A Case of Ketamine-induced Cholangiopathy: A Novel Diagnosis Associated With Chronic Recreational Ketamine Use

Zhongqian Lin DO, Larisa Garkusha MD, Daria Yunina MD, Sadat Iqbal MD, Dmitriy Khodorskiy MD, Yuriy Tsirlin MD, Maryanne Ruggerio MD, Linda A. Lee MD
Division of Gastroenterology, Maimonides Medical Center

Abstract

Ketamine, an analgesic commonly used for procedural sedation, has become a popular agent for recreational drug use among young adult. The diagnosis of ketamine-induced cholangiopathy is uncommon. We report a case of a young adult with clinical and radiological features consistent with cholangiopathy induced by chronic ketamine use.

Background

Ketamine is a synthetic compound that was introduced to the market in 1965 [1]. It is a non-competitive NMDA receptor antagonist that is commonly used in induction and maintenance of general anesthesia. Ketamine also has off-label use for acute and chronic pain, treatment resistant major depressive disorder, refractory agitation, and refractory status epilepticus [2]. Due to its hallucinogenic and cataleptic-like dissociative effects, ketamine has become an increasingly popular recreational drug in the U.S., especially among the young adults [3].

Introduction

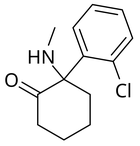
It has been well-established that chronic exposure to ketamine can result in hematuria, urinary incontinence, and hydronephrosis , known as ketamine-induced ulcerative cystitis [4]. However, there were only few reports from Asia regarding sclerosing cholangitis-like hepatobiliary injuries caused by ketamine [5]. In this case, we present a young adult with history of chronic recreational ketamine use and was observed to have symptoms and clinical findings consistent with ketamine-induced cholangiopathy.

Case

A 19-year-old female with past medical history of peptic ulcer disease presented to emergency department (ED) with severe epigastric abdominal pain. On further questioning, the patient reported one year history of intermittent epigastric pain, as well as chronic recreational ketamine use. Physical exam revealed mild epigastric and RUQ tenderness.

Liver function test demonstrated elevated alkaline phosphatase of 174 U/L, AST of 237 U/L and ALT of 224 U/L. All other hematology and chemistry results were within normal limits. RUQ ultrasound showed minimally dilated common bile duct (CBD). An MRCP was obtained, showing mild-to-moderate dilatation of intra-/extra-hepatic bile ducts and dilated cystic duct (CD) without obvious intraductal calculi. Endoscopic ultrasonography (EUS) was performed showing dilatation of CBD, minimal dilatation of common hepatic duct, and minimal dilatation of CD, once again without obvious calculi. These imaging findings are compatible with ketamine-induced cholangiopathy.

After being admitted for 6 days with supportive managements, the patient demonstrated significant improvement in her abdominal pain, with gradually improving liver test values. She was discharged with the recommendation to abstain from ketamine use and outpatient gastroenterology follow-up.



en.Wikipedia.org/wiki/Ketamine

Vials containing liquid ketamine


Ketamine in various forms

dea.gov/factsheets/ketamine

Figure A. MRCP showing mild-moderate dilatation of the intra-hepatic and extra-hepatic bile ducts, and dilatation of the cystic duct. No visible stones or other etiology of dilatation

Figure B. EUS displaying CBD dilatation measuring up to 10.6 mm in the head region, with smooth tapering to the ampulla up to 2.7 mm

Discussion

Chronic exposure to ketamine has been known to cause urologic injury, referred to as ketamine-induced ulcerative cystitis. In comparison to the urologic complications of chronic ketamine use, its effects on the biliary system have been less commonly reported. Existing reports have mostly come from regions of Asia where recreational ketamine use is more prevalent [5]. The nonspecific gastrointestinal symptoms that are typically reported by patients with ketamine-induced cholangiopathy may make the diagnosis more challenging to recognize. Due to increasing recreational ketamine use among young adults in recent years, cases of ketamine-induced cholangiopathy are likely to rise. Therefore, a better understanding of the clinical and radiological features of this condition are needed to allow for prompt recognition of ketamine-induced cholangiopathy.

Conclusions

Due to recent increase in the popularity of recreational ketamine use in young adults, similar cases of ketamine-induced cholangiopathy are likely to rise. As clinicians, we should suspect chronic ketamine use in young adults who presented with both urological and biliary symptoms without other obvious causes of cholangitis.

Contact

<Zhongqian Lin>
< Maimonides Medical Center>
Email: linzq95@gmail.com
Website: maimo.org/treatments-care/gastroenterology
Phone: (718)-200-8060

References

1. Corssen G, Domino EF. Dissociative anesthesia: further pharmacologic studies and first clinical experience with the phencyclidine derivative CI-581. *Anesth Analg*. 1966 Jan-Feb 1966;45(1):29-40.
2. Gao M, Rejaei D, Liu H. Ketamine use in current clinical practice. *Acta Pharmacol Sin*. Jul 2016;37(7):865-72. doi:10.1038/aps.2016.5
3. Ni A, Lee Cantrell F, Clark RF. Ketamine exposure demographics and outcomes over 16 years as reported to US poison centers. *Am J Emerg Med*. 08 2018;36(8):1459-1462. doi:10.1016/j.ajem.2018.04.066
4. Vu DM, Freyre K, Opsha O, Opsha Y. Recreational ketamine-induced cholangiopathy and ulcerative cystitis. *Am J Emerg Med*. 07 2021;45:682.e7-682.e9. doi:10.1016/j.ajem.2020.12.025
5. Yu WL, Cho CC, Lung PF, et al. Ketamine-related cholangiopathy: a retrospective study on clinical and imaging findings. *Abdom Imaging*. Dec 2014;39(6):1241-6. doi:10.1007/s00261-014-0173-2