Department of Medicine
Li Ka Shing Faculty of Medicine, HKU

HKU and North District Hospital Identifies Long-term Ketamine Abuse Damages the Biliary System

Press Conference
April 25, 2018

Supported by the Beat Drug Fund, Government of the HKSAR

Speakers

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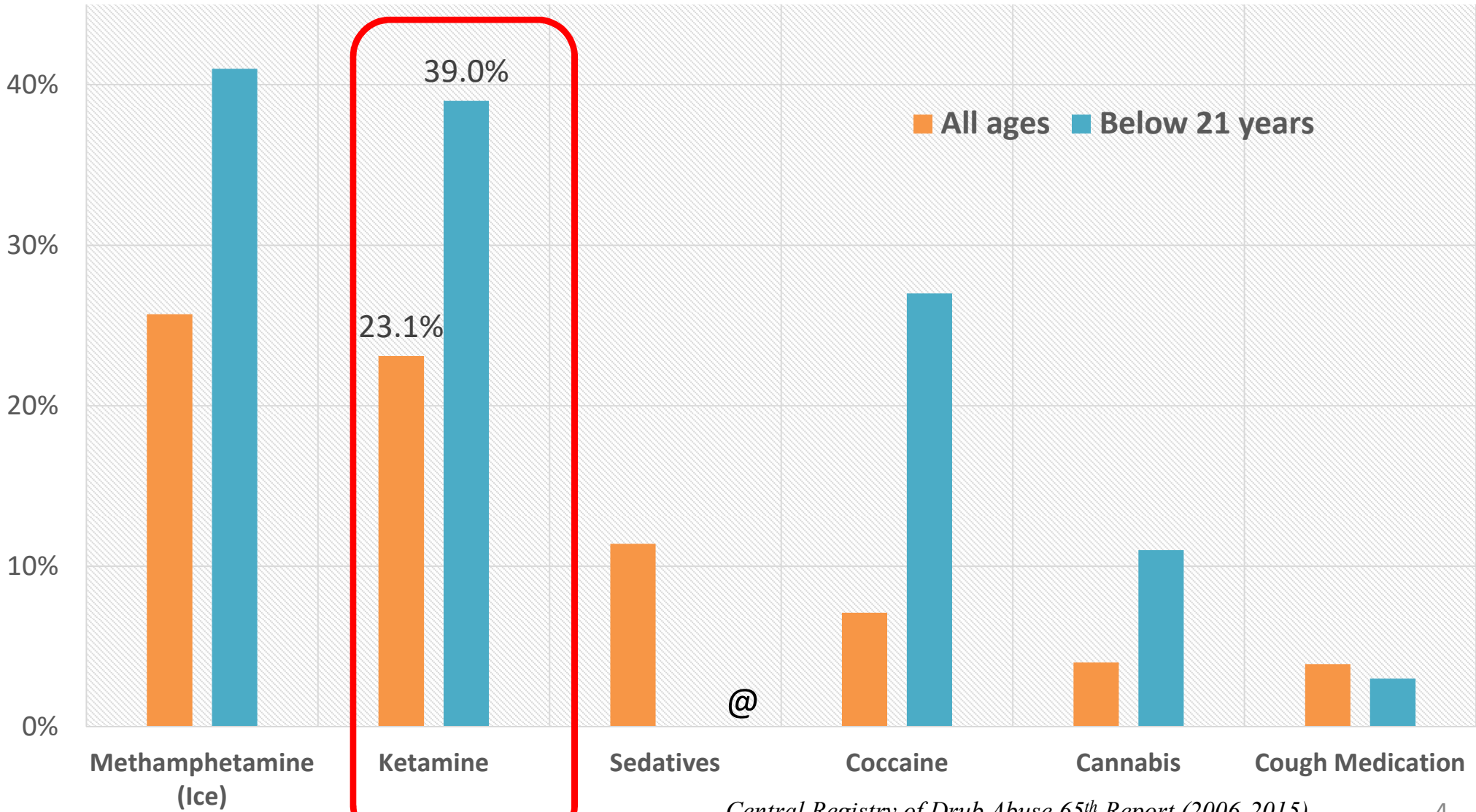
Drug Abuse in Hong Kong (2015)

