



The top 100 cited articles on urological emergencies: A bibliometric analysis

Ürolojik acillerle ilgili en çok atıf alan 100 makale: Bibliyometrik bir analiz

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ABSTRACT

Objective: In this study, we bibliometrically evaluated the top 100 cited articles on urological emergencies published since 1975 with a multidisciplinary and interdisciplinary perspective.

Material and methods: We obtained the data for this study from the Thomson Reuters Web of Science and PubMed. We determined 360 articles which were related directly or indirectly to urological emergencies between 1975 and 2017 and analyzed retrospectively the top 100 cited articles among these.

Results: The mean citation impact factor of the top 100 cited articles was 25.8 ± 50.1 (range: 4-467) between 1991 and 2014. We determined that classical articles were cited for 2588 times and the total number of self-citations was 23 (0.8%). Highest publication rate per year was in 2006 (n=9). Among the institutions which published ≥ 2 articles per year University of Texas led the way with 5 articles. The top 100 articles came from 27 countries and 58% of these are from the USA (n=29), the United Kingdom (n=23) and Germany (n=6). For the top 3 journals of the 33 of top 100 articles most frequently cited were published in journals with an impact factor ≥ 2 namely, Journal of Urology (n=15), British Journal of Urology International (n=13) and Urology (n=5) respectively. The most frequently cited main topics were penile emergencies with 22 articles and acute scrotal problems with 15 articles. Most of the classical articles on urological emergencies were based on clinical researches (n=95) and also we found that the average level of evidence for the top 100 cited articles was 4.16 (range: 1-5). Mostly preferred publishing language was English among this scientific papers (n=90).

Conclusion: Although not considered as a completely unbiased and adequate criterion for scientific evaluations, analysis of the top 100 cited articles provides us with important current data on urological emergencies.

Keywords: Analysis; bibliometrics; emergency; urology.

ÖZ

Amaç: Biz bu çalışmada, 1975 yılından beri ürolojik acillerle ilgili en çok atıf alan 100 makaleyi multidisipliner ve disiplinlerarası bir bakış açısıyla bibliyometrik olarak değerlendirdik.

Gereç ve yöntemler: Bu çalışmanın verilerini The Thomson Reuters Web of Science'den ve PubMed'den elde ettik. 1975-2017 yılları arasındaki ürolojik acillerle direkt veya indirekt olarak ilişkili 360 makale arasından belirledik ve bunlar arasından en çok atıf alan 100 makaleyi geriye dönük olarak analiz ettik.

Bulgular: Çalışmamızın verilerine göre ürolojik acillerle ilgili en çok atıf alan 100 makalenin atf ortalaması $25,8 \pm 50,1$ (range: 4-467) ve atıf yılları aralığı ise 1991-2014 idi. Klasik makalelerin toplam alıntılanma sayısını 2588 ve toplam self-citation sayısını 23 (%0,8) olarak saptadık. Yıllara göre en sık yayın sayısı 2006 yılında kaydedilmiştir (n=9). İki veya daha fazla en sık yayın yapan akademik kuruluş 5 makale ile Texas Üniversitesi (ABD) idi. En sık alıntılanan 100 makalenin 27 ülkeden kaynaklandığını ve bunun da %58'ini sırasıyla ABD (n=29), İngiltere (n=23) ve Almanya'nın (n=6) oluşturduğunu saptadık. En sık atıf alan 100 makalenin 33'ünün impact faktörü 2 ve üzeri olan 3 dergide; Journal of Urology (n=15), British Journal of Urology International (n=13) ve Urology'de (n=5) yayımlandığını belirledik. Çalışmamızın sonuçlarına göre 22 makale ile penil aciller ve 15 makale ile akut skrotal problemler en sık tekrarlanan ana konulardı. Ürolojik acillerle ilgili klasik makalelerin çoğunun klinik araştırmaya dayanan çalışmalar (n=95) olduğunu ve bu yayınların kanıt düzeyi ortalamasını ise 4,16 (range: 1-5) olarak belirledik. Çalışmamızdaki bilimsel makalelerde en çok tercih edilen yayım lisansı İngilizce idi (n=90).

Sonuç Bilimsel değerlendirme açısından tamamen objektif ve yeterli bir ölçüt olarak kabul edilmese de, en çok atıf alan 100 makalenin analizi bize ürolojik acillerle ilgili önemli güncel bilgiler sağlamaktadır.

Anahtar Kelimeler: Analiz; bibliyometri; acil; üroloji.

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Introduction

Urological emergencies are not the most common emergency types seen in the Emergency Room (ER) but they, especially the traumatic ones, pose important medical and/or surgical problems, most of which usually require a multidisciplinary approach.^[1,2] Urological emergency rates and sickness breakdown may alter according to the socioeconomic levels and demographic features of the communities living in different parts of the world. Urological emergencies constitute around 6% of total surgical emergency admissions.^[3] Different clinical researches reported that most commonly encountered urological emergencies in the ER are acute urinary retention, urinary infections and renal colic.^[4-7] In a study by Mondet et al.^[8], the authors reported that the most commonly encountered urological symptom in the ER patients is low back pain (25%) and 5% of the urological emergency patients needed emergency surgical intervention. In a study that lasted for 25 years, Campbell et al.^[9] reported that emergency surgical interventions, including urological emergencies increased over years however duration of hospital stay and mortality rates significantly decreased.

