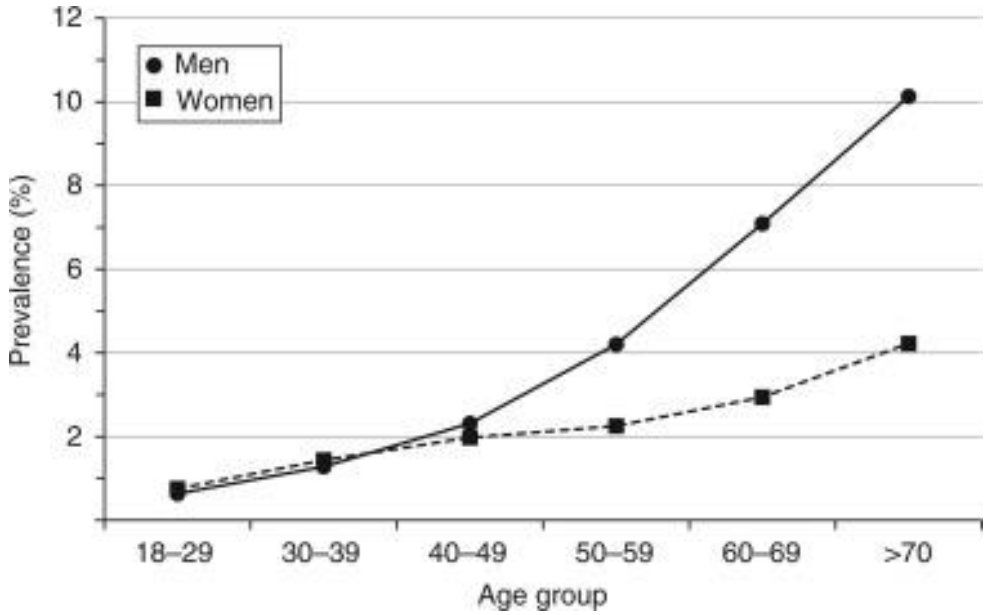
Prevalence and incidence

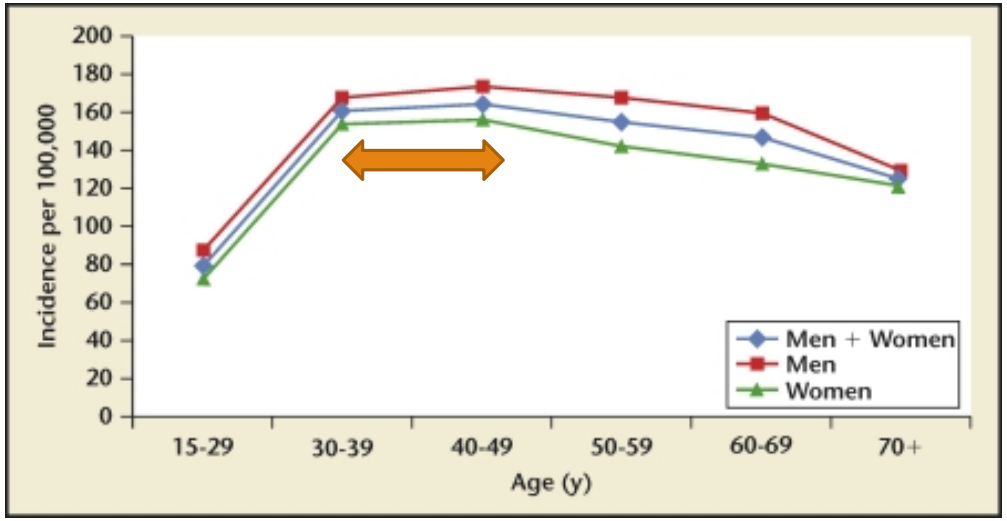
Kidney stones are a common problem. A study based upon the National Health and Nutrition Examination Survey (NHANES) estimated that 19 percent of males and 9 percent of females will be diagnosed with a kidney stone by the age of 70 years.

Age:The prevalence of ever having had a stone increases with age.

