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Medical Cannabis Program

Cannabinoid Hyperemesis Syndrome (CHS)

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Disclaimer

- The opinions shared during this meeting do not necessarily reflect the position of the Medical Cannabis Program.
- The Medical Cannabis Program does not endorse any specific product, producer, or vendor.

Online Portal Updates

- NMCS# no longer visible to patients.
- Caregiver information is **not** carried forward on renewal applications – must be re-entered as caregiver may change.
- Soon, patients will receive a banner notifying them that their card will expire in 90 days.
- As a reminder, do not enter application barcode in the renewal ID Code field. Enter as a “New” if no ID Code available.

Medical Cannabis Advisory Board (MCAB)

- Next meeting is scheduled for Monday, May 13, 2024, at 9:00 am (Mountain Time).
- Currently there is one vacancy on the MCAB.

Any questions?

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Definitions

- Cannabis Hyperemesis Syndrome (CHS) – a condition in which a patient experiences cyclical nausea and vomiting, accompanied by abdominal pain following prolonged high-dose cannabis use.
- Scromiting – is a contrived word which combines “screaming” and “vomiting”. It is used to describe episodes of intense pain which cause individuals to scream while vomiting and is typically associated with someone suffering from CHS.

Background

- CHS first described in the literature in 2004.[1]
- CHS diagnosis criteria first published in 2009.[2]
- A crucial factor in the genesis of CHS is the change in the composition of cannabis.[3]

  ↑THC and ↓CBD

- Synthetic cannabinoids can also cause CHS.[4]

Introduction

- 46% of individuals in the US report that they have used cannabis.[5]
- 19% of individuals in the US report using cannabis at least once in the past year.[5]
- 32.9% of individuals between ages 18-49 who smoked at least 20 days/month met criteria for CHS.[6]
  - Criteria = reported smoking cannabis at least 20 days per month and also rated ‘hot showers’ as five or more on the ten-point symptom relief method Likert scale for nausea and vomiting.

Introduction[7]

- A retrospective observational study of patients at three medical centers from 2010 to 2015 showed the following:
  - $76,291.92 = average cost for combined ED visits and radiologic evaluations per patient.
  - 17.9 = average number of ED visits prior to CHS diagnosis.
  - Patients were exposed to an average of 5.94 radiographs, 4.94 CT scans, and 2.41 ultrasounds
  - In addition to imaging, patients underwent colonoscopies, EGDs, and surgical interventions.

New Mexico[8]

- CHS was defined as an ED visit with a cannabis related diagnosis code and a persistent vomiting diagnosis code.
- From 2010 – 2015 ED visits increased by 24.2%
  - *Nationally 6.9%*
- ED visits for cannabis increased by 172.8%
  - *Nationally 71.9%*
- ED visits for CHS increased by 585.7%
  - *Nationally 423.3%*
- CHS visits were more likely to be male, between 18-29 years, and reside in the Northeast region of the state.

Phases of CHS

- Prodromal phase
- Hyperemetic phase
- Recovery phase

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Prodromal phase

- Abdominal discomfort
- Fear of vomiting
- Early morning nausea
- Can last months to years
- Can occur on one or more days of the week
- Patient may increase cannabis use to self-medicate

Hyperemetic phase

- Intense dry heaving – (episodes can last from <12 hours to >7 days)
- Decreased food intake
- Food aversion
- Anxiety
- Weight loss
- Dehydration
- Compulsive bathing with hot water

Recovery Phase

- Symptoms go away
- Normal eating resumes
- Symptoms return if cannabis use resumes