- Reported drug abusers: 8,598 persons
  - Average age: 38 years
- Reported first-time drug abusers: 2,103 persons
  - Average age: 29 years
- Duration of abuse among “first-timers”: 5.8 years
- Age of starting drug abuse:
  - 20 years or below: 77%
  - 15 years or below: 35%

Central Registry of Drub Abuse 65th Report (2006-2015)
Narcotics Division, Security Bureau
The Government of the HKSAR

Drug Abuse in Hong Kong (2015)



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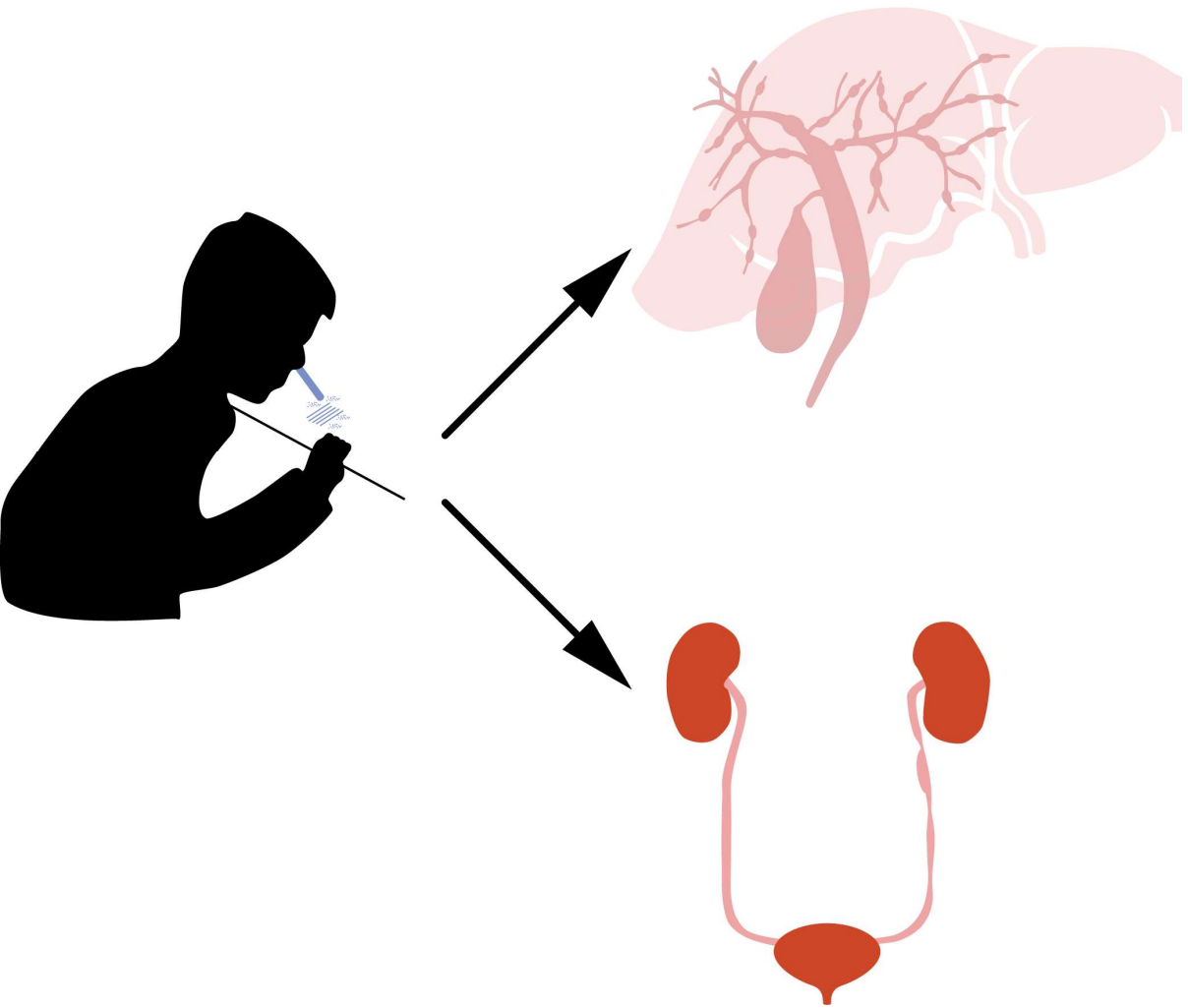
Central Registry of Drub Abuse 65th Report (2006-2015)
Narcotics Division, Security Bureau, The Government of the HKSAR