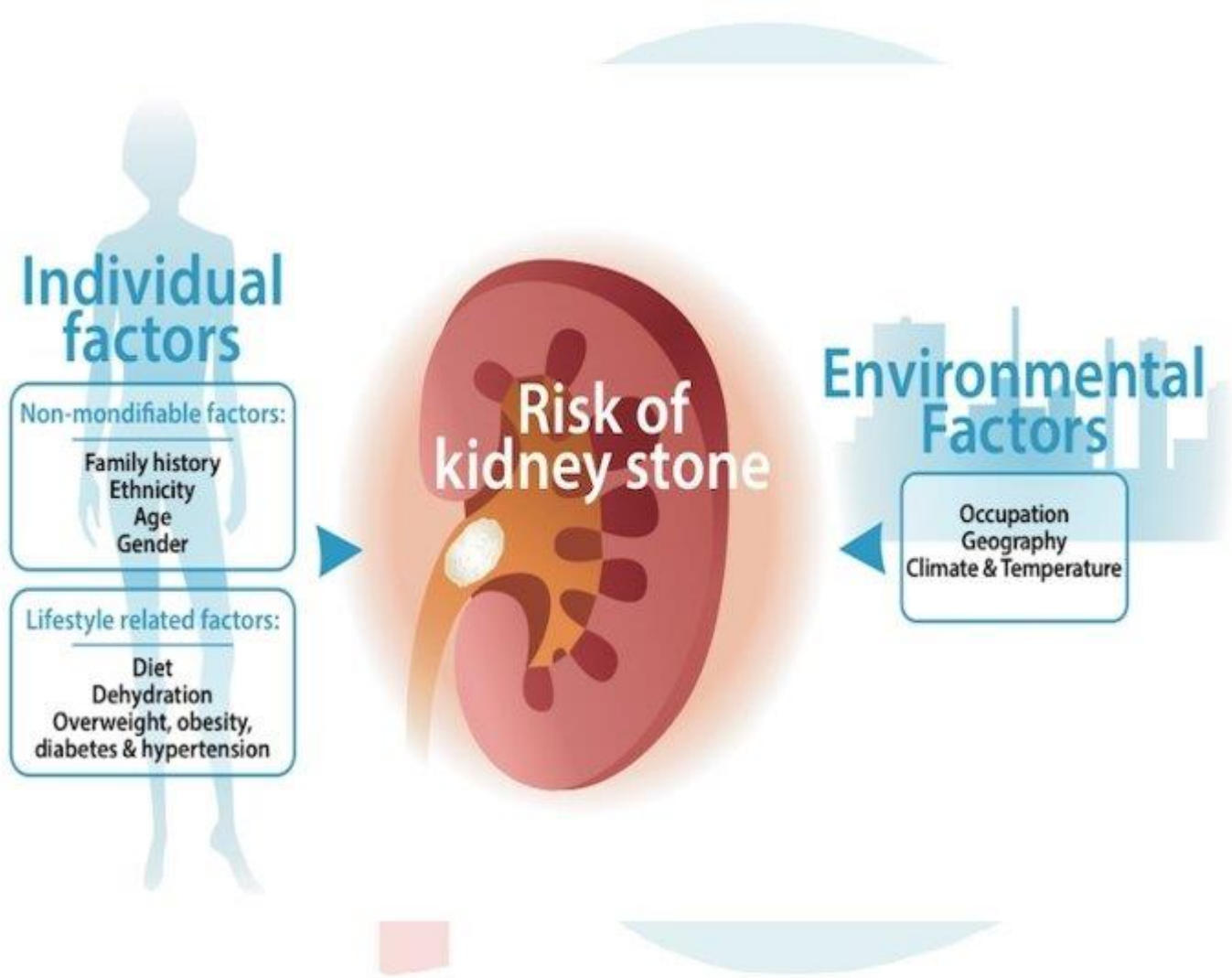
Sex: Incidence rates are also similar in males and females below age 40 years, but above age 40 years the rates are higher in males than in females

Temporal trends in the incidence of kidney stone disease





Iran



Sedentary jobs
Astronauts

Research | Open Access | Published: 08 October 2021

Risk factors of kidney stone disease: a cross-sectional study in the southeast of Iran

Parvin Khalili, Zahra Jamali, Tabandeh Sadeghi, Ali Esmaeili-nadimi, Maryam Mohamadi, Amir Moghadam-Ahmadi, Fatemeh Ayoobi ✉ & Alireza Nazari

BMC Urology **21**, Article number: 141 (2021) | Cite this article

Methods

In the baseline phase of this study, 10,000 people aged 35 to 70 years are enrolled in the RCS, as one of the prospective epidemiological research studies in Iran. From this population, 9932 participants completed related demographic questionnaires as well as reported a history of diabetes mellitus, kidney stone, and hypertension diseases.

Results

According to the obtained results, 46.54% of the studied population were male and 53.46% were female. The mean age of the participants was 49.94 ± 9.56 years. 2392 people accounting for 24.08% of the population had kidney stones. After adjustment of the variables, six variables of gender, WSI*, no consumption of purified water, BMI, and history of hypertension and diabetes were found to be significant related factors of kidney stone disease.

Water solubility Index

Stone composition

- **Calcium oxalate** – 70 to 80 percent
- **Calcium phosphate** – 15 percent
- **Uric acid** – 8 percent
- **Cystine** – 1 to 2 percent
- **Struvite** – 1 percent
- **Miscellaneous -** <1 percent

Calcium stones are formed due to an excess of a mineral called oxalate – commonly found in some fruit, vegetables, nuts and chocolate.

A struvite stone is less common and caused by infection in the urinary tract. It can grow quickly and become quite large.

Uric acid stones form due to chronic dehydration. The risk increases in those with gout, a genetic tendency or a diet too high in protein.

Cystine stones form in people with an inherited disorder that causes the kidneys to excrete an excess of certain amino acids.

Xanthine stones are caused by an enzyme deficiency that causes the build-up of xanthine deposits.

Silica stones are rare and caused by certain medications or herbal supplements.

