

BÖLÜM 2

ÜRİNER SİSTEM TAŞ HASTALIĞINDA TANISAL DEĞERLENDİRME

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GİRİŞ

Ürolitiazis, insanlık tarihindeki en eski hastalıklardan biri olarak kabul edilir. Antik Mısır uygarlığından kalma mumyalar üzerinde yapılan incelemelerde, idrar yollarında taşlara rastlanması bu hastalığın binlerce yıldır var olduğunu göstermektedir. Ayrıca Hipokrat ve Galen gibi antik dönem hekimlerinin eserlerinde de taş hastalığına dair ayrıntılı açıklamalar yer almaktadır. Bu tarihi veriler, ürolitiazisin evrensel ve çağlar boyunca süregelen bir sağlık problemi olduğunu ortaya koymaktadır (1).

Son yıllarda dünya genelinde ürolitiazis prevalansında anlamlı bir artış gözlenmektedir. Gelişmiş ülkelerde bu hastalık, yaşam boyu taş oluşturma riski açısından önemli bir sağlık sorunu olarak öne çıkmakta; erkeklerde kadınlara kıyasla yaklaşık iki kat daha sık rastlanmaktadır (2). Türkiye’de yapılan epidemiyolojik çalışmalarda ise, genel erişkin popülasyonda taş hastalığı sıklığı %11–14 arasında bildirilmiştir (3). Özellikle sıcak ve kurak iklimlerde taş hastalığına daha sık rastlanmaktadır. Bu bağlamda, iklimsel faktörler, sıvı tüketim alışkanlıkları, diyet ve genetik yatkınlık gibi pek çok değişken taş oluşumunda rol oynamaktadır (4). Günümüzde ise bu hastalık, gelişen tanı yöntemleri sayesinde asemptomatik dönemde dahi saptanabilmektedir.

Ürolitiazis genellikle idrarın süpersatüre hale gelmesi sonucu kristallerin çökmesiyle başlar. Bu kristaller zamanla büyüüp birleşerek taş oluşumunu meydana getirir. İdrar içerisindeki kalsiyum, oksalat, fosfat ve ürik asit gibi iyonlar ile bu süreci inhibe eden sitrat gibi maddeler arasındaki dengenin bozulması, taş gelişimini kolaylaştıran temel faktörlerden biridir. Ayrıca hiperparatiroidizm, re-

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Gebelik, pediatrik yaş, ileri yaş ve anatomik anomaliler gibi özel hasta gruplarında tanısal yaklaşım, radyasyon maruziyetinin en aza indirilmesi ve klinik bulguların dikkatle yorumlanması prensiplerine dayanmalıdır.

Sonuç olarak, üriner sistem taş hastalığının tanı ve yönetiminde multidisipliner, kılavuz temelli ve hasta odaklı bir yaklaşım esastır. Güncel tanısal algoritmaların uygulanması hem hasta güvenliğini artıracak hem de sağlık sisteminde kaynak kullanımını daha etkin hale getirecektir.

