

A Case Study on Kidney Stones

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Abstract: Kidney stone disease is a crystal concretion formed usually within the kidneys. It is an increasing urological disorder of human health, affecting about 12% of the world population. It has been associated with an increased risk of end-stage renal failure. The etiology of kidney stone is multifactorial. The most common type of kidney stone is calcium oxalate formed at Randall's plaque on the renal papillary surfaces. The mechanism of stone formation is a complex process which results from several physicochemical events including supersaturation, nucleation, growth, aggregation and retention of urinary stone constituents within tubular cells. These steps are modulated by an imbalance between factors that promote or inhibit urinary crystallization. It is also noted that cellular injury promotes retention of particles on renal papillary surfaces. The exposure of renal epithelial cells to oxalate causes a signalling cascade which leads to apoptosis by p38 mitogen activated protein kinase pathways. Currently there is no satisfactory drug to cure and/or prevent kidney stone recurrences. Thus, further understanding of the pathophysiology of kidney stone formation is a research area to manage urolithiasis using new drugs. Therefore, this review has intended to provide a compiled up-to-date information on kidney stone etiology, pathogenesis and prevention approaches.

Keywords: Kidney stones.

1. Introduction

Kidneys remove waste from blood to make urine (pee), when there is too much waste in blood and body is not producing enough urine, crystals begin to form in kidneys. These crystals attract other wastes and chemicals to form a solid object (a kidney stone) that will get larger unless it is passed out of body through urine.

Kidney stones can be as small as a grain of sand or as large as a golf ball. Kidney stones are hard deposits of salt and minerals in the kidneys. These stones usually cause immense pain whenever they move or obstruct the urinary tract. Kidney stones differ in size, while some stones can be a few mm in size, other can grow to inches.

Kidney stones are quite prevalent equally and affect both men and women. Kidney stone can be divided into four types- Calcium stones, Uric acid stones, Struvite stones and Cystine stones.

Aim:

To design a case study on kidney stone.

Objective:

To examine the patient history, physical examination, findings and treatment.

Kidney Stone Causes:

- Lack of water
- Chronic diarrhea
- High blood sugar Family history.

Kidney Stone Symptoms:

- Severe pain below the ribs, in the side and back
- Pain while urinating
- Pink, Red or Brown – coloured urine
- Nausea and Vomiting

Types of Kidney Stones:

There are four main types of stones:

Calcium oxalate: The most common type of kidney stone which is created when calcium combines with oxalate in the urine. Inadequate calcium and fluid intake, as well as other conditions, may contribute to their formation.

Uric acid: This is another common type of kidney stone. Food such as organ meats and shellfish have high concentrations of a natural chemical compound known as purines. High purine intake leads to a higher production of monosodium urate, which under the right conditions may form stones in the kidneys. The formation of these types of stones tends to run in families.

Struvite: These stones are less common and are caused by infections in the upper urinary tract.

Cystine: These stones are rare and tend to run in families.

Kidney Stone Treatment:

The treatment for kidney stone is similar in children and adults. You may be asked to drink a lot of water. Doctors try to let the stone pass without surgery. You may also get medication to help make your urine less acid. But if it is too large, or if there is a sign of infection, it is removed with surgery.

Shockwave lithotripsy is a non-invasive procedure that uses high-energy sound waves to blast the stones into fragments that are then more easily passed out in the urine. In ureteroscopy, an endoscope is inserted through the ureter to retrieve or obliterate the stone. Rarely. For very large or complicated stones, doctors will use percutaneous nephrolithotomy/nephrolithotripsy.

Patient history report:

Patient Name : Mr. Ramesh
HPIP No : IP0000044326
Doctor Referred : Dr. S. Senthilkumar MS.DNB
Specimen : Urine
Order No : IG396922
UHID : TN21000039197
Investigation : Culture Urine
Gram stain : Occasional pus cell no bacteria
Culture Report : No growth in culture.

Patient Name : Mr. Ramesh
Age/Gender : 36/Male
Doctor Referred : Dr. S. Senthilkumar. MS.DNB
IP/OP : OOBTN2102B16
UHID : TN21000039197
Specimen : Urine
INVESTIGATION : Clinical pathology

Final Report:

The patient has no bacteria at the site of a suspect infection in urine. It will tell any infection or bacteria that are cultured in urine. But this patient has no such type of any growth of bacteria or any fungal culture in his urine.

