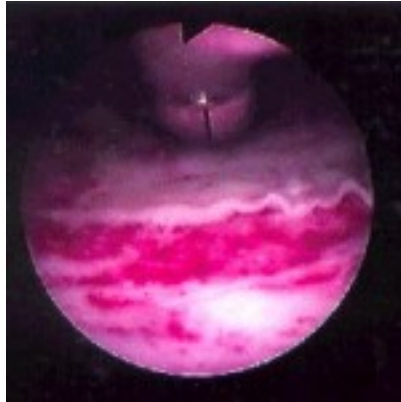


[What Is Ketamine Cystitis? Learn How To Prevent And Treat It](http://www.ic-network.com/conditions/ketamine-cystitis/)

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Ketamine Cystitis Information Center

Ketamine cystitis (or ketamine bladder syndrome) is a fairly new reported side effect to K use, first documented in 2007. Since then, clinicians in Asia, Canada, the USA and Europe have reported treating young, teenage ketamine abusers who appear to have severe and possibly irreversible bladder, kidney, liver and possible brain damage.



Extreme ketamine use can injure the bladder, causing ulcers (wounds) and fibrosis (stiffening of the bladder walls and shrinkage). Patients often struggle with urinary frequency, urgency, pressure, pain, incontinence and/or bleeding from the bladder. They can receive a variety of diagnoses including ulcerative bladder, interstitial cystitis or ketamine cystitis.

Ketamine may be legitimately prescribed to pain patients suffering from severe neuropathic pain or for malignant or “end of life” pain control. It is not our intent to discourage the use of ketamine for legitimate pain care. Rather we want to raise awareness for this potential side effect.

In recreational and/or criminal use, ketamine is known as a “date rape drug” for its dissociative amnesia effect and has quickly outgrown heroin and methamphetamine as the drug of choice due to its low cost and easy accessibility in many parts of the world. It is commonly used at RAVE parties and is known as a “Club Drug,” often mixed with ecstasy. A mild hallucinogenic, it has several street names including: *Cat Tranquilizer, Cat Valium, Jet, K, Kit Kat, Purple, Special K, Super K, Special La Coke, Super Acid, Vitamin K.*

Diagnosis

Urologists are using the diagnostic criteria for interstitial cystitis, a similar medical condition that results in some bladder damage. Thus, patients will be assessed based upon their symptoms as listed above. Physicians may do a cystoscopy to exam the bladder wall, as well as other functional tests such as a voiding cystogram and/or urodynamics. Ultimately, a hydrodistention with cystoscopy may be used so that the clinician can closely exam the bladder wall. Patients with ketamine induced bladder damage have varying degrees of irritation, inflammation, petechial hemorrhages (bleeding blood vessels) or larger Hunner’s Ulcers in their bladder wall. Bladder capacity is also reduced dramatically. Normal bladder capacity may be 500cc’s however some ketamine addicts have developed a small, stiff bladder that can only hold 50cc’s of urine or less.

It is essential that physicians ask younger patients if they have, or are, using ketamine.

Treatment Options

FOR PRESCRIBED KETAMINE USERS

If you are using ketamine as prescribed by your doctor, please discuss any bladder symptoms you may be having with that doctor. Do NOT stop your medication on the basis of what you read on this website. Please review our “Pain Mgt” link above for more information on how ketamine is used in pain treatment centers.

FOR RECREATIONAL KETAMINE USERS AND/OR KETAMINE ADDICTS

Your first line of defense is to stop using ketamine recreationally. The challenge is that ketamine can cause psychological dependence on the drug. If you are dependent upon ketamine, it is vital that you seek care for your drug use. A local, in-person drug rehab program is ideal and your phonebook should include several listings. It can also be helpful to ask your peers, counselors or therapists, medical care providers and even county health departments who they would suggest for drug rehabilitation services. You deserve the best care and most compassionate counselors available. [Narcotics Anonymous](#) is an invaluable resource for the patient and their family. They offer world wide rehabilitation and support services.

TREATMENTS

Once ketamine use has stopped, therapies that can help reduce irritation and inflammation are vital. Luckily, the AUA Treatment Guidelines for Interstitial Cystitis are available.