KAYNAKLAR

1. Tefekli A, Cezayirli F. The history of urinary stones: in parallel with civilization. *ScientificWorldJournal*. 2013 Nov 20;2013:423964. doi: 10.1155/2013/423964.
2. GBD 2021 Urolithiasis Collaborators. The global, regional, and national burden of urolithiasis in 204 countries and territories, 2000-2021: a systematic analysis for the Global Burden of Disease Study 2021. *EClinicalMedicine*. 2024 Nov 21;78:102924. doi: 10.1016/j.eclinm.2024.102924.
3. Muslumanoglu AY, Binbay M, Yuruk E, et al. Updated epidemiologic study of urolithiasis in Turkey. I: Changing characteristics of urolithiasis. *Urol Res*. 2011 Aug;39(4):309-14. doi: 10.1007/s00240-010-0346-6.
4. Stamatelou K, Goldfarb DS. Epidemiology of Kidney Stones. *Healthcare (Basel)*. 2023 Feb 2;11(3):424. doi: 10.3390/healthcare11030424.
5. Evan AP. Physiopathology and etiology of stone formation in the kidney and the urinary tract. *Pediatr Nephrol*. 2010 May;25(5):831-41. doi:10.1007/s00467-009-1116-y.
6. Skolarikos A, Geraghty R, Somani B, et al. European Association of Urology Guidelines on the Diagnosis and Treatment of Urolithiasis. *Eur Urol*. 2025 Jul;88(1):64-75. doi: 10.1016/j.eururo.2025.03.011.
7. Mirzazadeh M, Xu R, O'Connor C, et al. Renal Pelvis Urine Sampling in Patients with Obstructed, Infected Ureterolithiasis: A Retrospective Quality Improvement Initiative. *J Endourol*. 2025 Jan;39(1):79-83. doi: 10.1089/end.2024.0179.
8. Pietropaolo A, Keller EX, Sener TE, et al. Economic Burden of Imaging and Interventions in Endourology: A Worldwide Cost Analysis from European Association of Urology Young Academic Urology Endourology and Urolithiasis Working Party. *J Endourol*. 2025 Apr;39(4):389-398. doi:10.1089/end.2024.0673.
9. Lim RT, Moll NR, Bryan AC, et al. Pain Management Strategies for Patients with Kidney Stones. *Urol Clin North Am*. 2025 Aug;52(3):429-439. doi:10.1016/j.ucl.2025.04.008.
10. Ding P, Luo Q, Cao L. Drug-induced kidney stones: a real-world pharmacovigilance study using the FDA adverse event reporting system database. *Front Pharmacol*. 2025 Mar 27;16:1511115. doi: 10.3389/fphar.2025.1511115.
11. Ordon M, Bota S, Kang Y, et al. The Impact of Timing of Definitive Intervention for Patients with Acute Renal Colic: A Population-Based Study. *J Endourol*. 2025 Jul;39(7):708-715. doi: 10.1089/end.2024.0657.
12. Patatas K, Panditaratne N, Wah TM, et al. Emergency department imaging protocol for suspected acute renal colic: re-evaluating our service. *Br J Radiol*. 2012 Aug;85(1016):1118-22. doi: 10.1259/bjr/62994625.
13. Kavgacı U, Gulhan B, Kurt-Sukur ED, et al. Comprehensive analysis of pediatric urolithiasis in a tertiary care center and insights into demographics, risk factors, and management outcomes. *J Pediatr Urol*. 2025 Mar 13:S1477-5131(25)00144-5. doi: 10.1016/j.jpuro.2025.03.006.
14. Tamir S, Hermann D, Bekhor E, et al. Physiologic hydronephrosis as a cause of emergent right abdominal pain in pregnancy-truth or myth? *Quant Imaging Med Surg*. 2025 Jul 1;15(7):6457-6464. doi: 10.21037/qims-2025-563.