Studies on top 100 cited articles have been conducted for various clinical disciplines by researchers from time to time since the last 25 years.^[10-13] These types of bibliometric studies on top cited articles or classics are actually “topic trend” or “cost effectivity” studies based on an area.^[11] Most cited articles, i.e. “key papers” or “classic papers” systematically reflect scientific dispositions and popular study subjects regarding an area.^[14,15] We prepared this bibliometric study because we believe that it will provide both urological and medical contributions.

Material and methods

Study design

Study Type: Clinical retrospective study. Level III study by the Oxford Centre for Evidence-Based Medicine (The CEBM).^[16]

Data collection

We obtained the data of this study from the Web of Science (WoS) of Thomson Reuters (formerly Institute of Scientific Information-ISI) and PubMed as sources of information. Two authors (H.K. and M.D.) independently and with consensus identified the articles published between 1975 and 2017 with the keywords “urological emergencies”. For this purpose, the authors accessed the WoS Core Collection and PubMed first on 05.04.2017 and obtained a total of 360 articles and included top 100 cited articles related directly or indirectly (as a complication of interventions and treatments or diagnostic procedures and etc. of other medical disciplines) with urological emergencies among these (Table 1). The authors (H.K. and M.D.) conducted a bibliometric analysis on the top 100 cited articles according to their distribution per

year, citation numbers, study types, publication languages, funding sources, number of authors contributed, countries and institutions of origin, and journals they published and main topics. We used the first institutions for authors with more than one institution and also, the country of origin was defined by the address provided by the first author. Each article was classified into levels of evidence on a scale of I to V as per previously described guidelines by the Oxford Centre for Evidence-Based Medicine (The CEBM).^[16] According to the CEBM, Level I evidence consisted of randomised clinical trials or meta-analysis of randomized clinical trials. Level II evidence consisted primarily of cohort studies. Level III evidence consisted of case-control studies and compared two or more groups where the data were collected retrospectively. Level IV evidence consisted of case series. Level V evidence consisted of case reports and basic science articles.

We did not perform an article-based self-citation analysis because according to WoS database, the number of total self-citations was very small for the top 100 cited articles.

Statistical analysis

Basic statistical methods have been used in the study. All data were expressed as a percentage, number, bar chart and mean±standard deviation on the tables.

Ethical statement

All authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki “Ethical Principles for Medical Research Involving Human Subjects”. This study did not need to be approved by an ethics committee since it performed a bibliometric analysis or citation analysis of available published classical studies.

Results

Top 100 articles among the articles published between 1975 and 2017 on urological emergencies were listed based on their citation numbers. The mean number of citations for the top 100 articles was 25.88±50.12 (min-max:4-467; Median=13 and Mod=11). We determined that the total number of 2588 citations were made including 23 (0.8%) self-citations. The mean number of authors for the top 100 articles was 4.69±2.45 (min-max:1-13). Only two proceedings papers were listed among top 100 articles. These were Nöske et al.^[17] (Annual Meeting of the American-Urological-Association Location: Orlando, FL Date: May 04-09, 1997) and Patel et al.^[18] (64th Annual Scientific Meeting and Postgraduate Course Program, Southeastern-Surgical-Congress Location: Tampa, FL Date: Feb 04-07, 1996) (Table 1). Highest publication rate per year for top 100 articles is 9 articles in 2006 (range: 1991-2014) (Figure 1). We also determined that total of 27 funding agencies sponsored some of the top 100 articles.

Table 1. The top 100 cited articles on urological emergencies (part 1 of 4)