Patient Name : Mr. Ramesh
Age/Gender : 36/Male
Doctor Referred : Dr. S. Senthilkumar MS.DNB
IP/OP : OOBTN2102B16
UHID : TN21000039197
Specimen : Urine

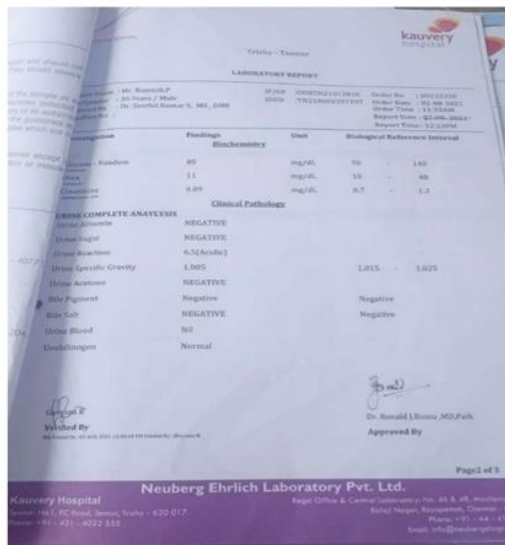
Investigation:

	BIOCHEMISTRY	NORMAL VALUE
Glucose	85 mg/dl	70-140
Urea	11 mg/dl	10-40
Creatinine	0.89 mg/dl	0.7-1.3

Final Report:

The patient has normal levels of glucose, urea, creatinine in urine. It indicates the patient has no abnormality in glucose, urea, creatinine.

Report Attachment:



Complete urine

	analysis	Normal value
Urine Albumin	Negative	<20 mg/day
Urine sugar	Negative	<140 mg/dl
Urine reaction	6.5 (Acidic)	Acidic
Urine specific gravity	1.005	1.005-1.030
Urine Acetones	Negative	<0.6
Bile pigment	Negative	0.3-1.2 mg
Bile salt	Negative	0.3-1.2 mg
Urine Blood	Nil	<2RBC
Urobilinogen	Normal	0.1-1.8 mg/dl
Pus Cells	8-10	5-8 mg/dl
Crystals	Nil	<45 mg/dl
Casts	Nil	0-2

Final Report:

- The patient urine has high amount of PUS cells than normal. When there is an increase in PUS cells it leads to Interstitial cystitis, Tuberculosis, Urinary tract stones, Kidney disease, Pneumonic, polycystic kidney disease, Tumours in urinary tract.
- The patient has no infection in bacteria culture. So, there may be a chance of kidney disease, urinary tract disease, kidney stones.

Patient Name : Mr. Ramesh
Age/Gender : 36/male
Doctor referred : Dr. S. Senthilkumar. MS.DNB
IP/OP : OOBTN2102B16
UHID : TN21000039197
Specimen : EDTA, BLOOD

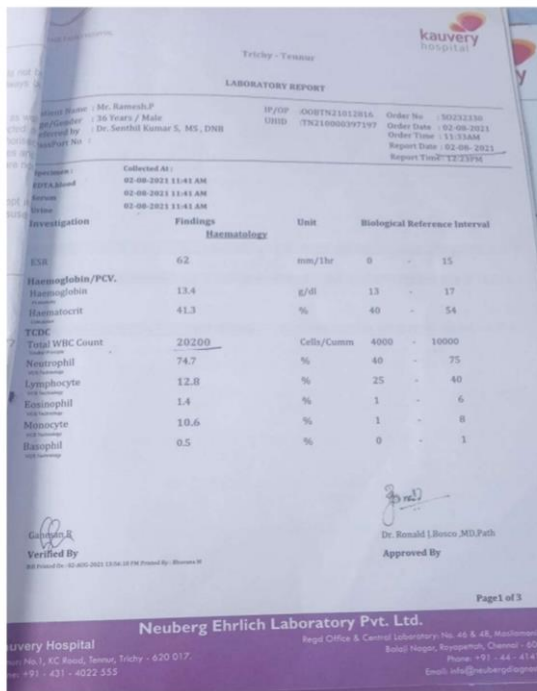
Investigation:

	HAEMATOLOGY	Normal value
ESR	62	0-15
Haemoglobin	13.4	13-17
Haematocrit	41.3	40-54
Total WBC count	20200	4000-10000
Neutrophil	74.7	40-75
Lymphocyte	12.8	25-40
Eosinophil	1.4	1-6
Monocyte	10.6	1-8
Basophil	0.5	0-1

Final Report:

- There is an increase in ESR, Total WBC count, Monocyte levels in blood. There is a decrease in Lymphocyte level in blood then normal.
- Increase in ESR can cause kidney disease, certain cancers, Heart disease etc.,
- Increase in Total WBC count leads to infection, abnormalities in the bone marrow, smoking, chronic lung disease, kidney disorders.
- Increase in Monocytes causes chronic inflammatory disease, Parasitic infection, Tuberculosis, Mumps, etc.
- Decrease in Lymphocytes causes intense physical exercise, severe stress or Malnutrition.
- The culture test tells that no infection in blood and urine but ESR levels is high it leads to disorders in kidney, certain cancers.
- We suggested that the patient have anyone of disease out of kidney stones or cancer.