Staghorn

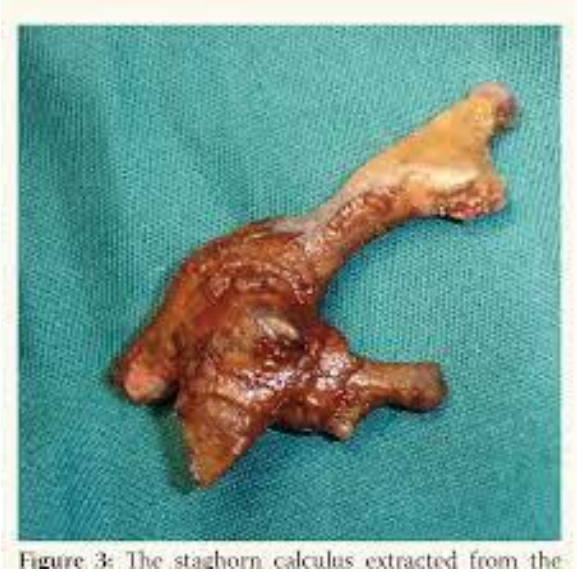


Figure 3: The staghorn calculus extracted from the

Modifiable risk factors

Urinary factors

Certain biochemical abnormalities of the urine composition have been associated with an increased risk for kidney stone formation, including higher urine calcium, higher urine oxalate, lower urine citrate, higher urine uric acid, and lower urine volume. The urine pH contributes to the likelihood of formation of certain types of stones; an acid urine favors uric acid precipitation, whereas an alkaline urine promotes calcium phosphate stone formation. **Calcium oxalate** stones **are not pH dependent** in the physiologic range.

Modifiable risk factors

Dietary factors Dietary factors can play an important role in promoting stone formation, primarily by affecting the composition of the urine. **Lower intake** of fluid, calcium, potassium, and phytate and **higher intake** of oxalate, sodium, sucrose, fructose, vitamin C, and possibly animal protein are associated with an increased risk for calcium stone formation. Higher consumption of animal protein and lower intake of fruits and vegetables increase the risk of uric acid stones by reducing urine pH and increasing generation of uric acid. Specialized diets, such as the Dietary Approaches to Stop Hypertension (DASH) and Mediterranean diets, are reasonable options in the attempt to reduce the risk of stone recurrence.

JAMA Network Open

Original Investigation | Hematology

The Efficacy and Safety of Vitamin C for Iron Supplementation in Adult Patients With Iron Deficiency Anemia

A Randomized Clinical Trial

Nianyi Li, MD, PhD; Guangjie Zhao, MD; Wanling Wu, MD; Mengxue Zhang, MD; Weiyang Liu, MD; Qinfen Chen, MD; Xiaoqin Wang, MD, PhD

Findings In this randomized clinical trial that included 440 adults with iron deficiency anemia, the mean change in hemoglobin level after 2 weeks was 2.00 g/dL in the oral iron supplements plus vitamin C group, compared with1.84 g/dL in the oral iron supplements–only group. This difference met prespecified criteria for equivalence.

Meaning The use of oral iron supplements alone is comparable to a regimen of vitamin C supplemented with oral iron for patients with iron deficiency anemia.

DASH diet

The DASH diet includes foods that are rich in potassium, calcium and magnesium.

These nutrients help control blood pressure. The diet limits foods that are high in sodium, saturated fat and added sugars.

Modifiable risk factors

Medications

Several drugs have been associated with an increased risk of kidney stone formation. Some drugs can promote kidney stone formation by inducing metabolic abnormalities that alter the urine composition, while others can crystallize in the urine and become the primary constituent of the kidney stone.

Medications associated with kidney stone formation

Medications that induce metabolic abnormalities that alter urine composition
Carbonic anhydrase inhibitors (acetazolamide, topiramate, zonisamide)
Glucocorticoids (eg, dexamethasone)
Laxatives
Loop diuretics (eg, furosemide)
Medications that can form crystals in the urine
Antiviral agents (acyclovir, atazanavir, indinavir, ritonavir)
Ceftriaxone
Ciprofloxacin
Ephedrine
Felbamate
Magnesium trisilicate
Sulfa medications (eg, trimethoprim-sulfamethoxazole, sulfadiazine)
Triamterene

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Major risk factors for calcium stone

Urinary
Lower volume
Higher calcium
Higher oxalate (CaOx stones)
Lower citrate
Higher pH (CaP stones)
Anatomic
Medullary sponge kidney
Horseshoe kidney
Diet
Lower fluid intake
Lower dietary calcium
Higher oxalate
Lower potassium
Higher sodium
Higher sucrose
Higher fructose
Lower phytate
Higher vitamin C
Other medical conditions
Primary hyperparathyroidism
Gout
Obesity
Diabetes mellitus
Distal renal tubular acidosis
Inflammatory bowel disease
Malabsorptive bariatric surgery
Short bowel syndrome

Prevention

General principles

- In adults with established kidney stone disease (nephrolithiasis), the goal of preventive therapy is to prevent the future recurrence of kidney stones as well as to prevent growth of existing kidney stones.

- Preventive therapy generally consists of lifestyle changes (eg, increased fluid intake, dietary modification, weight loss), drug therapy, or a combination of these.

Preventive measures for all stone types

- **Fluid intake** – For all patients with kidney stones, we suggest sufficient fluid intake to consistently produce at least 2 liters of urine per day.

This includes any type of fluid such as water, coffee and lemonade which have been shown to have a beneficial effect with the exception of **grapefruit juice and soda.**

This will help produce less concentrated urine and ensure a good urine volume of at least 2.5L/day

Preventive measures for all stone types

- **Sodium intake** – High sodium intake increases calcium in the urine which increases the chances of developing stones. For all patients with kidney stones, we suggest limiting dietary sodium intake to below 100 mEq (2300 mg) per day.

Preventive measures for all stone types

Fruit and vegetable intake – For all patients with kidney stones, we suggest increasing dietary fruit and vegetable intake.