Rank	Article	Times cited
1.	Gupta K, Hooton TM, Naber KG, Wullt B, Colgan R, Miller LG, et al. International Clinical 467 Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. <i>Clin Infect Dis</i> 2011;52:e103-20.	467
2.	Gitlin MJ. Psychotropic medications and their effects on sexual function: diagnosis, biology, and treatment approaches. <i>J Clin Psychiatry</i> 1994;55:406-13.	147
3.	Vieweg J, Teh C, Freed K, Leder RA, Smith RH, Nelson RH, et al. Unenhanced helical computerized tomography for the evaluation of patients with acute flank pain. <i>J Urol</i> 1998;160:679-84.	112
4.	Asgari MA, Hosseini SY, Safarinejad MR, Samadzadeh B, Bardideh AR. Penile fractures: Evaluation, therapeutic approaches and long-term results. <i>J Urol</i> 1996;155:148-9.	78
5.	Husmann DA, Gilling PJ, Perry MO, Morris JS, Boone TB. Major renal lacerations with a devitalized fragment following blunt abdominal trauma: a comparison between nonoperative (expectant) versus surgical management. <i>J Urol</i> 1993;150:1774-7.	76
6.	Griebing TL. Urologic diseases in America project: trends in resource use for urinary tract infections in women. <i>J Urol</i> 2005;173:1281-7.	73
7.	Thorpe AC, Cleary R, Coles J, Vernon S, Reynolds J, Neal DE. Deaths and complications following prostatectomy in 1400 men in the northern region of England. Northern Regional Prostate Audit Group. <i>Br J Urol</i> 1994;74:559-65.	73
8.	McAndrew HF, Pemberton R, Kikiros CS, Gollow I. The incidence and investigation of acute scrotal problems in children. <i>Pediatr Surg Int</i> 2002;18:435-7.	58
9.	Winstock AR, Mitcheson L, Gillatt DA, Cottrell AM. The prevalence and natural history of urinary symptoms among recreational ketamine users. <i>BJU Int</i> 2012;110(11):1762-6.	57
10.	Brown J. Diagnostic and treatment patterns for renal colic in US emergency departments. <i>Int Urol Nephrol</i> 2006;38:87-92.	54
11.	Pohlemann T, Culemann U, Gansslen A, Tscherne H. The severe pelvic injury with pelvic mass hemorrhage: determining severity of hemorrhage and clinical experience with emergency stabilization. <i>Unfallchirurg</i> 1996;99:734-43.	53
12.	Ahluwalia RS, Johal N, Kouriefs C, Kooiman G, Montgomery BS, Plail RO. The surgical risk of suprapubic catheter insertion and long-term sequelae. <i>Ann R Coll Surg Engl</i> 2006; 88:210-3.	51
13.	Goldman SM, Sandler CM, Corriere JN Jr, McGuire EJ. Blunt urethral trauma: A unified, anatomical mechanical classification. <i>J Urol</i> 1997;157:85-9.	49
14.	Sood A, Sarangi S, Pandey A, Murugiah K. YouTube as a source of information on kidney stone disease. <i>Urology</i> 2011;77:558-62.	47
15.	Siegmeth A, Mullner T, Kukla C, Vécsei V. Accompanying injuries in severe pelvic trauma. <i>Unfallchirurg</i> 2000;103: 572-81.	32
16.	Dokmeci D, Inan M, Basaran UN, Yalcin O, Aydogdu N, Turan FN, et al. Protective effect of L-carnitine on testicular ischaemia-reperfusion injury in rats. <i>Cell Biochem Funct</i> 2007;25:611-8.	31
17.	Nöske HD, Kraus SW, Altinkilic BM, Weidner W. Historical milestones regarding torsion of the scrotal organs. <i>J Urol</i> 1998; 159(1):13-6. (Conference: Annual Meeting of the American-Urological-Association Location: Orlando, FL Date: May 04-09, 1997).	30
18.	Sheridan WG, White AT, Havard T, Crosby DL. Nonspecific Abdominal-Pain-The Resource Implications. <i>Ann R Coll Surg Engl</i> 1992;74:181-5.	30
19.	Reisiger KE, Landman J, Kibel A, et al. Laparoscopic renal surgery and the risk of rhabdomyolysis: diagnosis and treatment. <i>Urology</i> 2005;66:29-35.	28
20.	Molokwu CN, Somani BK, Goodman CM. Outcomes of scrotal exploration for acute scrotal pain suspicious of testicular torsion: a consecutive case series of 173 patients. <i>BJU Int</i> 2011;107:990-3.	27
21.	Yoshimura K, Utsunomiya N, Ichioka K, Ueda N, Matsui Y, Terai A. Emergency drainage for urosepsis associated with upper urinary tract calculi. <i>J Urol</i> 2005;173:458-62.	27
22.	Fitzpatrick JM, Kirby RS. Management of acute urinary retention. <i>BJU International</i> 2006;97:16-20.	26
23.	Burns-Cox N, Campbell WB, van Nimmen BA, Vercaeren PM, Lucarotti M. Surgical care and outcome for patients in their nineties. <i>Br J Surg</i> 1997;84:496-8.	26

Table 1. The top 100 cited articles on urological emergencies (part 2 of 4)