Unfortunately, we have only anecdotal data from various physicians regarding the actual effectiveness of these on a ketamine damaged bladder. [Researchers in Canada](#) found that the oral medication Elmiron (pentosan polysulfate) offered some symptomatic relief. Robert Moldwin MD (USA) shared that he treats this aggressively with oral and intravesical agents, particularly the use of anesthetic cocktails comprised of lidocaine, marcaine, triamcinolone and heparin sodium. A [Hong Kong research team](#) shared one experience with bladder augmentation used to expand bladder capacity in an end stage patient. Unfortunately, the patient continued ketamine use after surgery, resulting in more serious complications. However, the authors report that other centers have found success in reducing symptoms and improving voiding through substitution cystoplasty.

Related Research Studies

The first two formal papers discussing ketamine induced bladder dysfunction were published in 2007. Clinicians from Toronto (Canada) described nine patients who were daily ketamine users and who presented with severe dysuria, frequency, urgency and gross hematuria. At cystoscopy, all patients had severe ulcerative cystitis (1). Clinicians in Hong Kong (China) shared a similar presentation of ten street ketamine users diagnosed with ulcerative cystitis (2).

In the first of three articles released in 2008, Drs. Colbunders and Van Erps (Belgium) described the case of a 20 year old man who presented with a seven month history of urinary frequency, nocturia, urgency and pain during urination, as well as episodes of severe bleeding from the bladder shortly after beginning recreational ketamine use. The researchers conclude “We expect that in the future an increasing number of cases of cystitis caused by ketamine use will be seen in young adults.” (3)

While addiction professionals acknowledged that ketamine use was associated with ulcerative colitis, (4) chronic pain specialists in Halifax (Canada) also revealed a case where a young pediatric patient was prescribed a oral medication as a adjuvant medication for chronic pain. After nine days on 8mg/kg per day of ketamine, she developed symptoms of dysuria, frequency, urgency and incontinence. “Her symptoms decreased after decreasing the dose of ketamine to 6mg/kg per day and completely disappeared at 2mg/kg/per day.” Upon increasing the dosage to 5mg/kg per day a few months later, the bladder symptoms returned and against resolved when the dosage was reduced. These researchers conclude that there is, indeed, a dose related effect of ketamine on the bladder mucosa. (5)

The largest study to date was released by researchers in Hong Kong in December 2008 as a follow up to their 2007 publication. They offer an alarming study of 59 ketamine users with moderate to severe lower urinary tract symptoms. Patients had frequency rates from 15 to 90 minutes between voids. Functional voiding capacity was between 20-200 cc’s which represent a dramatic decrease in bladder capacity. Upon cystoscopy, 71% of these patients showed various degrees of bladder mucosal inflammation similar to that seen in interstitial cystitis. Histological examination showed a largely denuded

bladder epithelium and granulation of the lamina propria infiltrated by lymphocytes and eosinophils. Most patients showed detrusor overactivity at very low bladder infusion volumes.

What makes this study alarming is the documentation of severe kidney effects. 51% of the patients showed unilateral or bilateral hydronephrosis on renal ultrasonography. 7% had features suggestive of papillary necrosis.(6)

2009 Update

The first United Kingdom report of ketamine causing painful bladder and urinary tract damage was being released by D. Gillatt, Bristol Urological Institute in a poster session at the 2009 ICS meeting in late September 2009. Twenty long term ketamine users are discussed, displaying symptoms discussed above. Researchers report “progressive urinary tract damage leading to ureteric stricture and renal impairment.” A survey of British Association of Urology (BAUS) members found cases throughout the UK. (7)

Clinicians in Taipei, Taiwan produce solid studies. One team published a case study of a 25 year old man with ketamine induced bladder and kidney dysfunction. He admitted to using ketamine for four years recreationally. Symptoms were advanced, including gross hematuria and disabling, frequent urination. (8) In a study of eleven ketamine users, researchers find “irreversible histological changes in the urinary tract” noting that the dosage and duration of use of ketamine in causing this damage is still unclear. (9)