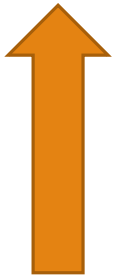
Weight loss – Weight control may be helpful in preventing stone recurrence; however, there are no clinical trials that have shown that weight loss reduces the risk of recurrent stones.

Preventive measures for other stone types

In general, **patients with calcium phosphate stones have the same risk factors as those with calcium oxalate stones** (**except for hyperoxaluria and higher urine pH**); as a result, therapy for recurrent stone formation is similar in most cases. In addition to general preventive measures, patients with uric acid, cystine, or struvite stones may require additional specific preventive measures. For a patient with recurrent stone disease (but the type of stone is unknown), it is reasonable to assume that the stone is calcium oxalate or calcium phosphate.

Preventive measures for calcium oxalate or calcium phosphate stones

Prevention of recurrent calcium oxalate stones is aimed at decreasing the concentrations of the lithogenic factors (calcium and oxalate) and at increasing the concentrations of inhibitors of stone formation, such as citrate.

Citrate   Calcium & Oxalate

Preventive measures for calcium oxalate or calcium phosphate stones

Achieving these goals may require an increase in fluid intake, dietary modification, and the administration of appropriate medications. Specific recommendations should be based upon 24-hour urine collection results, which should be performed before dietary modification or drug therapy is attempted.

In addition, any medical conditions that are associated with calcium stones (eg, primary hyperparathyroidism) should be addressed as appropriate.

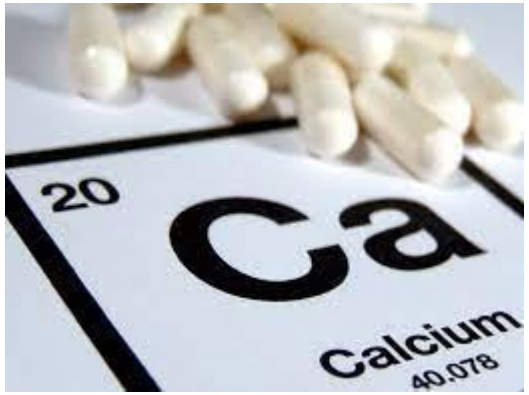
Preventive measures for calcium oxalate or calcium phosphate stones

Calcium intake – For all patients with calcium oxalate stones, we suggest against a low-calcium diet.

We generally encourage patients to consume several servings of dairy or other calcium-rich foods to reach 800 to 1000 mg/day.

Preventive measures for calcium oxalate or calcium phosphate stones

Calcium supplements should **not** be routinely used to achieve adequate dietary calcium intake, as they do not appear to be effective in preventing recurrent stones and may even slightly increase risk.

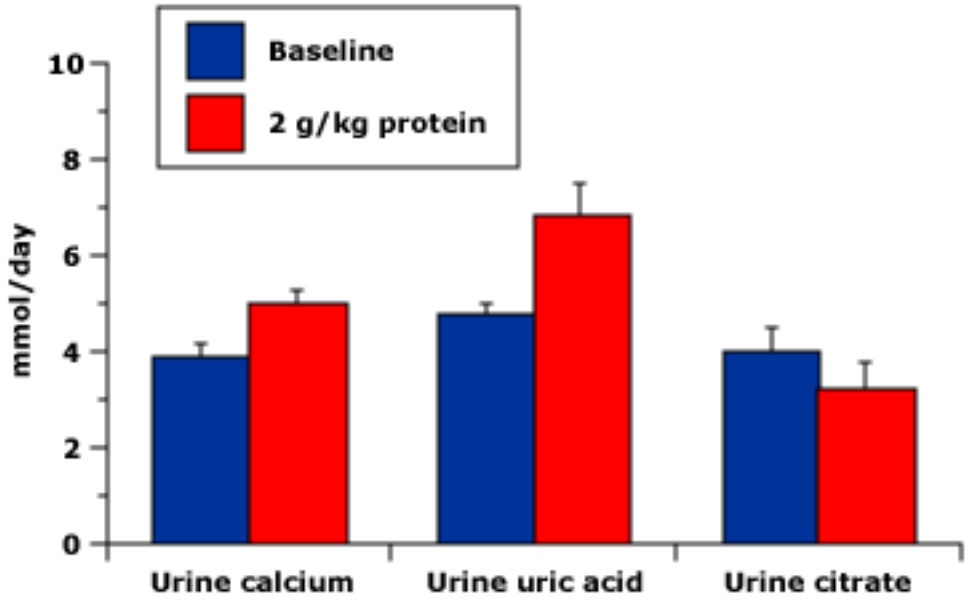


VS

Preventive measures for calcium oxalate or calcium phosphate stones

Protein intake – High protein intakes will cause the kidneys to excrete more calcium therefore this may cause more stones to form in the kidney. For all patients with calcium oxalate stones, we suggest reducing nondairy animal protein intake.

Protein load increases urine stone-forming tendency



The institution of a high protein diet (2 g/kg per day) in normal males adversely affects the metabolic parameters determining the risk of calcium stone formation. There is an increase in the urinary excretion of calcium and uric acid and a reduction in that of citrate.

Data from Kok, DJ, Iestra, JA, Doorenbos, CJ, Papapoulos, SE, J Clin Endocrinol Metab 1990; 71:861.