Rank	Article	Times cited
24.	Ramsey S, Robertson A, Ablett MJ, Meddings RN, Hollins GW, Little B. Evidence-based drainage of infected hydronephrosis secondary to ureteric calculi. <i>J Endourol</i> 2010;24:185-9.	25
25.	Greenwell TJ, Woodhams S, Denton ER, MacKenzie A, Rankin SC, Popert R. One year's clinical experience with unenhanced spiral computed tomography for the assessment of acute loin pain suggestive of renal colic. <i>BJU Int</i> 2000;85(6):632-6.	25
26.	Kamdar C, Mooppan UM, Kim H, Gulmi FA. Penile fracture: preoperative evaluation and surgical technique for optimal patient outcome. <i>BJU Int</i> 2008;102:1640-4.	24
27.	Hsieh CH, Chen RJ, Fang JF, Lin BC, Hsu YP, Kao JL, et al. Diagnosis and management of bladder injury by trauma surgeons. <i>Am J Surg</i> 2002;184:143-7.	24
28.	Campbell WB, Lee EJ, Van de Sijpe K, Gooding J, Cooper MJ. A 25-year study of emergency surgical admissions. <i>Ann R Coll Surg Engl</i> 2002;84:273-7.	24
29.	Smithers BM, O'Loughlin B, Strong RW. Diagnosis of ruptured diaphragm following blunt trauma: results from 85 cases. <i>Aust N Z J Surg</i> 1991;61:737-41.	24
30.	Muneer A, Minhas S, Arya M, Ralph DJ. Stuttering priapism--a review of the therapeutic options. <i>Int J Clin Pract</i> 2008;62:1265-70.	23
31.	Altman AL, Seftel AD, Brown SL, Hampel N. Cocaine associated priapism. <i>J Urol</i> 1999; 161:1817-8.	22
32.	Dundee P, Bouchier-Hayes D, Haxhimolla H, Dowling R, Costello A. Renal tract calculi: comparison of stone size on plain radiography and noncontrast spiral CT scan. <i>J Endourol</i> 2006;20:1005-9.	21
33.	Wagenlehner FM, Lichtenstern C, Rolfes C, Mayer K, Uhle F, Weidner W, et al. Diagnosis and management for urosepsis. <i>Int J Urol</i> 2013;20:963-70.	20
34.	Wagenlehner FM, Weidner W, Naber KG. Optimal management of urosepsis from the neurological perspective. <i>Int J Antimicrob Agents</i> 2007;30:390-7.	20
35.	Speziale F, Sbarigia E, Grossi R, Maraglino C, Fiorani P. Inflammatory aneurysms of the abdominal aorta involving the ureters: is combined treatment really necessary? <i>J Urol</i> 2001; 165:27-31.	20
36.	Shariat SF, Jenkins A, Roehrborn CG, Karam JA, Stage KH, Karakiewicz PI. Features and outcomes of patients with grade IV renal injury. <i>BJU Int</i> 2008;102:728-33.	19
37.	Sadeghi-Nejad H, Dogra V, Seftel AD, Seftel AD, Mohamed MA. Priapism. <i>Radiol Clin North Am</i> 2004;42:427-43.	19
38.	Khan MA, Shaw G, Paris AM. Is microscopic haematuria a urological emergency? <i>BJU Int</i> 2002;90:355-7.	19
39.	Al-Shaiji TF, Amann J, Brock GB. Fractured penis: diagnosis and management. <i>J Sex Med</i> 2009;6:3231-40.	17
40.	Yagmurdur H, Ayyildiz A, Karaguzel E, Ogun E, Surer H, Caydere M et al. The preventive effects of thiopental and propofol on testicular ischemia-reperfusion injury. <i>Acta Anaesthesiol Scand</i> 2006;50:1238-43.	17
41.	Philip J, Selvan D, Desmond AD. Mumps orchitis in the non-immune postpubertal male: a resurgent threat to male fertility? <i>BJU Int</i> 2006;97:138-41.	17
42.	Emberton M, Fitzpatrick JM. The Reten-World survey of the management of acute urinary retention: preliminary results. <i>BJU Int</i> 2008;101:27-32.	16
43.	Yossepowitch O, Baniel J, Livne PM. Urological injuries during cesarean section: intraoperative diagnosis and management. <i>J Urol</i> 2004;172:196-9.	16
44.	Hinev A. Fracture of the penis: treatment and complications. <i>Acta Med Okayama</i> 2000;54:211-6.	16
45.	Bayne AP, Madden-Fuentes RJ, Jones EA, Cisek LJ, Gonzales ET Jr, Reavis KM, et al. Factors associated with delayed treatment of acute testicular torsion--do demographics or interhospital transfer matter? <i>J Urol</i> 2010;184:1743-7.	15
46.	Zilberman D, Inbar Y, Heyman Z, Shinhar D, Bilik R, Avigad I, et al. Torsion of the cryptorchid testis--can it be salvaged? <i>J Urol</i> 2006;175:2287-9.	15
47.	Thomas K, Chow K, Kirby RS. Acute urinary retention: a review of the aetiology and management. <i>Prostate Cancer Prostatic Dis</i> 2004;7:32-7.	15
48.	Volpe MA, Pachter EM, Scalea TM, Macchia RJ, Mydlo JH. Is there a difference in outcome when treating traumatic intraperitoneal bladder rupture with or without a suprapubic tube? <i>J Urol</i> 1999;161:1103-5.	15

Table 1. The top 100 cited articles on urological emergencies (part 3 of 4)