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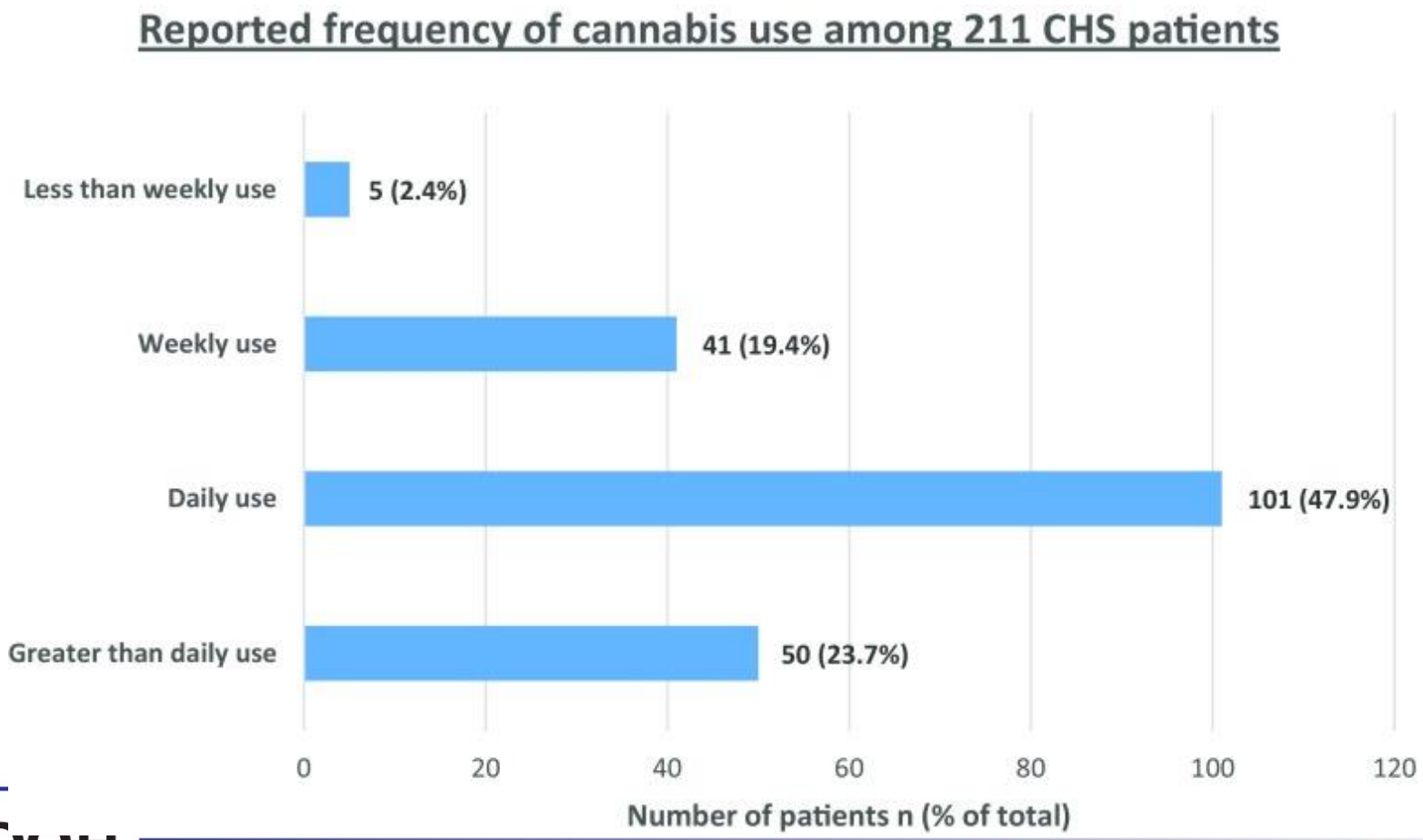
Complications of CHS

- Dehydration and Electrolyte imbalance
  - Kidney failure
  - Arrythmias
- Malnutrition
- Weight Loss
- Tooth Decay
- Choking, pneumonitis and/or aspiration pneumonia
- Injury to esophagus
  - Boerhaave's syndrome
  - Mallory Weiss tear

Diagnostic Criteria[9]

- History of regular cannabis use for over 1 year (74.8%)
- Severe nausea and vomiting (100%)
- Vomiting that recurs in a cyclic pattern over mos. (100%)
- Resolution of symptoms after stopping cannabis (96.8%)
- Compulsive hot baths/showers with sx relief (92.3%)
- Male predominance (72.9%)
- Abdominal pain (85.1%)
- At least weekly cannabis use (97.4%)
- History of daily cannabis use (76.6%)
- Age less than 50 at time of evaluation (100%)

Cannabis Use Trends[9]



Differential Diagnosis[10] (*a diagnosis of exclusion)

- Cyclic Vomiting Syndrome (CVS)
- Cannabis Withdrawal Syndrome (CWS)
- Gastritis
- GERD
- PUD
- Appendicitis
- Diverticulitis
- Sigmoid Volvulus
- Biliary Colic
- Pancreatitis
- Nephrolithiasis
- Urinary tract infection
- Ectopic Pregnancy
- Ovarian torsion