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Preventive measures for calcium oxalate

Oxalate intake – For all patients with calcium oxalate stones, we suggest limiting intake of high oxalate foods and supplemental vitamin C. However, excessive restriction of oxalate is not likely to be helpful; patients should continue to consume a wide variety of fruits and vegetables while avoiding those very high in oxalate.

What kind of diet plan is recommended to prevent Ca oxalate stones?

Oxalate is naturally found in many foods, including fruits and vegetables, nuts and seeds, grains, legumes, and even chocolate and tea. Some examples of foods that have high levels of oxalate include peanuts, rhubarb, spinach, beets, Swiss chard, chocolate and sweet potatoes. Limiting intake of these foods may be beneficial for people who form calcium oxalate stones which is the leading type of kidney stone.


High Oxalate Foods
Potatoes and Yams
Legumes and Beans
Seeds and Nuts
Wheat Bran
Soy, Tofu, and Miso
Raspberries
Spinach
Swiss Chard
Rhubarb
Beets
Chocolate and Cocoa
Processed Meats
Pumpkin
Eggplant
Grapefruit and Juice
Low Oxalate Foods
Coffee
Low Fat Dairy
Bananas
Cantaloupe
Papaya
Water with Lemon
Broccoli
Iceberg Lettuce
Bok Choy
Pepper

Preventive measures for calcium oxalate or calcium phosphate stones

Sucrose and fructose intake – For all patients with calcium oxalate stones, we suggest limiting intake of sucrose and fructose.

High urine calcium – For patients with recurrent calcium oxalate stones who have higher than desired urine calcium, we suggest treatment with a thiazide diuretic to lower urinary calcium excretion

The NEW ENGLAND JOURNAL of MEDICINE

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Hydrochlorothiazide and Prevention of Kidney-Stone Recurrence

CONCLUSIONS

Among patients with recurrent kidney stones, the incidence of recurrence did not appear to differ substantially among patients receiving hydrochlorothiazide once daily at a dose of 12.5 mg, 25 mg, or 50 mg or placebo once daily.

Hypokalemia, gout, new-onset diabetes mellitus, skin allergy, and a plasma creatinine level exceeding 150% of the baseline level were more common among patients who received hydrochlorothiazide than among those who received placebo.

What kind of diet plan is recommended to prevent Ca oxalate stones?

Eat and drink calcium foods such as milk, yogurt, and some cheese and oxalate-rich foods together during a meal. The oxalate and calcium from the foods are more likely to bind to one another in the stomach and intestines before entering the kidneys. This will make it less likely that kidney stones will form.

Calcium is not the enemy but it tends to get a bad rap! This is most likely due to its name and misunderstanding that calcium is the main cause in calcium-oxalate stones. A diet low in calcium actually increases your chances of developing kidney stones.

Preventive measures for calcium oxalate stones

Low urine citrate – For patients with recurrent calcium oxalate stones who have low urine citrate, we suggest potassium citrate or potassium bicarbonate therapy to increase urinary citrate excretion.

Citrate supplement

Powder Sodium Citrate 10 g

Powder Citric acid 1.34 g

Distilled Water q.s 100 cc

Shohls Solution

Powder potassium Citrate 22 g

Powder Citric acid 6.68 g

Distilled Water q.s 100 cc

Powder potassium Citrate 11 g

Powder Sodium Citrate 10 g

Powder Citric acid 6.68 g

Distilled Water q.s 100 cc

Will it help or hurt to take a vitamin or mineral supplement?

The B vitamins which include thiamine (B1), riboflavin (B2), niacin (B3), B6 and B12 have not been shown to be harmful to people with kidney stones. In fact, some studies have shown that **B6** may actually help people with high urine oxalate.

Avoid high doses of vitamin C supplements

- It is recommend to take **60mg/day** of vitamin C based on the US Dietary Reference Intake
- Excess amounts of **1000mg/day** or more may produce more oxalate in the body

Preventive measures for calcium oxalate stones

High urine oxalate – Treatment in individuals with enteric hyperoxaluria is directed toward diminishing intestinal oxalate absorption. The initial regimen consists of oral calcium carbonate or citrate (1 to 4 g/day) with meals to bind oxalate in the intestinal lumen. Treatment in individuals with primary hyperoxaluria is directed at reducing endogenous oxalate production, which is increased in patients with primary hyperoxaluria.

Preventive measures for calcium oxalate stones

High urine uric acid – For patients with recurrent calcium oxalate stones who do not respond to dietary modification and other drug therapies and who have high urine uric acid, we **suggest** treatment with allopurinol. We typically initiate allopurinol at 300 mg/day, given in two divided doses to improve tolerability.

ACUTE MANAGEMENT

Triage of patients — Many patients with acute renal colic can be managed conservatively with pain medication and hydration until the stone passes.

In general, patients can be managed at home if they are able to take oral medications and fluids. Hospitalization is required for those who cannot tolerate oral intake or who have uncontrollable pain or fever. Urgent urologic consultation is warranted in patients with urinary tract infection, acute kidney injury, anuria, and/or unyielding pain, nausea, or vomiting.

Supportive measures

Pain control — During an acute episode of renal colic, management is focused on pain control. Both nonsteroidal antiinflammatory drugs (NSAIDs) and opioids have traditionally been used for pain control in patients with acute renal colic. We suggest **NSAIDs rather opioids as the initial choice** for pain control in most patients presenting with acute renal colic. We reserve opioids for patients who have contraindications to NSAIDs, have severe kidney function impairment (ie, estimated glomerular filtration rate [eGFR] <30 mL/min/1.73 m2), or do not achieve adequate pain relief with NSAIDs.