Rank	Article	Times cited
49.	Patel VG, Walker ML. The role of "one-shot" intravenous pyelogram in evaluation of penetrating abdominal trauma. <i>Am Surg</i> 1997;63:350-3.(Conference: 64th Annual Scientific Meeting and Postgraduate Course Program, Southeastern-Surgical-Congress Location: Tampa, FL Date: Feb 04-07, 1996).	14
50.	Liguori G, Amodeo A, Mucelli FP, Patel H, Marco D, Belgrano E, et al. Intractable haematuria: long-term results after selective embolization of the internal iliac arteries. <i>BJU Int</i> 2010;106:500-3.	13
51.	Ponniah A, Brown CT, Taylor P. Priapism secondary to leukemia: effective management with prompt leukapheresis. <i>Int J Urol</i> 2004;11:809-10.	13
52.	Vilke GM, Harrigan RA, Ufberg JW, Chan TC. Emergency evaluation and treatment of priapism. <i>J Emerg Med</i> 2004;26:325-9.	13
53.	Borofsky MS, Walter D, Shah O, Goldfarb DS, Mues AC, Makarov DV. Surgical decompression is associated with decreased mortality in patients with sepsis and ureteral calculi. <i>J Urol</i> 2013;189:946-51.	12
54.	Chan L, Nade S, Brooks A, Deane S. Experience with lower urinary tract disruptions associated with pelvic fractures: implications for emergency room management. <i>Aust N Z J Surg</i> 1994;64:395-9.	12
55.	Ning C, Wen J, Zhang Y, Dai Y, Wang W, Zhang W, et al. Excess adenosine A2B receptor signaling contributes to priapism through HIF-1 α mediated reduction of PDE5 gene expression. <i>FASEB J</i> 2014;28:2725-35.	11
56.	Donaldson JF, Rees RW, Steinbrecher HA. Response to Commentary to 'Priapism in children: a comprehensive review and clinical guideline'. <i>J Pediatr Urol</i> 2014;10:25.	11
57.	van Nieuwkoop C, Hoppe BP, Bonten TN, Van't Wout JW, Aarts NJ, Mertens BJ, et al. Predicting the need for radiologic imaging in adults with febrile urinary tract infection. <i>Clin Infect Dis</i> 2010;51:1266-72.	11
58.	Torremadé Barreda J, Millán Scheiding M, Suárez Fernández C, Cuadrado Campaña JM, Rodríguez Aguilera J, et al. Fournier gangrene. A retrospective study of 41 cases. <i>CirEsp</i> 2010;87:218-23.	11
59.	Sterrett SP, Moore NW, Nakada SY. Emergency room follow-up trends in urolithiasis: single-center report. <i>Urology</i> 2009;73:1195-7.	11
60.	Akcora B, Altug ME, Kontas T, Atik E. The protective effect of darbepoetin alfa on experimental testicular torsion and detorsion injury. <i>Int J Urol</i> 2007;14:846-50.	11
61.	Regalado J, Mendoza H, Aizpuru F, Altuna E, Gómez M, Cía JM. Acute pyelonephritis treated under "home hospitalization." Ten years' experience. <i>Enferm Infecc Microbiol Clin</i> 2006;24:629-33.	11
62.	Rosser CJ, Zagoria R, Dixon R, Scurry WC, Bare RL, McCullough DL, et al. Is there a learning curve in diagnosing urolithiasis with noncontrast helical computed tomography? <i>Can Assoc Radiol J</i> 2000;51:177-81.	11
63.	Colombo F, Lovaria A, Saccheri S, Pozzoni F, Montanaris E. Arterial embolization in the treatment of post-traumatic priapism. <i>Ann Urol (Paris)</i> 1999;33:210-8.	11
64.	Dawson C, Whitfield H. ABC of Urology. Urological emergencies in general practice. <i>BMJ</i> 1996;312:838-40.	11
65.	Karaguzel E, Kadihasanoglu M, Kutlu O. Mechanisms of testicular torsion and potential protective agents. <i>Nat Rev Urol</i> 2014;11:391-9.	10
66.	Graham A, Luber S, Wolfson AB. Urolithiasis in the emergency department. <i>Emerg Med Clin North Am</i> 2011;29:519-38.	10
67.	Kara E, Müezzinoğlu T, Temeltas G, Dinçer L, Kaya Y, Sakarya A, et al. Evaluation of risk factors and severity of a life threatening surgical emergency: Fournier's gangrene (a report of 15 cases). <i>Acta Chir Belg</i> 2009;109:191-7.	10
68.	May M, Gunia S, Helke C, Kheyri R, Hoschke B. Penile entrapment in a plastic bottle -a case for using an oscillating splint saw. <i>Int Urol Nephrol</i> 2006;38:93-5.	10
69.	Chezian C, Pye J, Jenkinson LR. The next millennium--are we becoming emergency surgeons? A seven year audit of surgical and urological admissions in a rural district general hospital. <i>Ann R Coll Surg Engl</i> 2001;83:117-20.	10
70.	Khoubehi B, Watkin NA, Mee AD, Ogden CW. Morbidity and the impact on daily activities associated with catheter drainage after acute urinary retention. <i>BJU Int</i> 2000;85:1033-6.	10
71.	Moore CP, Marr JK, Huang CJ. Cryptorchid testicular torsion. <i>Pediatr Emerg Care</i> 2011;27:121-3.	9
72.	Jayaram G, Rao P. Safety of trazodone as a sleep agent for inpatients. <i>Psychosomatics</i> 2005;46:367-9.	9
73.	Dubin N, Razack AH. Priapism: ecstasy related? <i>Urology</i> 2000;56(6):1057.	9

Table 1. The top 100 cited articles on urological emergencies (part 4 of 4)