Besides Bladder Function
Ketamine Abuse also Affects the Biliary System



Research Article
Cholestasis and Autoimmune Diseases

JOURNAL OF HEPATOLOGY

Magnetic resonance cholangiogram patterns and clinical profiles of ketamine-related cholangiopathy in drug users

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Background & Aims: Recreational ketamine use has emerged as an important health and social issue worldwide. Although ketamine is associated with biliary tract damage, the clinical and radiological profiles of ketamine-related cholangiopathy have not been well described.

Methods: Chinese individuals who had used ketamine recreationally at least twice per month for six months in the previous two years via a territory-wide community network of charitable organizations tackling substance abuse were recruited. Magnetic resonance cholangiography (MRC) was performed, and the findings were interpreted independently by two radiologists, with the findings analysed in association with clinical characteristics.

Results: Among the 343 ketamine users referred, 257 (74.9%) were recruited. The mean age and ketamine exposure duration were 28.7 (±5.8) and 10.5 (±3.7) years, respectively. A total of 159 (61.9%) had biliary tract anomalies on MRC, categorized as diffuse extrahepatic dilatation (n = 73), fusiform extrahepatic dilatation (n = 64), and intrahepatic ductal changes (n = 22) with no extrahepatic involvement. Serum alkaline phosphatase (ALP) level (odds ratio [OR] 1.007; 95% CI 1.002–1.102), lack of concomitant recreational drug use (OR 1.99; 95% CI 1.11–3.58), and prior emergency attendance for urinary symptoms (OR 1.95; 95% CI 1.03–3.70) had high predictive values for biliary anomalies on MRC. Among sole ketamine users, ALP level had an AUC of 0.800 in predicting biliary anomalies, with an optimal level of ≥113 U/L having a positive predictive value of 85.4%. Cholangiographic anomalies were reversible after ketamine abstinence, whereas decompensated cirrhosis and death were possible after prolonged exposure.

Conclusions: We have identified distinctive MRC patterns in a large cohort of ketamine users. ALP level and lack of concomitant drug use predicted biliary anomalies, which were reversible after abstinence. The study findings may aid public health efforts in combating the growing epidemic of ketamine abuse.

Lay summary: Recreational inhalation of ketamine is currently an important substance abuse issue worldwide, and can result in anomalies of the biliary system as demonstrated by magnetic resonance imaging. Although prolonged exposure may lead to further clinical deterioration, such biliary system anomalies might be reversible after ketamine abstinence.

Clinical trial number: NCT02165488.