Supportive measures

Pain control

In the treatment of acute renal colic, **NSAIDs were comparable to opioids or paracetamol in initial pain reduction at 30 minutes**

Patients receiving NSAIDs had a lower requirement for rescue analgesia compared with those receiving opioids or paracetamol and were less likely to experience vomiting compared with those receiving opioids.

Ketorolac

Weight ≥50 kg and <65 years of age:
IM:30 to 60 mg as a single dose or 15 to 30 mg every 6 hours as needed
IV:30 mg as a single dose or 15 to 30 mg every 6 hours as needed
Max:120mg/day

Weight <50 kg or ≥65 years of age:
IM:IM: 30 mg as a single dose or 15 mg every 6 hours as needed
IV: 15 mg as a single dose or 15 mg every 6 hours as needed
Max:60mg/day

Supportive measures

The combination of NSAIDs and antispasmodics was not superior to NSAIDs alone for all assessed outcomes.

NSAIDs should be stopped three days before anticipated shock wave lithotripsy (SWL) to minimize the risk of bleeding.

Supportive measures

Stone passage

Stone size is the major determinant of the likelihood of spontaneous stone passage, although stone location is also important. Most stones ≤5 mm in diameter pass spontaneously. For stones >5 mm in diameter, there is a progressive decrease in the spontaneous passage rate, which is unlikely with stones ≥10 mm in diameter. Proximal ureteral stones are also less likely to pass spontaneously. For patients with stones >5 and ≤10 mm in diameter, we suggest treatment with tamsulosin for up to four weeks to facilitate stone passage. Patients are then reimaged if spontaneous passage has not definitively occurred.

Medical explosive therapy

Alpha blocker therapy has been shown to be superior to the calcium channel blocker nifedipine as MET (medical explusive therapy) for distal ureteral stones.

Nifidipine: lower stone passage rates, longer stone expulsion times, and more complications with nifedipine

Other agents – In addition to tamsulosin and nifedipine, tadalafil and silodosin can be used as MET.

10 mg for 2-4 weeks
Monotherapy or in combination with tamsulosin

Kc HB, Shrestha A, Acharya GB, Basnet RB, Shah AK, Shrestha PM. Tamsulosin versus tadalafil as a medical expulsive therapy for distal ureteral stones: A prospective randomized study. Investig Clin Urol. 2016 Sep;57(5):351-6.
Puvvada S, Mylarappa P, Aggarwal K, Patil A, Joshi P, Desigowda R. Comparative efficacy of tadalafil versus tamsulosin as the medical expulsive therapy in lower ureteric stone: a prospective randomized trial. Cent European J Urol. 2016;69(2):178-82.

International Journal of Immunopathology & Pharmacology

Letter to the Editor

Progress and prospects in the management of kidney stones and developments in phyto-therapeutic modalities

Muhammad Akram and Muhammad Idrees

International Journal of Immunopathology and Pharmacology
Volume 33: 1–5

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Akram M, Idrees M. Progress and prospects in the management of kidney stones and developments in phyto-therapeutic modalities. International Journal of Immunopathology and Pharmacology. January 2019. doi:10.1177/2058738419848220

Table 1. Medicinal plants having activity in renal calculi.

Botanical name	Origin of plant	Family	Parts used	Functions	Animal model
Hibiscus sabdariffa Linn.	India and Malaysia	Malvaceae	Petals	Antioxidant, antilithiatic	Rats
Phyllanthus niruri	Southern India and China	Phyllanthaceae	Whole plant	Anti-HIV, antilithiatic	In vitro
Nigella sativa L.	Middle East and Asia	Ranunculaceae	Seeds	Anticancer, antilithiatic	Rats
Cynodon dactylon	Australia and Africa	Poaceae	Aerial parts	Antidiabetic, antilithiatic	Rats
Hyptis suaveolens	South America, West Indies and Mexico	Lamiaceae	Leaves	Antidiabetic, antilithiatic	In vitro
Sesbania grandiflora	Philippines, Tropical Asia, Indonesia and Malaysia	Fabaceae	Leaves	Cardioprotective, antilithiatic	Rats
Aerva lanata	Africa	Amaranthaceae	Whole plant	Antidiabetic, antilithiatic	Rats
Orthosiphon grandiflorus	Africa	Lamiaceae	Whole plant	Hepatoprotective, antilithiatic	Clinical trials
Tribulus terrestris	Australia, Africa, Southern Asia and Europe	Zygophyllaceae	Fruit	Diuretic, antilithiatic	Rats
Pyracantha crenulata Roem.	Southeast Asia and Southeast Europe	Rosaceae	Berries, flowering tops	Anti-inflammatory, antilithiatic	Rats
Costus spiralis Roscoe	Tropical South America	Costaceae	Leaves	Antimicrobial, antilithiatic	Rats
Raphanus sativus	Asia	Brassicaceae	Roots	Antifungal, antilithiatic	Rats
Nigella sativa	Middle East and Asia	Ranunculaceae	Seeds	Anticancer, antilithiatic	Rats
Randia echinocarpa	Mexico	Rubiaceae	Fruits	Antioxidant, antilithiatic	Rats
Achyranthes aspera Linn.	India and China	Amaranthaceae	Roots	Antinociceptive, antilithiatic	Rats
Herniaria hirsuta L.	California	Caryophyllaceae	Aerial parts	Hypolipidemic, antilithiatic	Rats
Aerva lanata	Africa and Uganda	Amaranthaceae	Leaves	Antidiabetic, antilithiatic	Rats
Asparagus racemosus	India and Srilanka	Asparagaceae	Roots	Galactagogue, antilithiatic	Rats
Helianthus annuus Linn.	India and America	Asteraceae	Leaves	Antibacterial, antilithiatic	Rats
Acalypha indica L.	India and Tropical Africa	Euphorbiaceae	Leaves	Analgesic, antilithiatic	Rats
Rotula aquatica	India	Boraginaceae	Roots	Antimitotic, antilithiatic	Rats
Bergenia ligulata	Himalaya	Saxifragaceae	Rhizome	Antioxidant, antilithiatic	Rats