Rank	Article	Times cited
74.	Bennett RT, Gill B, Kogan SJ. Epididymitis in children: the circumcision factor? J Urol 1998;160:1842-4.	9
75.	Wróblewska M, Kuzaka B, Borkowski T, Kuzaka P, Kawecki D, Radziszewski P. Fournier's gangrene--current concepts. Pol J Microbiol 2014;63:267-73.	8
76.	Patatas K, Panditaratne N, Wah TM, Weston MJ, Irving HC. Emergency department imaging protocol for suspected acute renal colic: re-evaluating our service.Br J Radiol 2012;85:1118-22.	8
77.	Rodgers R, Latif Z, Copland M. How I manage priapism in chronic myeloid leukaemia patients. Br J Haematol 2012;158:155-64.8	
78.	Morrison BF, Burnett AL. Priapism in hematological and coagulative disorders: an update. Nat Rev Urol 2011;8:223-30.	8
79.	McGahan PJ, Richards JR, Bair AE, Rose JS.Ultrasound detection of blunt urological trauma: a 6-year study. Injury 2005;36:762-70.	8
80.	Hegarty PK, Walsh E, Corcoran MO. Exploration of the acute scrotum: a retrospective analysis of 100 consecutive cases. Ir J Med Sci 2001;170:181-2.	8
81.	Velmahos GC, Safaoui M, Demetriades D. Management of shotgun wounds: do we need classification systems? Int Surg 1999;84:99-104.	8
82.	Dubin J,Davis JE. Penile emergencies. Emerg Med Clin North Am 2011;29:485-99.	7
83.	Maruschke M, Seiter H. Total infarction of the penis caused by entrapment in a plastic bottle. Urologe A 2004;43:843-4.	7
84.	Mondet F, Chartier-Kastler E, Yonneau L, Bohin D, Barrou B, Richard F. Epidemiology of urological emergencies in a teaching hospital. Prog Urol 2002;12:437-42.	7
85.	Sinisi AA, Di Finizio B, Lettieri F, Pasquali D, Scurini C, De Bellis A,et al. Late gonadal function and autoimmunization in familial testicular torsion. Arch Androl 1993;30:147-52.	7
86.	Itano N, Ferlic E, Nunez-Nateras R, Humphreys MR. Medical expulsive therapy in a tertiary care emergency department. Urology 2012;79:1242-6.	6
87.	Kaplon DM, Sterrett S, Nakada SY. Medical management of acute urolithiasis in one American academic emergency room. BJU Int 2010;105:856-8.	6
88.	Berger I, Wildhofen S, Lee A, Ponholzer A, Rauchenwald M, Zechner O,et al. Emergency nephrectomy due to severe urosepsis: a retrospective, multicentre analysis of 65 cases. BJU Int 2009;104:386-90.	6
89.	Fall B, Diao B, Fall PA, Diallo Y, Sow Y, Ondongo AA, et al. Urological emergencies at the Dakar university teaching hospital: epidemiological,clinical and therapeutic features. Prog Urol 2008;18:650-3.	6
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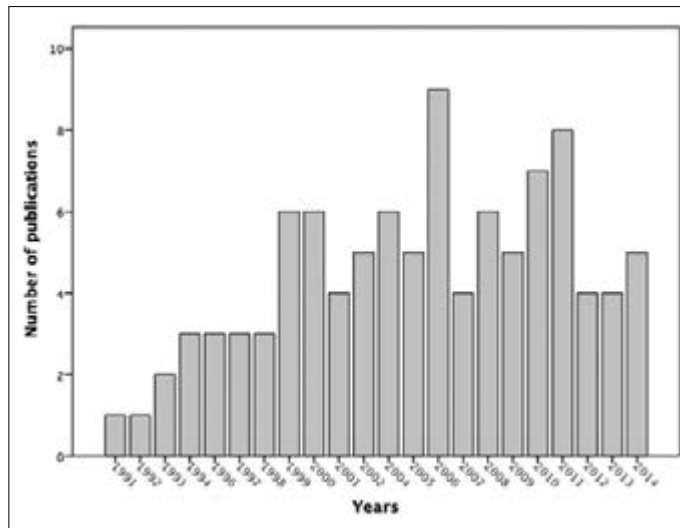


Figure 1. Number of items published year by year on urological emergencies in 100 top cited articles between 1991, and 2014 (incl.) (from Web of Science database, 2017)

Ninety-five percent of the top 100 articles was based on 95 clinical studies, and only 5 articles were experimental animal studies. Most of top 100 cited articles were original research (57%) studies followed by case-control studies (16%), observational-descriptive studies (14%), cohort studies (4%), prospective comparative studies (8%), randomised control studies (RCTs) (2%), meta-analysis of RCT (2%) and systematic reviews (1%). Also case series (26%), review articles (11%), case reports (5%) and expert opinion or committee reports (1%) were also published. Most preferred publication language of the top 100 articles was English (90%), followed by French (10%); German (5%), and Spanish (2%).

Top 100 articles came from 27 countries and also 58% of these are from the United States (29%) the United Kingdom (23%) and Germany (6%) (Table 2).

Top 100 articles on urological emergencies were published by 83 institutions. We determined that 12 institutions published 2 or more articles amounting to a total 29 publications. The institution that published the greatest number of articles among the institutions that published 2 or more articles was University of Texas (USA) with 5 publications. Seven institutions that published 2 or more articles were from USA (Table 3).

Even though top 100 articles on urological emergencies were published in 52 journals, only 17 journals published 2 or more articles. Total number of 65 articles were published in these 17 journals. Impact factor (IF) of the 33% of top 100 articles was ≥ 2 and mainly published in 3 journals (Journal of Urology, British Journal of Urology International and Urology) (Table 4).

Table 2. Countries of origin of the top 100 cited articles on urological emergencies

Country	Number
The United States of America	29
The United Kingdom	23
Germany	6
Turkey	5
Italy	5
Ireland	4
Australia	3
Iran	2
Austria	2
Israel	2
Spain	2
France	2
India	1
Japan	1
Scotland	1
Taiwan	1
Canada	1
Bulgaria	1
Netherlands	1
Malaysia	1
Poland	1
Jamaica	1
Senegal	1
Singapore	1
Finland	1
United Arab Emirates	1
Guinea	1

The majority of the top cited articles subtypes were related to therapeutic (43/100), diagnostic (15/100) and prognostic (11/100) subjects respectively (Table 5). The average level of evidence was 4.16 (range: 1-5).

We determined 24 main topics in the top 100 cited articles regarding urological emergencies in this study. Penile emergencies with 22 articles and acute scrotal problems with 15 articles were most common main topics (Table 6). Most of the articles on penile emergencies were about priapism (14 articles) and penile fractures (5 articles) while most of the articles on acute scrotal problems were about testis torsion (11 articles).

