

cannabinoid hyperemesis syndrome

A rare syndrome associated with long-term chronic cannabis use that is characterised by recurrent nausea and vomiting associated with abdominal pain has been reported. These symptoms have been reported to be alleviated temporarily by taking a hot shower or bath or more permanently by abstaining from cannabis use. Several case reports have been published across the world in the last five years and are listed in Table 1.

The first published cases of cannabinoid hyperemesis were reported by Allen and colleagues in 2004. This article spurred some interest in clinicians and several other case reports were published (see Table 1). However, the article also spurred some debate. Byrne and colleagues (2006) posited that “alternative explanations (of symptoms) need to be sought” and that the syndrome “should not be accepted as being caused by cannabis without additional reports and other evidence”. Although several case reports have been published, there remains to be any accepted explanation of symptoms.

Sontineni and colleagues (2009) have offered guidelines for the clinical diagnosis of cannabinoid hyperemesis. They suggest the essential features of: 1) history of regular cannabis use for years; 2) major clinical features of syndrome; 3) severe nausea and vomiting; 4) vomiting that recurs in a cyclic pattern over months; and 5) resolution of symptoms after stopping cannabis use. In addition diagnosis has supportive features of: 1) compulsive hot baths with symptom relief; 2) colicky abdominal pain; and 3) no evidence of gall bladder or pancreatic inflammation.

Various theories attempting to explain symptoms have been published. These theories fall into two themes; 1) dose dependent build up of cannabinoids and related effects of cannabinoid toxicity, and 2) the functionality of cannabinoid receptors in the brain and particularly in the hypothalamus (which regulates body temperature and the digestive system). Chang and Windish (2009) offer a summary of corroborating evidence for these theories; however, the authors note that the mechanisms by which cannabis causes or controls nausea and the adverse consequences of long-term cannabis toxicity remain unknown. The authors also conclude that organic disease should not be ruled out as a possible cause.

The largest case series to date was recently provided by Simonetto and colleagues (2012). Patient records from 2005 to 2020 from the Mayo Clinic, Minnesota, were screened for the presence of cannabinoid hyperemesis. Following screening, 98 patients met the criteria proposed by Sontineni and colleagues (2009). In addition, the authors provided follow-up data from 10 patients who were advised to stop using cannabis to relieve symptoms. Of these patients, 7 stopped using cannabis and 6 of these individuals reported relief of symptoms. This study expanded on Sontineni and colleagues’ diagnosis pattern with the major feature of weekly cannabis use and supportive (common but non-essential) features of 1) age younger than 50 years, 2) weight loss greater than 5 kilograms, 3) morning predominance of symptoms, 4) normal bowel habits, and 5) negative laboratory, radiographic and endoscopic test results. It was noted that the majority of patients developed symptoms within 1 to 5 years from onset of cannabis use (ranging from 4 months to 27 years).

Despite numerous case study reports, Byrne and colleagues' (2006) call for further evidence and research is still pertinent with little knowledge regarding the causal mechanisms of the syndrome.

Table 1: Cannabinoid hyperemesis case reports

| Author(s) | Year | Patient description and history of cannabis use |
|----------------------------------|------|---|
| De Moore, et al. | 1996 | 22 yr male in Australia – symptoms and cannabis use were present although the authors did not specify cannabis use as the cause |
| Allen, et al. | 2004 | 19 patients in Australia cited with symptoms; 9 patients were reported in detail – all daily cannabis users for 3-27 years |
| Roche & Foster | 2005 | 21 yr male in the UK – “freely admitted to smoking cannabis” |
| Boeckxstaens, G.E. | 2005 | 36 yr male in the Netherlands – smoking cannabis for 24 yrs |
| Wolfhagen, F.H. | 2005 | 46 yr patient from the Netherlands – smoking for 27 years, most recent 3 years of daily smoking |
| Roelofs, et al. | 2005 | “Regularly observed” in a psychiatric clinic in the Netherlands |
| Roche & Foster | 2005 | 21 yr male in the UK – “freely admitted to cannabis use” |
| Alfonso, et al. | 2006 | 49 yr female in Spain – regular smoking for 31 years |
| Wallace, et al. | 2007 | 30 yr male, Britain – daily, long-term cannabis use for ten years |
| Singh & Coyle | 2008 | 46 yr male in America – daily cannabis use since childhood |
| Budhreja, et al. | 2008 | 19 yr male in America – daily cannabis use for 18 months |
| Chepyala & Olden | 2008 | 38 yr male in America – almost daily cannabis use for 20 years |
| Chang & Windish | 2009 | 25 yr female and a 23 yr male in America – the female smoked cannabis for 6-7 years almost daily, and the male smoked daily for 9 years |
| Sontineni, S.P., et al. | 2009 | 22 yr male in New Zealand – smoking cannabis daily for 6 years |
| Watts, M. | 2009 | 32 yr male in New Zealand – smoking cannabis daily for 16 years |
| Martineau-Beaulieu & Baillargeon | 2009 | 53 yr male in Canada, daily use for “several years” |
| Ochoa-Mangado, et al. | 2009 | 25 yr male in Spain, daily use for 6 years |
| Sannarangappa & Tan | 2009 | 34 yr male in Australia – smoking cannabis frequently for 15 years |
| Miller et al. | 2010 | 17 yr male and 18 yr female – smoking cannabis frequently for over one year |
| Soriano-Co et al. | 2010 | 8 patients in America – aged 32 ± 4 years, 5 males, using cannabis for 19 ± 4 years |
| Patterson et al. | 2010 | 4 male patients in America – aged 20-43 yrs, cannabis history was reported for two patients (chronic use for 10 and 16 years) |
| Schmid et al. | 2011 | 26 yr female (pregnant) in Switzerland – smoking cannabis regularly for 13 years |
| Donnino et al. | 2011 | 3 male patients in America – aged 22, 23, and 51 years, cannabis was smoked for over one year by all patients |
| Fleig & Brunkhorst | 2011 | 28 yr male in Germany – history of cannabis use was not reported although the patient was described to be a regular cannabis user |
| Price et al. | 2011 | 30yr male in America – reported “chronic cannabis use for years” |
| Lieb et al. | 2011 | 29 yr male in Germany – reported “chronic cannabis use” |
| Stuijvenberg et al. | 2011 | 22 yr male, 22 yr female, and 25 yr female in Germany – each reported using cannabis for several years |
| Wild & Wilson | 2012 | 21 yr female in the United Kingdom – smoking cannabis daily for 7 years |
| Bagdure et al. | 2012 | 27 yr male in America – reported “a history of prolonged use” |
| Simonetto et al. | 2012 | 98 patients, aged 32±10 yrs, 66 males, in America – using cannabis between 4 months to 27 years |

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