15. Shastri S, Patel J, Sambandam KK, et al. Kidney Stone Pathophysiology, Evaluation and Management: Core Curriculum 2023. *Am J Kidney Dis.* 2023 Nov;82(5):617-634. doi: 10.1053/j.ajkd.2023.03.017.
16. Kim HJ, Oh SH. Comprehensive prediction of urolithiasis based on clinical factors, blood chemistry and urinalysis: UROLITHIASIS score. *Sci Rep.* 2023 Sep 9;13(1):14885. doi: 10.1038/s41598-023-42208-9.
17. Kulsoom, Ahmad S, Urwa, et al. Associations between clinical, biochemical, and nutritional factors in kidney stone formation and recurrence. *Urolithiasis.* 2025 Jun 12;53(1):112. doi: 10.1007/s00240-025-01784-3.
18. Tsampoukas G, Hossain MF, Katsouri A, et al. Urine pH, citrate, and beyond: challenges of pharmaceutical stone management in daily urological practice. *Arch Ital Urol Androl.* 2025 Jun 30;97(2):13798. doi: 10.4081/aiua.2025.13798.
19. Bauza JL, Pieras EC, Grases F, et al. Urinary tract infection's etiopathogenic role in nephrolithiasis formation. *Med Hypotheses.* 2018 Sep;118:34-35. doi: 10.1016/j.mehy.2018.06.002.
20. Kalwar SR, Mahar N, Lal M, et al. Evaluation of predictive factors of renal function recovery in renal failure secondary to urinary tract obstruction. *J Pak Med Assoc.* 2023 Jun;73(6):1203-1206. doi: 10.47391/JPMA.6339.
21. Balasingam B, Varothayan S, Rajendra S, et al. Assessment of Urinary Stone Chemical Compositions and Prevalence of Metabolic Disorders Among Urolithiasis Patients in Northern Sri Lanka: A Prospective Study. *Cureus.* 2024 Jun 28;16(6):e63377. doi: 10.7759/cureus.63377.
22. Tiselius HG, Daudon M, Thomas K, et al. Metabolic Work-up of Patients with Urolithiasis: Indications and Diagnostic Algorithm. *Eur Urol Focus.* 2017 Feb;3(1):62-71. doi: 10.1016/j.euf.2017.03.014.
23. Basiri A, Tahvildari A, Naji M, et al. Determination of the kidney stone composition using infrared spectroscopy in Iran at a national referral center during 2019-2023. *Asian J Urol.* 2025 Jan;12(1):72-78. doi:10.1016/j.ajur.2024.07.004.
24. Ringdén I, Tiselius HG. Composition and clinically determined hardness of urinary tract stones. *Scand J Urol Nephrol.* 2007;41(4):316-23. doi:10.1080/00365590601154551.
25. Aldughiem A. Imaging Diagnosis of Major Kidney and Urinary Tract Disorders in Children. *Medicina (Kaunas).* 2025 Apr 10;61(4):696. doi: 10.3390/medicina61040696.
26. Juliebø-Jones P, Semins MJ, Seitz C, et al. Management of Kidney Stones in Pregnancy: A Worldwide Survey of Practice Patterns. *J Endourol.* 2024 Oct;38(10):1092-1096. doi: 10.1089/end.2024.0012.
27. Vijayakumar M, Ganpule A, Singh A, et al. Review of techniques for ultrasonic determination of kidney stone size. *Res Rep Urol.* 2018 Aug 10;10:57-61. doi:10.2147/RRU.S128039.
28. Krakhotkin DV, Chernylovskiy VA, Sarica K, et al. Diagnostic value ultrasound signs of stones less than or equal to 10 mm and clinico-radiological variants of ureteric colic. *Asian J Urol.* 2023 Jan;10(1):39-49. doi: 10.1016/j.ajur.2022.03.015.
29. O'Kane D, Papa N, Manning T, et al. Contemporary Accuracy of Digital Abdominal X-Ray for Follow-Up of Pure Calcium Urolithiasis: Is There Still a Role? *J Endourol.* 2016 Aug;30(8):844-9. doi: 10.1089/end.2016.0173.
30. Barton MF, Brower CH, Barton BL, et al. POCUS-first for nephrolithiasis: A Monte Carlo simulation illustrating cost savings, LOS reduction, and preventable radiation. *Am J Emerg Med.* 2023 Dec;74:41-48. doi:10.1016/j.ajem.2023.09.025.
31. Arslan E, Mohamed AH. Evaluation, management, and analysis of demographic and radiological characteristics of patients with renal colic at a tertiary hospital in Somalia. *Afr J Emerg Med.* 2022 Dec;12(4):358-361. doi:10.1016/j.afjem.2022.07.011.
32. Kaul I, Moore S, Barry E, et al. Renal Imaging in Stone Disease: Which Modality to Choose? *R I Med J* (2013). 2023 Dec 1;106(11):31-35. PMID:38015782.
33. Hanqi L, Fucai T, Caixia Z, et al. Limited sensitivity and size over measurements of ultrasound affect medical decisions for ureteral stone compared to non-contrasted computed tomography. *World J Urol.* 2019 May;37(5):907-911. doi: 10.1007/s00345-018-2444-y.