Report Attachment:



Patient Name : Mr. Ramesh
Age/Gender : 36/Male
Doctor Referred : Dr. S. Senthikumar. MS.DNB
IP/OP : IP0000045060
UHID : TN21000039197
Department : Urology
Consultants : Sasikumar S, MS. M.Ch(Urology)/
 Santhosh Kumar M, MS., M.Ch(Urology), / Mohamed Eliyas N, MBBS,DA
 (Anesthesiology)
Diagnosis : LEFT Renal Pelvic Calculus on LEFT DJS

Renal calculi are called a kidney stone it is made up of minerals and salts that form in kidney. DJS (Double J stent) it is a urethral stent with curving ends that prevent the stent slipping into the bladder or kidney.

It (DJS) can be placed to help reduce sharp pain from a stone or to allow drainage when infection is present or when a stone prevents a kidney from working adequately.

Procedure:

Left RIRS + DJS Done

Complaints and History:

Ramesh is a follow up case of renal pelvic calculus on LIFD DJS. Now admitted for Left RIRS + DJS.

On examination patient was conscious and oriented, afebrile.

PR : 82/min
BR : 60/80 Hg
RR : 20/min
SPO2 : 97% on room air
RS : NVBS
P/A : soft

Treatment:

Lab Investigation: Report enclosed

Treatment Given:

Injection for kidney stones

- Troyperazone, colistin
- Meroqram, Tamin
- Amikacin
- Levoflox
- Syscan
- Rantac

Tablets for kidney stone

- Tramadol
- Perinorm
- Pyrigesic

Syrup for kidney stone

- Pantocid DSR
- Ascoril

Surgery notes:

Left RIRS + DJS Done

Anesthesia Notes : Under general anesthesia
Radioperative Period : No Complications
Lithotomy Position : IV antibiotic cover/Left DJS removed/
 Left UO Cannulated.

Final Report:

- Kidney Stone is identified in the patient and the treatment are given according to their Stage.
- RIRS and DJS are given to a patient to prevent from a pain of stone in a kidney.
- Several injections and tablets are given to control the kidney stone and to destroy it.

Report Attachment:

kauvery hospital

SUMMARY

Patient Name	Mr. Ramesh, F	Date of Admission	17/08/2021 02:17 PM
Age/Gender	48 years / Male	Date of Discharge	23/08/2021 12:02 PM
Address	Karuppal Kovilattuppal, Ponnambalam (TK) Pudukottai, Tamil Nadu, India 622005	UHID	792166009797
Mobile No	944228719	IP No	09000045900
Diagnose	Dr. Senthil Kumar S, MCh, DNB	Department	Urology
Operation	TRUS GUIDED, LRS	Ward / Bed	B B / 355-3

CD-COMPLAINT(S)
 Dr. Senthil Kumar S, MCh, DNB (Urology)
 Dr. Sankaranarayanan S, MCh, MCh (Urology)
 Dr. Mohamed Elwan H, MCh, DNB (Anesth) (Anesthetologist)

DIAGNOSIS
 LEFT RENAL PELVIC CALCULUS ON LEFT DJR

PROCEDURE
 LEFT RIRS + DJR DONE ON 19.08.2021

COMPLAINTS AND HISTORY
 Mr. Ramesh is a follow up case of left renal pelvic calculus on left DJR. Now admitted for left RIRS + DJR. No other known co-morbidities. On examination patient was conscious and oriented, afebrile, PR: S2/normal, BP: 110/80 mm Hg, RR: 22/min, SpO2: 97% on room air, CVS: S1 S2 (+), RS: NVBS, P/A: Soft.

LAB INVESTIGATIONS
 Reports enclosed.

TREATMENT GIVEN
 IV fluids
 inj. Trospirone, inj. Metrogem, inj. Amikacin, inj. Levoflox, inj. Syntac, inj. Ramax, inj. Tramadol, Tab. Ramax, inj. Colistin, inj. Tazim, inj. Paracetamol, Tab. Paracetamol, Tab. Pantacid DSR, Syp. Associl.

SURGERY NOTES
 LEFT RIRS + DJR DONE ON 19.08.2021
 Anesthesia notes : Under general anesthesia.
 Postoperative period : No complications

Lithotomy position
 IV antibiotic cover / Left DJR removed
 Left UO cannulated

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2. Conclusion

Kidney stones may not seem very significant, but these crystals are trying to prevent kidney stones is important. Every individual is at risk for being diagnosed with kidney at any age.

It's always good to be prepared for any situation. In conclusion, kidney stones aren't as harmless as some people think. These stones can affect someone's whole life, just a couple little crystals can change an individual's whole day. It is important that people know about the different types of Kidney stones, possible ways of prevention, and most importantly when to seek help from a doctor.

Although we live in an age when quick fixes are the order of the day more and more people are testing the waters of complementary medicine. This is probably due to the increased awareness regarding the adverse side effect of the long term use of conventional medicines. Homeopathy not only treats the symptoms of a disease but also tries to root out the underlying cause. Besides providing individualized treatment this system of medicine has very little side effects and is entirely affordable by all.

References

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