Herbal medicine

Study conducted by Mahmoud Bahmani and collogues aimed to determine native medicinal plants used by traditional healers of Shiraz for the treatment of kidney stones, revealed that:

A total of 18 species belonging to **19 botanical families** were recorded in study area. Species with the highest frequency of mentions were Alhagi maurorum (51.58%), Tribulus terrestris (51.58%), and Nigella sativa.

Bahmani M, Baharvand-Ahmadi B, Tajeddini P, Rafieian-Kopaei M, Naghdi N. Identification of medicinal plants for the treatment of kidney and urinary stones. J Renal Inj Prev. 2016 Jul 27;5(3):129-33. doi: 10.15171/jrip.2016.27. PMID: 27689108; PMCID: PMC5039998.

Scientific name	Family	Persian names	Usable part of plant	How to use	Traditional therapeutic effect in Shiraz
Alhagi maurorum	Fabaceae	Kharshotor	Aerial parts	Decoction	Kidney stone
Tribulus terrestris	Zygophyllaceae	Kharkhasak	Aerial parts	Decoction	Kidney stone
Nigella Sativa	Caryophyllaceae	Siahdaneh	Seed	Decoction	Kidney stone
Althea aucheri Boiss.	Malvaceae	Khatmi armanestani	Aerial parts	Decoction	Kidney stone
Lactuca sativa L	Compositae	Kahoo	Leave	Fresh	Kidney stone
Prunus cerasus	Rosaceae	Albaloo	Fruit	Fresh	Kidney stone
Alhagi camelorum	Papilionaceae	Taranjebin	Aerial parts	Decoction	Kidney stone
Mangifera indica	Anacardiaceae	Anbeh	Fruit	Fresh	Kidney stone
Prangos acaulis (DC.) Bornm	Apiaceae	Jashi-kotoleh	Aerial parts	Decoction	Kidney stone
Urtica dioica L	Urticaceae	Gazaneh	Aerial parts	Decoction	Kidney stone
Fumaria officinalis	Fumariaceae	Shah-tareh	Leave	Decoction and fresh	Kidney stone
Plantago psyllium	Plantaginaceae	Esfarzeh	Leave	Decoction	Kidney stone
Medicago sativa	Leguminosae	Yonjeh	Decoction	Decoction	Kidney stone
Apium graveolens	Umbelliferae	Karafs	Decoction	Decoction	Kidney stone
Rheum ribes	Polygonaceae	Rivas	Fruit	Fresh	Kidney stone
Arctium lappa	Compositae	Baba-adam	Aerial parts	Decoction	Kidney stone
Pimpinella anisum	Apiaceae	Anison	Aerial parts	Decoction	Kidney stone
Gundelia tournefortii	Asteraceae	Kangar	Leave	Fresh	Kidney stone

Herbal medicine

Most of the medicinal plants recommended by **Shirazian herbalists** have not been investigated in animal and humane models of renal stone which provides a new area of research.

قطره سنکل

اجزای فرآورده : در هر ۳۰ میلی لیتر قطره سنکل:

عصاره هیدروالکلی رازیانه

عصاره هیدروالکلی برگ بو

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Clinical Study

The Effects of Local Administration of Aminophylline on Transureteral Lithotripsy

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The Effects of Local Administration of Aminophylline on Transureteral Lithotripsy

Aminophylline can decrease urinary tract spasm.

120 patients with ureteral stones were enrolled and randomized into two groups.

The bladder was drained and then received a 150 mL irrigation solution.

Irrigation solution was saline and saline plus 10 mL aminophylline at 250 mg dose for control and case groups, respectively. Ureteroscopy and transureteral lithotripsy (TUL) were performed five minutes after irrigation.

The Effects of Local Administration of Aminophylline on Transureteral Lithotripsy

Conclusion:

Aminophylline facilitated ureteroscopy and increased the success rate in the treatment of renal colic using TUL.

No significant complications from post-TUL were observed. Using aminophylline carries several advantages such as reducing procedure duration, decreasing the need for ureteral and double-J catheter, and reducing stone migration to the kidney and use of SWL.