Researchers in Hong Kong discover dilated common bile ducts in ketamine users suggesting that the liver is also affected (10) and the bladder, ureters and kidney show invasion of mononuclear white cells in surrounding tissues. Lose of nerve fibers in the muscles of the bladder are also revealed. (11)

Can ketamine use lead to the development of cancer. In a study of 17 ketamine users, researchers in the UK found significant pathologies in the bladder wall that “mimic” carcinoma in situ but they conclude that the long term risk remains unknown. (12)

2010 Update

Researchers in Malaysian report on the case of a young Malay woman who was initially misdiagnosed with urinary tract infection. When she was unresponsive to therapy, additional investigation revealed a history of ketamine use. Authors encourage clinicians to be aware of this emerging public health concern. (13)

Radiologists in England present stunning results of 23 ketamine users. “Ultrasound demonstrated small bladder volume and wall thickening. CT revealed marked, generalized bladder wall thickening, mucosal enhancement, and perivesical inflammation. Ureteric wall thickening and enhancement were also observed. In advanced cases ureteric narrowing and strictures were identified using both CT and IVU. Correlation of clinical history, radiological and pathological findings was performed to confirm the diagnosis.” The authors conclude “This case series illustrates the harmful effects of ketamine on the urinary tract and the associated radiological findings. Delayed diagnosis can result in irreversible renal tract damage requiring surgical intervention. It is important that radiologists are aware of this emerging clinical entity as early diagnosis and treatment are essential for successful management.” (14)

Does ketamine use affect the brain? While cognitive dysfunction has been reported, researchers in China provide the first compelling evidence that the brain sustains damage. The authors reported “a reduction in frontal gray matter volume in patients after chronic ketamine use. The link between frontal gray matter attenuation and the duration of ketamine use and cumulative doses of ketamine perhaps suggests a dose-dependent effect of long-term use of the drug. Our results have important connotations for the clinical picture that is likely to emerge with the growing recreational use of ketamine and is also relevant to the status of the drug as a model for schizophrenia.” (15)

2011 Update

A collaborative team of urologists from throughout England released a paper reviewing past research, current literature and their own extensive clinical experience with ketamine patients. They suggest an assessment and treatment protocol of which the cornerstone is drug cessation. (16)

Researchers in Taiwan discovered that long term use (3 vs. 6 months) of ketamine causes thinning of the muscular layers of the bladder wall, particularly in the 6 month use group. Researchers also found a significant difference in sperm motility suggesting that ketamine also affects the genital system. (17)

Researchers in the United Kingdom discovered that ketamine abuse also causes liver dysfunction in a study of three young men who presented with jaundice and biliary tract abnormality. (18)

Researchers in Taiwan conducted the first study about the impact of ketamine use on sexual function which showed that sexual dysfunction was high in patients with KC. (19)

Researchers at Taichung Hospital (Taiwan) reported on four patients with a history of ketamine abuse, each showing typical symptoms of frequency, urgency, pain with urination. Urine cultures were sterile. Bladder ulceration with severe hemorrhage and low bladder capacity was found during cystoscopy. They reported that the cessation of ketamine abuse was the “milestone of treatment, followed by the use of mucosal protective agents, such as pentosan polysulfate or hyaluronic acid.” They reported that pain did improve in three patients after treatment but that outcome was dependent upon the severity of the disease process. (20)

2012 Update

Researchers in Spain produced their first study following 13 ketamine users in Barcelona, six of whom were experiencing severe lower urinary tract dysfunction with average frequency of every 42 minutes with 3 nighttime voids. All of the symptomatic patients experienced: 100% urgency, 100% pain with urination, 20% incontinence, 80% decreased flow, 80% with gross hematuria (blood in the urine) and 40% with lower back pain. Patients began to experience symptoms at 31 months and the intensity of symptoms was dependent upon ketamine dose and water intake. (21)

German clinicians shared the tragic story of a 25 year old ketamine addict who snorted ketamine over several years. Despite the presence of severe urinary dysfunction and pain, the patient was not motivated to stop using ketamine. After two attempts at treatment using Botox, cystectomy (bladder removal) was required. (22)

2013-2015 Update

More than 50 new research studies have been presented on ketamine cystitis, the majority discussing catastrophic urinary tract damage, sexual dysfunction and the challenges of treating this devastating disease. These can be viewed at: pubmed.gov. Just search for “ketamine cystitis.”