CHS

- Presentation after prolonged/excessive cannabis use
- Delayed gastric emptying
- Associated with bathing behavior
- Responds to cannabis cessation

CVS[11]

- Discrete episodes
  - 3 in prior year
  - 2 in past 6 months
- Increased gastric emptying
- History of migraine headaches
- Symptoms continue despite cessation of cannabis

CHS

- Onset < 24 hours
- Relief with hot shower
- No associated psych. symptoms
- 3 phases
- Amount does not correlate to sx severity
- Symptoms worsen with cannabis consumption

CWS[12]

- Onset 1 to 10 days
- No relief with shower
- Irritability, sleep difficulty, nervousness
- No distinct phases
- Higher quantity results in greater severity of sx
- Symptoms relieved by cannabis consumption

Diagnosing/Evaluating CHS

- CMP
- CBC
- Lipase
- UA and urine culture
- Urine THC Screen
- Urine hCG
- CT Scan or MRI

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Acute Treatments for CHS[12,13]

- IV Fluids
- Hot shower/Topical Capsaicin Cream
- Benzodiazepenes - diazepam
- Antipsychotics - haloperidol
- Antiemetics – ondansetron, metoclopramide (are usually not effective)
- Antihistamines
- PPI
- Pain Relievers
  - ibuprofen
  - acetaminophen
- Tricyclic antidepressants

Long Term Management[10]

- Best treatment appears to be cessation
- Convincing your patient can be very difficult
- Morbidity associated with this disease is related to poor control of symptoms due to ongoing cannabinoid use and frequent hospitalizations.

Pathogenesis[14]

- "The prevailing theory about how CHS develops is that extended activation of the CB_1 receptor by prolonged exposure to THC leads to desensitization and/or downregulation of the CB_1 receptor and changes to endocannabinoid-related enzymes, resulting in **endocannabinoid system dysregulation.**"
- "Given the ubiquitous nature of the endocannabinoid system, dysregulation of its normal functioning can have dramatic and potentially adverse outcomes."

Pathogenesis (cont.)[14]

- Impacts of Endocannabinoid System Dysregulation
  - A dysfunctional stress response
  - Altered thermoregulatory system
  - TRPV1 receptors
  - Inhibited gastric motility
- Additional Considerations
  - Predisposing factors
    - genetics and mood disorders
  - Cannabis contamination (unlikely)
    - pesticides

Dysfunctional Stress Response[14]

- Stress is hypothesized to be involved in the pathophysiology of various nausea and vomiting disorders.
- During the emetic phase of CVS there is an increase in circulation endocannabinoids.
- 20% of chemotherapy patients (very high stress) still experience anticipatory nausea despite receiving antiemetic therapy beforehand.

Altered Temperature Regulation[14]

- High doses of THC cause hypothermia by activating CB_1 receptors in the hypothalamus
- Nausea and vomiting symptoms are also associated with a decline in body temperature
- Hot bathing overcomes the combined hypothermia and improve symptoms
- Additionally, hot baths also cause vasodilation in the skin leading to a redirection of blood flow from the gut to the skin resulting in an alleviation of abdominal pain and nausea

TRPV1 Receptors[14]

- TRPV1 receptors are activated by noxious stimuli, high heat, or agonists (capsaicin) and are associated with nausea and vomiting.
- THC has minimal efficacy at the TRPV1 receptor, but other cannabinoids along with AEA and 2-AG activate and desensitize the TRPV1 receptor leading to dysregulation of TRPV1 receptor functions.
- Topical capsaicin activates the TRPV1 receptor, directly depleting substance P, thus inhibiting pain signals, resulting in analgesic and anti-emetic effects.

Inhibited Gastric Motility[14]

- At lower doses, cannabinoids have an antiemetic effect.
- At higher doses and after accumulation, cannabinoids inhibit gastric motility and emptying which leads to nausea and vomiting.
- Essentially, the pro-emetic effects override the antiemetic effects.