250 mg in 100 ml NS

The effect of intravenous aminophylline on stone free status after transureteral lithotripsy (TUL): a randomized double blind clinical trial study

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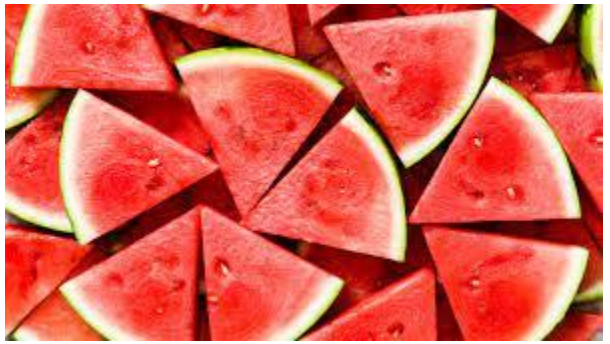
Abstract: (9016 Views)

Background: The third common urinary tract disease was renal stone, after the UTI and pathologic states of kidney. TUL is most useful and effective for removing the stones of inferic ureter. In other hand aminophylline can decrease urinary tract spasm. Then, combination of TUL and aminophylline help us to reduce the complication of TUL. Methods and materials: W have study on 87 case of renal colic who referred to Imam Khomeini hospital of sari and Tooba clinic. This study was a double blind systematic randomized clinical trial that patients wer divided to two group as 1 and 2: group one includes patients who received aminophylline and group 2 were selected as our control samples. Our sample size was calculated by statisti analysis according to recent studies. Result: The average of TUL time was 5.12± 1.77 min in group 1 and 6.59± 3.47 min in group 2($p<0.05$) and the success percents of TUL was 97.6% in group 1 and 84% in group 2($p>0.05$). ESWL was used in one patient of group 1 because of remaining of stone, but 7 patients of group 2 did not response to Transureter lithotripsy then they needed ESWL. Complication were not seen in patient who received Aminophylline and mean arterial pressure and heart rate was equal in two group. Conclusion: The differenc of TUL Time between two groups was meaningful. As you know, aminophylline has an antispasmotic effect on urinary tract and tract with smooth muscle, and according to our finding usage of aminophylline can reduce the complication of TUL and increase success rate of Lithotripsy in this patient. In other hand, it complications was few.

Is Watermelon Good For Kidney Stone?

- **Animal study**
- Simply it is fruit
- One slice of watermelon only has 1mg of oxalate
- Packed with citrate and phytate
- Reduce the amount of acid in urine



Can Beer Cause Kidney Stones?

Dehydration

Prolonged beer intake can cause dehydration, thus increasing the risk of kidney stones.

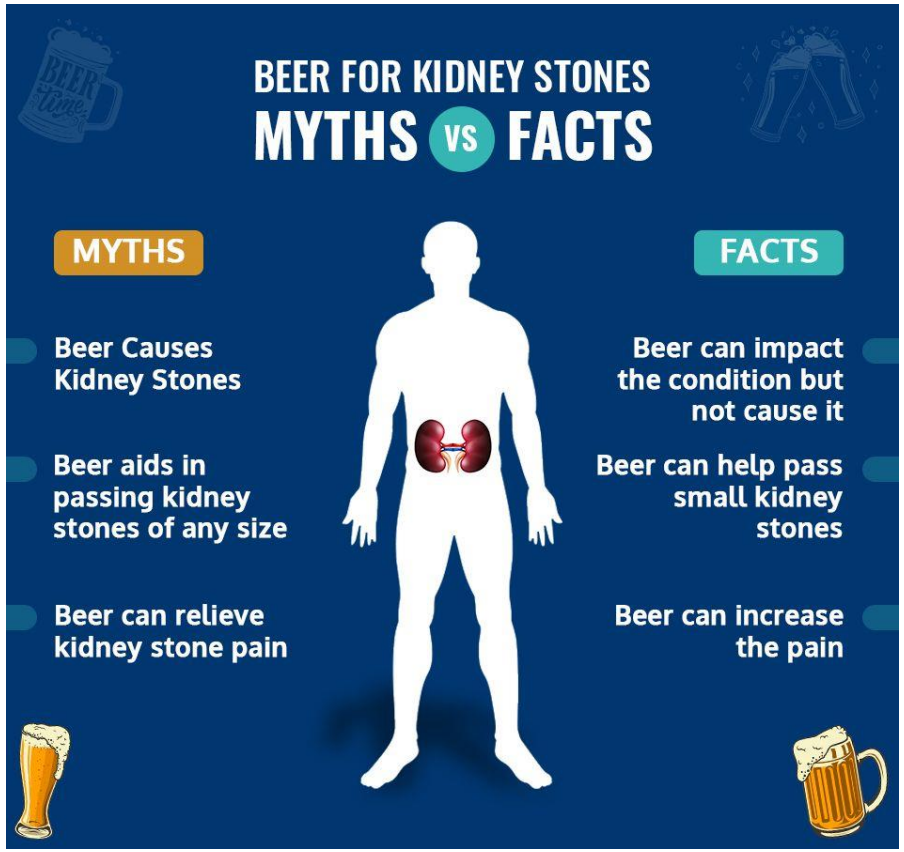
Obesity

Beer consumption can increase your weight. Being overweight (obesity) is yet another risk factor for kidney stones.

Uric acid

- Beer contains constituents that can increase uric acid in your body, thus increasing the risk of uric acid crystals in the kidney.

Should you consume Beer to pass Kidney Stones?



Take home message

- Drink plenty of fluid: 2-3 quarts/day
- Limit foods with high oxalate content
- Eat enough dietary calcium
- Avoid extra calcium supplements
- Eat a moderate amount of protein
- Avoid high salt intake
- Avoid high doses of vitamin C supplements

Thank you
Any question?