34. Chung AD. MR Urography: Point-MRI Provides Comprehensive Imaging of the Urinary Tract and Is a Feasible First-Line Imaging Test. *AJR Am J Roentgenol*. 2024 Aug;223(2):e2330763. doi: 10.2214/AJR.23.30763.
35. Morin CE, McBee MP, Trout AT, et al. Use of MR Urography in Pediatric Patients. *Curr Urol Rep*. 2018 Sep 11;19(11):93. doi: 10.1007/s11934-018-0843-7.
36. Morgan K, Rees CD, Shahait M, et al. Urolithiasis in pregnancy: Advances in imaging modalities and evaluation of current trends in endourological approaches. *Actas Urol Esp (Engl Ed)*. 2022 Jun;46(5):259-267. English, Spanish. doi: 10.1016/j.acuroe.2022.03.005.
37. Bo S, Sedaghat F, Pavuluri K, et al. Dynamic Contrast Enhanced-MR CEST Urography: An Emerging Tool in the Diagnosis and Management of Upper Urinary Tract Obstruction. *Tomography*. 2021 Mar 2;7(1):80-94.doi:10.3390/tomography7010008.
38. Lee MS, Fenstermaker MA, Naoum EE, et al. Management of Nephrolithiasis in Pregnancy: Multi-Disciplinary Guidelines From an Academic Medical Center. *Front Surg*. 2021 Dec 22;8:796876. doi: 10.3389/fsurg.2021.796876.
39. Demirtas F, Çakar N, Özçakar ZB, et al. Risk factors for recurrence in pediatric urinary stone disease. *Pediatr Nephrol*. 2024 Jul;39(7):2105-2113. doi: 10.1007/s00467-024-06300-0.
40. Woźniak MM, Mitek-Palusińska J. Imaging urolithiasis: complications and interventions in children. *Pediatr Radiol*. 2023 Apr;53(4):706-713.doi:10.1007/s00247-022-05558-6.
41. Schrag TA, Diarra D, Veser J. Prevention, diagnosis, and treatment of urolithiasis in geriatric patients - differences, similarities and caveats in comparison to the general population. *Curr Opin Urol*. 2024 May 1;34(3):154-165.doi:10.1097/MOU.0000000000001173.
42. Borgne P, Andrès E, Bilbault P, et al. A Real-World Cost-Effectiveness Study Evaluating Imaging Strategies for the Diagnostic Workup of Renal Colic in the Emergency Department. *Medicina (Kaunas)*. 2023 Feb 28;59(3):475.doi:10.3390/medicina59030475.
43. Tu X, Zhuang XY, Bai XX, et al. Composition analysis of 1,495 cases of upper urinary tract calculi: the role of age and gender. *Eur Rev Med Pharmacol Sci*. 2024 May;28(9):3447-3454. doi: 10.26355/eurrev_202405_36190.
44. Qaoud Y, Al Tali M, Boland F, et al. Comparative evaluation of urolithiasis management options in patients with horseshoe kidney: A systematic review and meta-analysis. *Curr Urol*. 2023 Sep;17(3):193-205. doi:10.1097/CU9.0000000000000199.
45. Firoozeh N, Park SY, Basavalingu D, et al. Reevaluating diagnostic confidence: the impact of delayed excretory phase imaging in CT urography on detecting renal and urinary tract abnormalities. *Abdom Radiol (NY)*. 2025 Aug 11. doi: 10.1007/s00261-025-05145-x.
46. Campo I, Sertorio F, Wong M, et al. Magnetic resonance urography of congenital abnormalities - what the radiologist needs to know. *Pediatr Radiol*. 2022 May;52(5):985-997. doi: 10.1007/s00247-021-05233-2.