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Editorial comment

Ketamine-induced uropathy: All physicians be aware



Ketamine has been used as an anesthesia agent since the 1960s and as a “recreational drug” for at least the past 2 decades, particularly in nightclubs, because of its well-known “k-hole effect” and psychological dissociation symptoms. According to a ketamine urinary analysis for drug abusers in Taiwan, the positive results of ketamine doubled in 8 years (15.4% in 2006 and 31.6% in 2015).¹ In 2012, a study in the UK, which used online questionnaires to survey drug use among 3806 participants via the website, showed that the prevalence of ketamine use in the last year was 33.8% and 17% of ketamine users were found to be dependent on the drug.² There is a selection bias in this study because the study was promoted by a national dance music magazine and website, and the participants may not represent the normal population. In fact, the real prevalence of ketamine abuse may be underestimated, because the issue of privacy and the illegal status of ketamine make it difficult to evaluate the undiscovered ketamine-abusing population.³

By contrast, although the World Health Organization concluded that international control of ketamine is not really necessary, the drug should be kept under close surveillance.⁴ The evidence of increasing ketamine abuse due to its low cost, easy availability to adolescents, as well as the relatively lenient penalty for ketamine use demands more stringent laws against the drug. Thus, although ketamine is now classified as a class C drug in Taiwan and many other countries in the world, the demand for reclassifying ketamine as a class B drug is increasing.

Ketamine-induced uropathy (KIU) was first described in 2007 by Shahani et al.⁵ with findings of ketamine-associated ulcerative cystitis. Thereafter, multiple cases of KIU were reported, and 20–26.6% of frequent or recent users of ketamine reported experiencing urinary symptoms.^{2,6} In addition, the relationship between the dosage and frequency of drug use and urinary symptoms has been shown, however, it was difficult to correlate. Nevertheless, the diagnosis of KIU remains challenging even today. An increasing number of patients present to urological services for ketamine-associated urinary symptoms. General physicians as well as urologists should be educated about KIU to make patients aware of the disease and prevent them from presenting at a relatively later stage. Women who present with pelvic pain similar to the pains caused by pelvic inflammatory disease, ovarian cyst accident, or pressure symptoms from uterine fibroids may be referred to gynecologists.⁷ An awareness of KIU should also be spread. Privacy is another issue of diagnosis challenge because patients tend to hide or deny the illegal use of ketamine.

KIU can involve both the lower and the upper urinary tract, with the lower urinary tract being predominantly affected. The diagnosis of KIU is based on the clinical presentation and a history of ketamine use. KIU investigation is essential, and the aims of investigating KIU are as follows: (1) confirming the diagnosis of KIU; (2)

excluding other causes contributing to the symptoms; (3) evaluating the immediate complications and upper urinary tract involvement; and (4) providing long-term surveillance.⁷ Among the investigating tools, image modalities such as computed tomography urography (CTU) and rigid cystoscopy are most important. CTU seems to be superior to rigid cystoscopy because CTU is noninvasive and does not require general anesthesia.

In this review article, the author introduced all the image modalities for KIU investigation and demonstrated associated imaging findings. The image modalities included ultrasound, IVU, and CTU. These tools can help evaluate both the upper and the lower urinary tract. The most common imaging findings of KIU are reduced capacity of urinary bladder, cystitis, hydronephrosis, and ureteral stricture. Among the image modalities, the author emphasized the usefulness of CTU and the advantages of split-bolus CTU. Indeed, CTU can provide detailed information on both the upper and lower urinary tract by using different reconstruction methods; however, the traditional three-phase CTU uses a relatively higher radiation dose compared with split-bolus CTU, which provides information on tissue perfusion and luminal contrast in the same scan. The use of split-bolus CTU is recommended for KIU investigation. We can comprehensively learn the advantages and disadvantages of each image modality as well as detailed imaging findings of KIU from this review. This article provides radiologic knowledge of KIU to all physicians to make them aware of this disease.

Conflicts of interest

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