Introduction

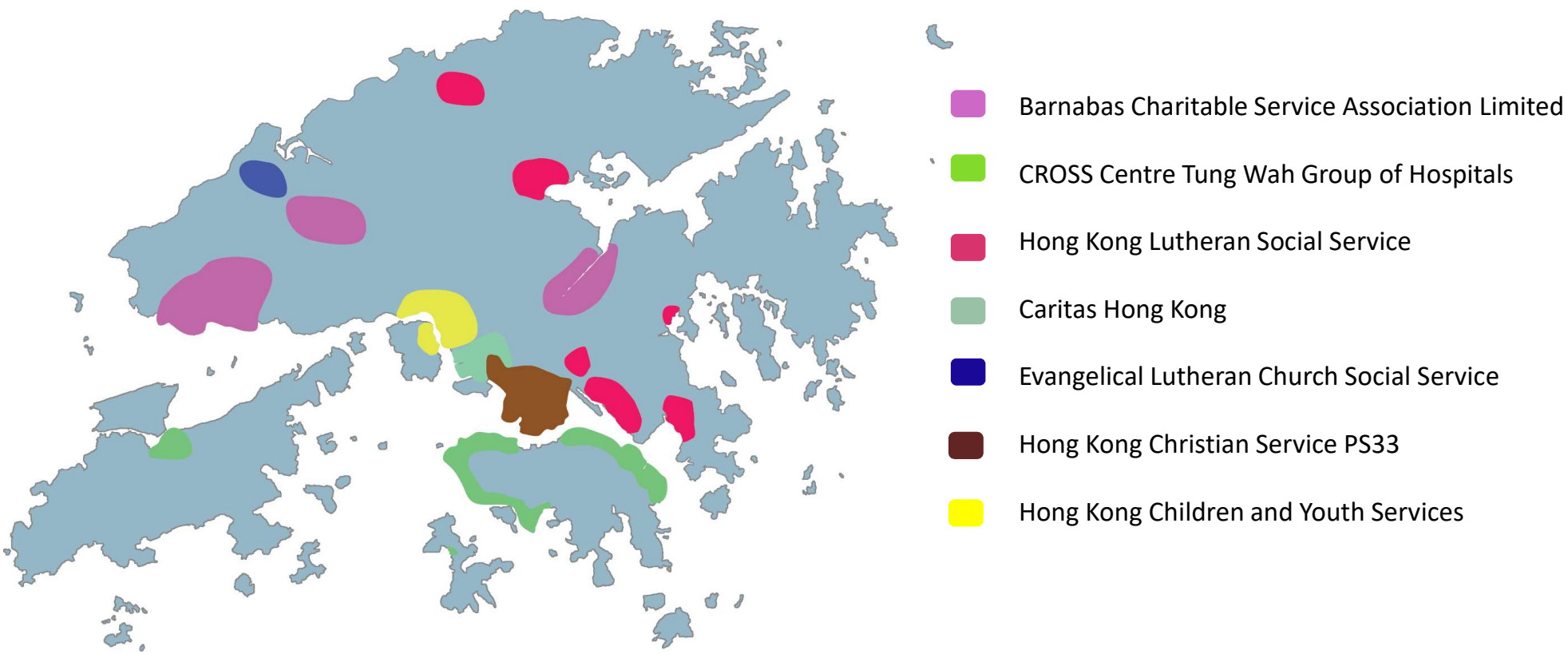
Recreational inhalation of ketamine is emerging as a major global social and health issue.[1,2] Although ketamine, an *N*-methyl-d-aspartate receptor antagonist, has medical uses in anaesthesia and chronic pain control, its highly addictive nature has led to a massive increase in recreational consumption worldwide. Because of the ease of production and low cost, the non-medical use of ketamine is increasing especially in East and South-East Asia, with its lifetime prevalence in the general population ranging from 0.3% to 2.0%,[3] comprising up to 39.7% of total recreational drugs users in these regions.[4] The self-reported recreational use of ketamine in Western countries, including the UK, Australia, and Canada, is also increasing.[5,6] From 2008 to 2014, law enforcement seizures of ketamine worldwide increased by more than threefold.[3]

Long-term heavy use of ketamine is associated with different medical problems, including cognitive impairment and psychological issues.[7] Damage to the urological system is also well documented, with many ketamine users developing a large variety of urinary problems, ranging from lower urinary tract symptoms and bladder incontinence to hydronephrosis, renal impairment, and papillary necrosis.[8,9] Urinary tract damage seemed reversible in a proportion of patients who ceased ketamine use.[10] Long-term ketamine use is also associated with deranged liver biochemistry[11,12] and biliary tract anoma-

Seto WK, Mak SK, et al. J Hepatol 2018

Research Method

- Supported by the Beat Drug Fund, HKSAR Government
- Participants recruited via territory-wide non-government organizations



