



INTRAVENTRICULAR HAEMMORHAGE IN A CHRONIC CANNABIS USER- A CASE REPORT.

Forensic Medicine

Dr. G. Venugopal Rao	Associate Professor, Department of Forensic Medicine and Toxicology, Osmania Medical college.
Dr. P. Rajaram	Final year postgraduate, Department of Forensic Medicine and Toxicology, Osmania Medical College.
Dr. Shiny Mathew*	Final year postgraduate, Department of Forensic Medicine and Toxicology, Osmania Medical College. *Corresponding Author

ABSTRACT

Cannabis is one of the commonly abused psychoactive recreational drugs, the popularity of which has exponentially increased in the recent times due to the notion that it has minimal side effects [1-3]. But of late, many studies have showed that chronic use of cannabis has cerebrovascular as well as cardio vascular complications [4,5]. As per the report of National Drug Dependence Treatment Centre (NDDTC) of the All India Institute of Medical Sciences (AIIMS), New Delhi, 2.83% of Indians aged 10–75 years (or 31 million people) were current users of cannabis products [6]. A 22-year-old, apparently healthy male student, staying alone in a rented apartment with history of chronic cannabis use was found in an unconscious state with multiple packets of cannabis (Ganja/ Marijuana). During the PME, about 250-300 grams of intraventricular hematoma was present in the lateral ventricles of the brain. Diffuse haemorrhage was present over bilateral cerebellar hemispheres. No antemortem injuries were present on the body.

KEYWORDS

Recreational drugs, Cannabis, Ganja, Intra ventricular hemorrhage.

INTRODUCTION:

Cannabis is the fourth most commonly abused drug and the most widely abused illicit drug. Cannabis is obtained from the plant *Cannabis sativa*, *Cannabis indica* and *Cannabis ruderalis*. Tetrahydrocannabinoids (THC), Cannabinol (CBN) and Cannabidiol (CBD) are the most important active principles of cannabis [7]. The plasma half-life of tetrahydrocannabinol in occasional users is ≈ 56 hours and in chronic users about 28 hours [8]. In this article, we present a case of intracerebral haemorrhage due to chronic cannabis use as a very rare complication.

Case Report

A 22-year-old, apparently healthy male was found unconscious in his rented apartment. He was rushed to a nearby health facility, was intubated in view of low GCS but succumbed to death despite the resuscitative measures. The body was shifted to the mortuary and subjected to post-mortem examination. Police recovered multiple packets of half-used 'Ganja' sachets from his personal belongings (Fig.1). The medical history was insignificant with no past history of hypertension, diabetes mellitus, coronary artery disease or stroke. He had history of smoking and occasional use of alcohol.



Figure 1: Cannabis sachets recovered from the personal belongings of deceased.

Autopsy Findings:

On external examination, both eyes were congested and tip of tongue was bitten between anterior teeth with dried salivary stains along the right angle of mouth. Post-mortem lividity was present over back of the body. Rigor mortis is fixed and present all over the body. No ante mortem injuries were present on the body.

On scalp reflection, no injuries were noted. On opening the skull cavity, about 200-250 grams of intraventricular haematoma was present within the lateral ventricles of brain. Diffuse haemorrhage was present over bilateral cerebellar hemispheres. No abnormality was detected in any other organs.



Figure.2: Tip of tongue bitten between the anterior teeth.



Figure 3: Gross appearance of brain on dissection showing haemorrhage in lateral ventricles.

Cause Of Death:

Based on circumstantial evidence, crime scene investigation, inquest report, post-mortem findings, forensic science laboratory report, the cause of death is due to intraventricular haemorrhage secondary to chronic cannabis abuse.

DISCUSSION:

Cannabis use has been known to Indian population from the late 20th century and now recreational use of cannabis has become very popular and common due to their easy availability and relatively low cost. The lack of stringent laws in our country in relation to cannabis along with the difficulty to screen blood and urine has made its use more rampant.

The primary cannabinoid in natural cannabis is delta-9-THC, a partial agonist of the cerebral $\square$ cannabinoid receptor 1 (CB1) in the central nervous system. The nature of the product, presence of contaminants or mixing of products makes the effects of cannabis widely variable.

Some studies report that consuming alcohol increases plasma cannabinoid levels [9]. Alcohol consumption with the use of cannabis is therefore, expected to increase blood levels of bioactive metabolites. Alcohol could be considered as a predisposing factor in cerebral

haemorrhage. Recreational marijuana use has shown independent association with 17% increased likelihood of Acute ischaemic stroke. This association further increased with concomitant use of tobacco (31%) and further increased with cocaine use (42%)^[10].

The mechanism of cannabis-associated intracranial haemorrhage is less known in comparison to others. The proposed pathophysiology is that cannabis has both vasodilatory and vasoconstrictive cerebrovascular effect, depending on the location in the body. Various animal experiments have shown that cannabis has an inhibitory action on sympathetic neuronal activity by blocking receptors on the presynaptic terminals of postganglionic sympathetic nerve fibres, thus causing hypotension and vasoconstriction^[11,12]. Delta-9-THC, the principal cannabinoid has a vasoconstrictor effect with peripheral vascular consequences^[13]. Many recent studies also suggested that cannabis use is associated with an increase in serum apolipoprotein C-III levels, a well-known cardiovascular and cerebrovascular risk factor^[14]. The most popular mechanisms are hypotension with abnormal regulation of the blood brain flow, cerebral vasospasm, and arrhythmia with resulting cardio-embolism^[15,16].

CONCLUSION:

The sparsity of evidence and literature regarding the adverse effects of cannabis usage on cerebrovascular health has resulted in a widespread myth that cannabis is harmless. In the presented case, cannabis exposure with the lack of other cardiovascular risk factors has resulted in the fatal event.

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