We found that 12 authors were listed as the first author (7%) and/or co-author (18%) 2 or more times in top cited 100 articles. We determined that the most frequent first author is Wagenlehner FM with 2 articles and most frequent co-author is Weidner with 3 articles.^[17,19,20] Two authors were from Justus-Liebig-University (Germany) (Table 1).

Discussion

There are numerous bibliometric article analyses conducted in various areas of medicine.^[21-24] In PubMed only over 100 bibliometric articles were published between 1993 and 2017. Recently, local or country-specific bibliometric analysis have been also reported.^[25] Even though there are many publications on urological emergencies in current literature, there are very few bibliometric studies.^[26] In this study, we conducted the bibliometric analysis of top 100 cited articles on urological emergencies since 1975 among 360 articles we obtained by using the databases in the WoS of Thomson Reuters and PubMed. WoS databases include important information for determining citations, which is an important indication of the quality of an article, and researching other academic impacts of the articles since 1945.^[27]

We determined that the most cited article (467-fold cited) was “International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases” by Gupta et al.^[28]

Citation numbers and being published in journals with high impact factors are important indicators of the quality of an article. Classically, it is not expected for the articles published in

Table 3. Institutions of origin with 2 or more top 100 cited articles on urological emergencies

Rank	Institution	Number
1	University of Texas (USA)	5
2	St. George's Hospital Medical School (England)	3
3	Justus-Liebig-Universität Giessen (Germany)	3
4	Duke University (USA)	2
5	Washington University (USA)	2
6	Royal Devon and Exeter Hospital (England)	2
7	University College London Hospitals (England)	2
8	Case Western Reserve University (USA)	2
9	Tel-Aviv University (Israel)	2
10	University of California (USA)	2
11	University of Wisconsin (USA)	2
12	Georgetown University (USA)	2

Table 4. Journals in which the top 100 cited articles on urological emergencies were published

Rank	Journal	No. of articles	Impact Factor*
1	Journal of Urology	15	5.157
2	British Journal of Urology International	13	4.387
3	Urology	5	2.309
4	Annals of The Royal College of Surgeons of England	4	1.350
5	International Journal of Urology	3	1.844
6	Progrès en Urologie	3	0.606
7	Clinical Infectious Diseases	2	8.216
8	International Urology and Nephrology	2	1.564
9	Der Unfallchirurg	2	0.467
10	Journal of Endourology	2	2.270
11	Australian and New Zealand Journal of Surgery	2	1.513
12	Annales D'Urologie	2	0.05
13	Nature Reviews Urology	2	7.735
14	Emergency Medicine Clinics of North America	2	1.360
15	Singapore Medical Journal	2	0.667
16	Canadian Urological Association Journal	2	1.082

*2016 Journal Citation Reports (Clarivate Analytics, 2017)

Table 5. Levels of evidence by the CEBM* of the top 100 cited articles on urological emergencies

Country	Number
Therapeutic	
Level 1	4
Level 2	6
Level 3	11
Level 4	19
Level 5	3
Diagnostic	
Level 1	3
Level 3	7
Level 4	5
Prognostic	
Level 2	1
Level 3	2
Level 4	8
Cost analytic	
Level 3	3
Epidemiologic	
Level 3	6
Level 4	2
Diagnostic/Therapeutic	
Level 3	1
Level 4	8
Diagnostic/Prognostic	
Level 4	1
Aetiologic/Therapeutic	
Level 3	1
Level 4	1
Level 5	1
Aetiologic/Pathophysiologic	
Level 2	1
Level 3	2
Level 4	3
Level 5	1

* The Oxford Centre for Evidence-Based Medicine Levels of Evidence (March 2009).^[16]

recent years to be cited as much as the older ones. In addition to this, there are many factors determining whether an article will be cited in high numbers or not.^[29] Level III and level IV being the levels of evidence of the articles and relatively moderate cite

Table 6. Most common subject matters in the top 100 cited articles on urological emergencies

Subject	Number
Penile emergencies	22
Acute scrotal problems	15
Acute urolithiasis	8
Emergency urological admissions	6
Acute urinary tract infections	5
Urosepsis	5
Acute urinary retention	5
Acute surgical complications	4
Severe pelvic injury	4
Renal colic-acute flank pain	3
Bladder injury	3
Haematuria	3
Fournier's gangrene	3
Renal injury	2
Blunt urological trauma	2
Penetrating abdominal trauma-shotgun wounds	2
Nonspecific abdominal pain	1
Urological procedural risks	1
Infected hydronephrosis-urolithiasis	1
Urological emergencies-general medicine practices	1
Urinary tract complications-abdominal aortic aneurysm	1
Spontaneous perirenal haemorrhage-solid renal tumours	1
Urological vascular complications-interventional radiology	1
Acute urinary tract symptoms-recreational ketamine users	1

averages in our study are striking. Despite the level-of-evidence scale used is specifically designed to assess clinical level of evidence and clinically relevant studies in a “classic papers” research by Joyce et al.^[21], it was reported that there isn’t a positive correlation between high numbers of citation and high level of evidence. Similarly, there may not be a positive correlation between being the author of a highly-cited article and being productive.^[30]

Even though the citation numbers of the top 100 cited articles in our study have a high range (4-467), their citation averages are lower when compared to other bibliographic studies (citation average was 25.8; Mod and Median value were 11 and 13 respectively). This might be caused because urological emergencies are not a subspecialty on their own and there are very few publications in this area. Besides, lower citation numbers of these studies may also be associated with their more retrospective design (90%) than other bibliometric studies and relatively

higher number of studies based on reviews and case reports (39%). Garfield^[31] once underlined that highly-cited articles are predominantly review studies. In their research on reports of less cited cardiovascular articles published within 5 years, Ranasinghe et al.^[32] underlined that there are many factors effective on the low citation numbers and publication period for articles. The reason why the articles published before 1991 and after 2014 are not listed is because they either included information that were not updated or they were published very recently.