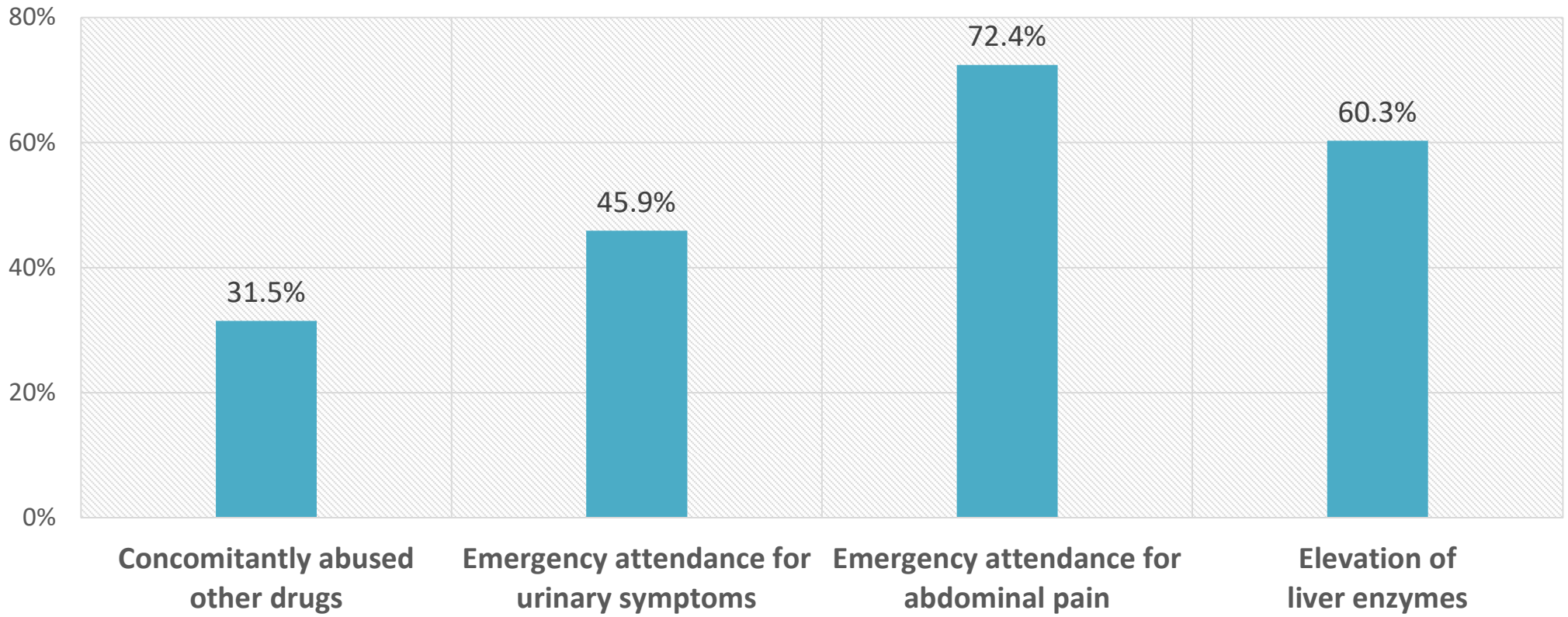
Only a gross depiction of the catchment area of different organizations. Organizations have recruited participants outside the depicted areas.

Research Method

- Participants:
  - Recreational used ketamine at least twice per month for 6 months in past 2 years
- Participants underwent clinical assessment, blood taking and MRI of the biliary system
- MRI findings intepreted independently by two radiologists in research team

Study Results

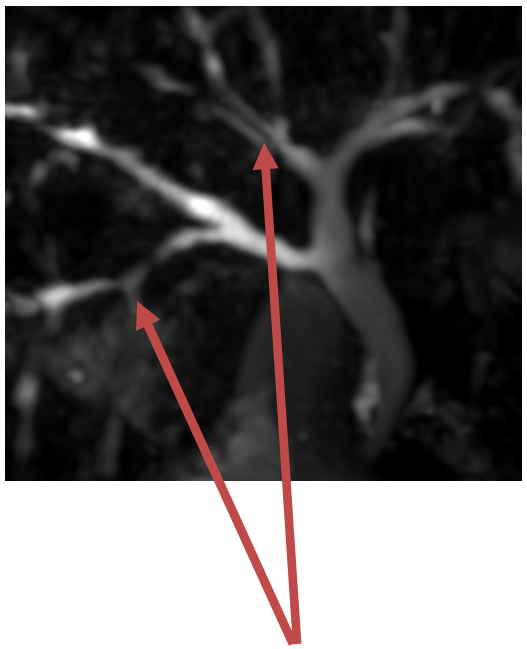
- Recruited participants: 257 persons
- Average age: 28.7 years
- Average duration of ketamine abuse: 10.5 years



Study Results

159 participants (61.9%) had biliary anomalies on MRI

Dilated common bile duct
137 (53.3%)



Abnormal intrahepatic ducts
91 (35.4%)