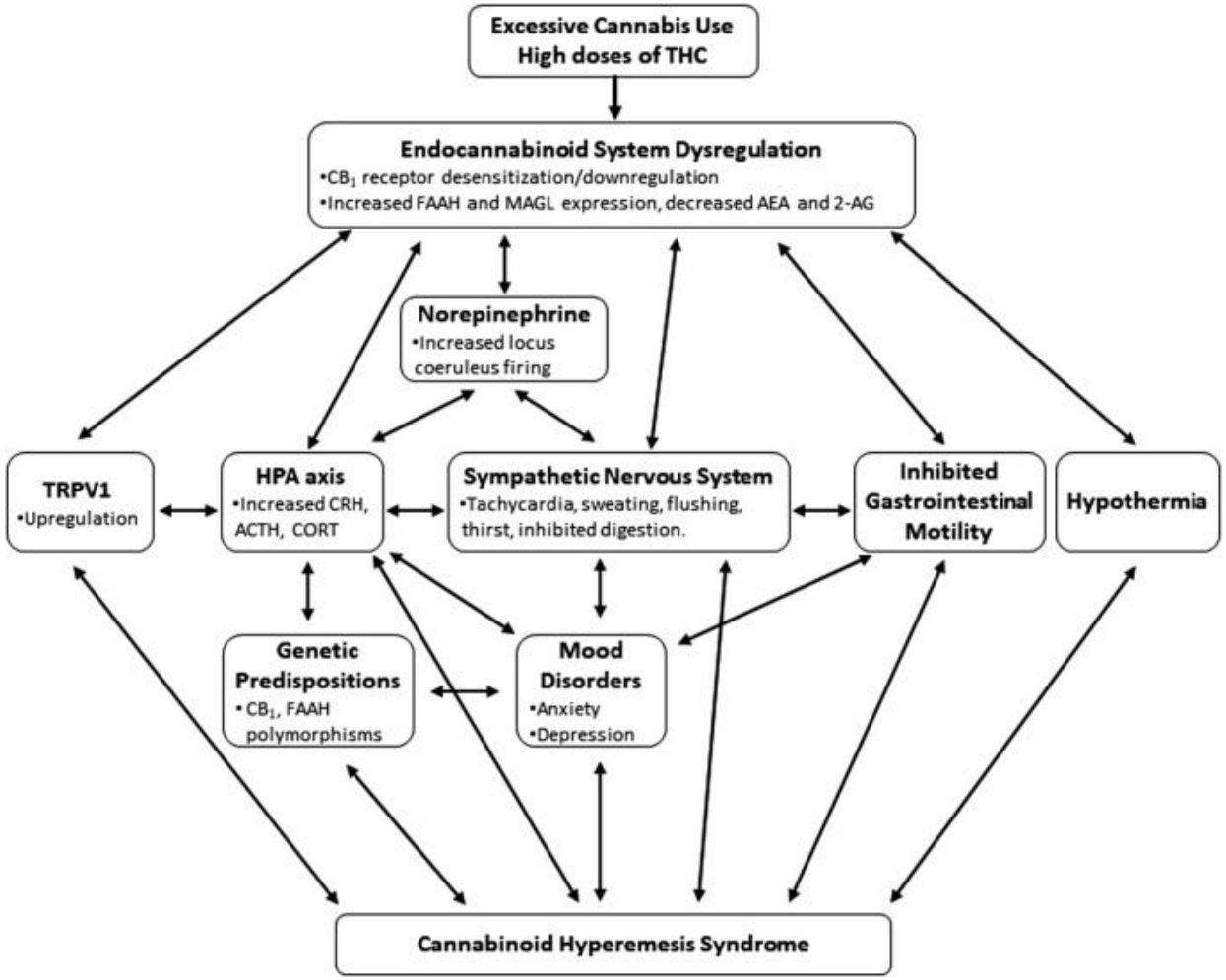
Predisposing Factors[14]

- Genetics
  - Not every cannabis user develops CHS
  - Polymorphisms of the CB_1 receptor gene linked to development of CVS
- Mood Disorders
  - Individuals with dysregulated stress responses may be at higher risk to develop CHS

Cannabis contamination[14]

- May lead to nausea and vomiting
- Pulmonary and cardiovascular symptoms, convulsions, and hepatic toxicity also likely
- Relief with compulsive hot bathing is **not** present in instances of contaminant poisoning
- Synthetic cannabinoids are typically void of pesticides and can cause CHS
- Pesticides are not exclusive to cannabis – we should see more cases

CHS Contributing Factors[14]



Future[15]

- Prevalence of CHS is expected to continue to increase in the US due to three things:
  - Legalization
  - Commercialization
  - Concentration

What can we do?

- Education regarding the potential effects of long-term use and high potency doses of cannabinoids should be disseminated to physicians and to the public!

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Any questions?

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THANK YOU!!