References:

1. Shahani R, Streutker C, Dickson B. [Ketamine associated with ulcerative cystitis: a new clinical entity](#). Urology 2007; 69:810-812
2. Chu PS, Kwok SC, Lam KM [“Street-ketamine” associated ulcerative cystitis: a new clinical entity](#). Hong Kong Med J 2007; 13:S1-3
3. Colebunders B, Van Erps P [Cystitis due to the use of ketamine as a recreation drug: a case report](#). J Med Case Reports 2008 June 26;2:219
4. Tsai JH, Tsai KB, Jan MY [Ulcerative cystitis associated with ketamine](#). Am. J. Addict 2008 Sept-Oct;17(5):453
5. Gregoire MC, MacLellan D Finley D [A pediatric case of ketamine-associated cystitis 9letter to the editor RE: Shahani R, et al: ketamine associated ulcerative cystitis: A new clinical entity](#). Urology Volume 71, Issue 6 (June 2008)
6. Chu PS, et al. [The destruction of the lower urinary tract by ketamine abuse: a new syndrome?](#) BJU Int 2008 Dec;102(11):1616-22
7. Gillatt D. [Painful Bladder and Urinary Tract Pathology Associated with Long Term Ketamine Use](#). Poster #208 ICS 2009 Annual Meeting
8. Yeong-Woei C, Chwel-Shiun Y. [The Case: Disabling frequent urination in a young adult](#). Kidney International 2009 76,123-124.
9. Tsai TH et al. [Ketamine-associated bladder dysfunction](#). Int J Urol. 2009 Oct;16(10):826-9. Epub 2009 Jul 29.
10. Wong SW et al. [Dilated common bile ducts mimicking choledochal cysts in ketamine abusers](#). Hong Kong Med J. 2009 Feb;15(1):53-6.
11. Yeung LY et al. [Mice are prone to kidney pathology after prolonged ketamine addiction](#). Toxicol Lett. 2009 Dec 15;191(2-3):275-8.

12. Oxley JD, et al. [Ketamine cystitis as a mimic of carcinoma in situ](#). Histopathology. 2009 Dec;55(6):705-8.
13. (13) Noorzurani R, et al. [Illicit ketamine induced frequency of micturition in a young Malay woman](#). Drug Alcohol Rev. 2010 May;29(3):334-6.
14. Mason K, et al. [Ketamine-associated lower urinary tract destruction: a new radiological challenge](#). Clin Radiol. 2010 Oct;65(10):795-80
15. Liao Y, et al. [Reduced dorsal prefrontal gray matter after chronic ketamine use](#). Biol Psychiatry. 2011 Jan 1;69(1):42-8.
16. Wood D, et al. [Recreational ketamine: from pleasure to pain](#). BJU Int. 2011 Feb 14.
17. Tan S. et al. [Ketamine effects on the urogenital system-changes in the urinary bladder and sperm motility](#). Microsc Res Tech. 2011 May 11.
18. Lo RS, et al. [Cholestasis and biliary dilatation associated with chronic ketamine abuse: a case series](#). Singapore Med J. 2011 Mar;52(3):e52-5.
19. Jang MY, et al. [Sexual dysfunction in women with ketamine cystitis: a case control study](#). BJU Int, 2011 Dec 16.
20. (20) Chen Ch. et al. [Ketamine snorting associated cystitis](#). J Formos Med Assoc. 2011 Dec;110(12):787-91. Epub 2011 Dec 27.
21. (21) Garcia-LarrosaA, et al. [Cystitis and ketamine associated bladder dysfunction](#). Actos Urol Esp. 2012 Jan; 36(1):60-4
22. (22) Lieb M, et al. [Ketamine induced vesicopathy](#). Psychiatr Prax. 2012 Jan;39(1):43-5. Epub 2012 Jan 10.