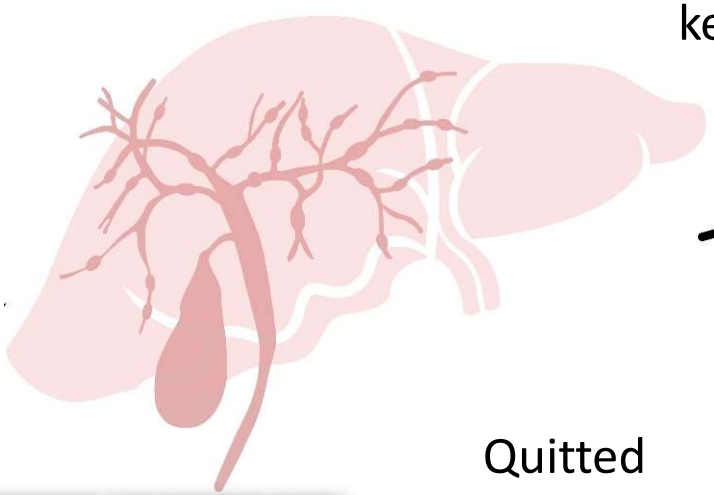
If:

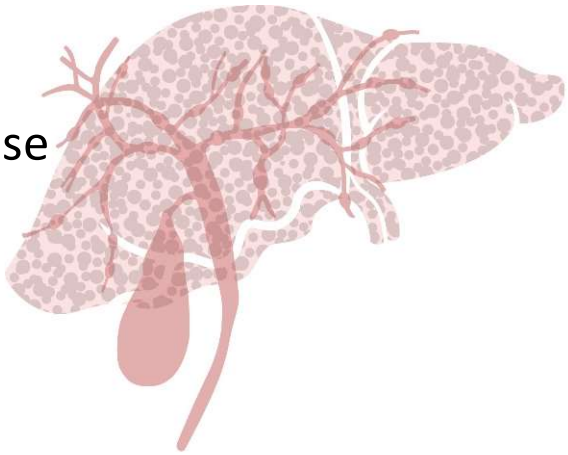
- ALP (a certain liver enzyme) elevated
- No concomitant drugs
- Urinary problems

Chances of biliary anomalies will increase

Study Results

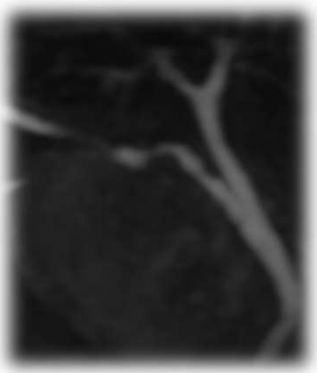
Continued ketamine abuse

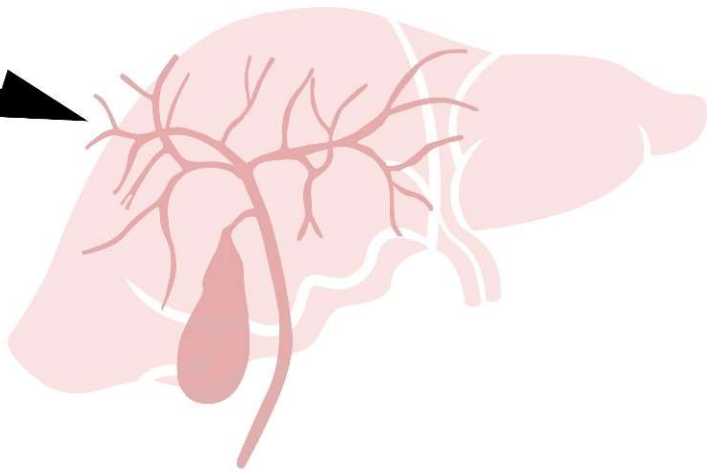




Liver cirrhosis
Liver failure

Quitted ketamine





Biliary system normalized

Conclusion

- Many ketamine abusers develop biliary damage
- Ketamine abusers with high-risk of biliary damage should be referred for appropriate screening
- Educational promotion against drug abuse should emphasize:
  - Biliary damage will reverse after quitting ketamine
  - Longstanding ketamine abuse can lead to cirrhosis

Say No to Drugs!

Sharing of experience

An individual who has quitted ketamine

Question and Answer Session