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IS ELECTRON MICROSCOPY USEFUL IT IN THE DIAGNOSIS OF KETAMINE-ASSOCIATED CYSTITIS?

Hypothesis / aims of study

Ketamine has been historically used as an anaesthetic agent, however, over the years its use as a recreational drug has gained popularity. The effects of ketamine use on the urogenital tract are being increasingly recognised. Patients with exposure to ketamine may present with severe cystitis (dysuria, frequency, urgency and haematuria). Ketamine cystitis often fails to respond to conventional conservative and antibiotic treatment. Diagnosis of ketamine cystitis presents a significant challenge to the urologist as there are no agreed pathological features. As such its diagnosis often is clinical and based on history of irritative urinary symptoms and previous or current recreational use of ketamine. Here we present cystoscopic, histopathological staining and electron microscopic appearance of patients with ketamine-associated cystitis.

Study design, materials and methods

Ten patients with a history of ketamine use and on-going irritative urinary symptoms underwent cystoscopy and biopsy in our unit between 2009-2012. In each patient samples were taken from both normal and abnormal areas when present and examined with light microscopy as well as electron microscopy. Slides were reviewed by a single uropathologist.

Results

70% (7) of the patients were male. Patients were between the ages of 18 and 32 years old. All of the patients had biopsies of both normal urothelium as well as abnormal areas.

Cystoscopy revealed areas of erythema and inflamed mucosa within the bladder with no obvious diagnostic features.

Light microscopy revealed a variable degree of denuded urothelium, oedema and exudate and fibrosis. Inflammation was a key feature present in the submitted tissues. However, these abnormalities were limited to the urothelium and lamina propria, with a normal supporting muscular layer.

Electron microscopy showed expected inflammatory changes corresponding to the light microscopy findings, but did not reveal any evidence of abnormal deposits, intracellular inclusions or infective bodies.

Interpretation of results

Although evidence of inflammation was present in patients with ketamine-associated cystitis, neither light nor electron microscopy revealed any diagnostic abnormalities in patients with ketamine use. Similarly, there were no key diagnostic features present at the time of cystoscopy. Based on the current data we are unable to comment on any associated specific morphological features as a result of ketamine use, even on high power view.

Concluding message

Further research is required to facilitate a better understanding of the appearance of normal urothelium on electron microscopy and its comparison in patients with ketamine-associated cystitis; this may help with establishment of histopathological criteria to aid with the diagnosis of ketamine-associated cystitis.

Disclosures

Funding: None **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** the study was part of normal patient diagnosis **Helsinki:** Yes **Informed Consent:** Yes