A self-citation is a reference to an article from the same journal. Self-citations can make up a significant portion of the citations a journal gives and receives each year. Self-citations can be an important scientometric criterion in determining values of the articles and scientific journals.^[27,33] In our study, we detected very few self-citations (23/2588 citations, rate: 0.8%). This may indicate that the influential articles on urological emergencies are mostly cited by other authors and published in medical journals with high impact factor.

Many articles in the current literature are written in English.^[33] However, as it can be also seen in our research, even though in a very low percentage, some other languages as French, German, and Spanish had been preferred in these articles. It was seen that at least half (n=52) of the papers came from the USA and the UK in our study. This is consistent with other bibliometric studies where the USA contributed most of the papers.^[11] Common article language may be related to the countries these articles originate from. The USA is still the leading country in the production of scientific publications in many areas.^[27,34] It can easily be seen that the USA is the leading country in the top 100 cited articles on urological emergencies in terms of publication number per institution and total number of institutions contributed to these publications. High IF is an important indicator of a journal's quality.^[35] The fact that the journal with the highest publication rate of urological emergencies among the journals that published 2 or more articles is Journal of Urology (current IF: 5.157) is important because it indicates that these articles are preferred by journals with high IF.

Some of urological emergencies require surgical treatment. Such as testicular torsion, urethral injuries, penile traumas, renal lacerations, pyonephrosis, acute urinary retention and renal calculi causing hydronephrosis are the most common of these.^[36,37] Acute scrotum, penile emergencies, hematuria, urinary retention, abdominal masses, and genital abnormalities can be listed among pediatric urogenital emergencies.^[38] Sexual emergencies are also handled as a urological emergency. These emergencies consist primarily of urethral, penile and scrotal emergencies.^[39] According to the data of our study, most preferred subject matters of urological emergencies in the top 100 cited articles or "classic papers" were penile emergencies and

acute scrotum. Most frequent article subjects were priapism and penile fractures in penile emergencies and testis torsion in acute scrotum. These subjects are especially important among urological emergencies because they require urgent medical and surgical intervention. Urosepsis was the common theme in both studies where, the most frequent first author and co-author were Wagenlehner and Weidner, respectively.^[17,19,20] Furthermore, the subject of another study where Weidner^[17] was co-author was testicular torsion. Moreover, this last study was published as a proceedings paper.

In terms of the literature contribution of the citation analysis to this sub-branch or subspecialty of urology, some classic papers are worth mentioning. In a study on classical subjects of urology, Heldwein et al.^[13] showed that the most common topic among classic articles was prostate cancer and prostate-specific antigen (33.5%), followed by bladder cancer and benign prostatic hyperplasia. Nason et al.^[14] found that oncology (n=54) and renal transplantation (n=22) were the most common subspecialties where the influential articles in urology had been published. In a study Hennessey et al.^[23] determined that urooncology (n=51) and renal transplantation (n=20) were the most commonly represented urological subfields in the top 100 cited articles. The common theme of these three researches was urooncology. However, the common emphasis of the last two studies is renal transplantation. Unlike previous bibliometric researches, Ipekci et al.^[25] showed that the most cited publications in Turkey belonged to urolithiasis (23.5%) and andrology areas (infertility: 15.6% and sexual dysfunction: 11.7%) in their country-based research. In another study Thomas et al.^[15] suggested that the most cited papers or classic papers in urology varied depending on the time period studied. In a bibliometric analysis on acute kidney injury by Liu et al.^[26] it was found that most of the clinical articles (55%) among the top 100 cited articles investigated patients with any cause of acute kidney injury, followed by the specific causes of contrast-induced acute kidney injury (25%) and cardiac surgery-induced acute kidney injury (15%) of the top 100 cited articles.

Study limitation

Only total number times the articles cited, number of citations with or without self-citations are presented in this study. But, we did not perform an article-based self-citation analysis which is a limitation of this study.

In conclusion, bibliometric article studies, just like in many other areas, provided us with many systematical achievements in urological emergencies. Most frequent main topics in top 100 cited articles were determined to be acute scrotal problems and penile emergencies. Citation range of top cited articles on urological emergencies is extensive. Most of the publications were originated from the USA and English is the preferred language for scientific articles. Even though there were relatively fewer

published articles when compared to other medical specialties or subspecialties, most of the classical articles on urological emergencies were published in journals with high impact factor. Among the top 100 cited articles on urological emergencies, relatively higher number of retrospective articles and case-case series were published. In addition to this, since these research subjects reflect the most updated information, they might be instructive for many prospective researches on emergency urological issues. In addition, bibliometric studies may attract the attention of funding agencies on promising research areas in a variety of fields.

Ethics Committee Approval: Authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki “Ethical Principles for Medical Research Involving Human Subjects”, (amended in October 2013).

Peer-review: Externally peer-reviewed.

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