

MARIJUANA TOXICOSIS

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A pet owner walks through the door carrying Muffy, her 10-lb, 3-year-old, spayed female Pomeranian. Muffy is very lethargic and disoriented and seems to have no idea what is going on around her. Muffy's owner proceeds to tell you that her teenager had a sleepover last night and the dog stayed in the room with the teens. When they woke up in the morning, they found that Muffy had vomited and was disoriented and atactic. From your previous experiences, you believe that Muffy may have ingested a central nervous system depressant, possibly marijuana. The when, why, what, and how of a condition can help determine if this is a toxicosis. So a complete history is critical. As a technician, would you recognize the signs of marijuana ingestion? What questions might you ask to verify your diagnosis?

Staff and veterinarians may have a difficult time approaching owners about marijuana because of its illicit status. Ingestion may include anything from a brownie to a baggie, so it is important to have a full history to make a proper diagnosis and determine treatment.

MECHANISM OF ACTION

The main toxic principle of marijuana is believed to be a chemical called tetrahydrocannabinol (THC). Marijuana plant material contains

approximately 1% to 8% THC.¹ Because THC is fat soluble, the chemical is better absorbed orally if fat is ingested with it.² When THC is absorbed, it is then distributed to the lipid layers of body fat, liver, kidney, and brain. In the central nervous system (CNS), THC affects a variety of neurotransmitters, including dopamine, serotonin, and γ -aminobutyric acid (GABA). THC increases the activity of GABA, an inhibitory neurotransmitter. This increased inhibition in the brain results in CNS depression.³

The ingestion of even small amounts of marijuana can cause clinical signs in pets.



CLINICAL SIGNS

The ASPCA Animal Poison Control Center (APCC) has consulted on multiple cases of suspected marijuana ingestion.⁴ Based on these cases, ingestion of marijuana can affect many systems. The most commonly affected areas are the CNS, heart, and gastrointestinal (GI) tract. Mild to moderate CNS depression was the most common sign in animals exposed to marijuana.⁴ Other

Common Clinical Signs of Marijuana Exposure in Dogs^a

Clinical Sign	Occurrence in 20 cases
Ataxia	12
Depression	8
Vomiting	8
Urinary incontinence	4
Bradycardia	3
Hyperthermia	2
Tremor	2
Anorexia	1
Adipsia	1
Hypothermia	1
Seizure	1
Stupor	1
Tachycardia	1
Weakness	1

^aFrom the database of the ASPCA APCC from 1/1/98 to 12/31/01.

CNS signs, such as disorientation and hyperesthesia, may occur. Ataxia and tremors are occasionally seen, and seizures are possible. CNS signs normally last from 4 to 6 hours.^{4,5}

Other signs that may follow marijuana ingestion include cardiac abnormalities, GI signs, and body temperature changes. The most commonly reported cardiac abnormalities are bradycardia and hypotension, but tachycardia can occur. Moderate GI signs such as vomiting, hypersalivation, and diarrhea have been reported. Hypothermia is common. Urinary incontinence may occur.^{4,5}

According to the ASPCA APCC, ingestion is the most common route of marijuana toxicity in dogs. Signs can develop from 30 to 60 minutes after exposure and can last up to 72 hours.⁵ Animals may need medical attention for a few days, as THC can stay in the body for up to 5 days. Marijuana toxicity is rarely fatal in dogs, with the lethal oral dose being greater than 3 g/kg.⁶

TREATMENT

Treatment of marijuana ingestion includes emesis within 15 to 30 minutes after exposure, followed by administration of activated charcoal.⁵ Because THC undergoes enterohepatic recirculation, activated charcoal should be given every 8 hours for 24 hours.⁷ Because of the risk for aspiration, emesis or administration of activated charcoal should only be done if the animal is not showing severe clinical signs.

If the animal is already showing clinical signs when presented, it is most important to treat those signs. Symptomatic treatment and supportive care are essential.⁵ Respiratory and cardiac function should be monitored. Medications such as atropine, propranolol, and diazepam can be administered as needed. Fluid therapy may be required if dehydration or hypotension develops after frequent vomiting or bouts of diarrhea.⁵ Monitoring the animal's body temperature and the blood glucose level is important.⁸ Placing the animal on seizure watch may also be indicated, especially if seizures are documented.

Talking with the Client

Because marijuana toxicity raises a sensitive issue with owners, technicians need to ask pertinent yet neutral questions that can help verify a diagnosis. Questions should be tailored to the specific history and clinical signs of the patient as an individual. Following are some questions that relate to Muffy's presentation:

CLINICAL

- In addition to vomiting, did Muffy have diarrhea or exhibit excessive salivation during the past 12 hours?
- Did Muffy have any urinary accidents (incontinence) during the past 12 hours?
- Has Muffy been panting less during the past 12 hours? More?
- Did you notice any tremors or shaking during the past 12 hours?
- In addition to being disoriented, has Muffy seemed overly sensitive to everyday sounds and noises?

HISTORICAL

- Did your daughter and her friends eat any brownies or cookies as snacks? If so, how were the snacks prepared?
- Did Muffy have access to these snacks?
- Did you see evidence, such as shreds or scraps of plastic, that Muffy may have sneaked snack foods stored in food bags?

PROGNOSIS

Marijuana ingestion in pets is rarely fatal, although even small amounts may be enough to cause clinical signs.⁵ If symptomatic treatment and supportive care are implemented, the prognosis is good. No permanent effects should be anticipated.^{5,9}

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After 24 hours and receiving appropriate treatment, Muffy was able to go home. The owner was grateful for the care that Muffy received and knew that no further problems were expected. Veterinary technicians play a vital role in reaching a diagnosis of toxicosis by obtaining an accurate history of exposure and by managing the patient with an understanding of the consequences of toxic exposure. Technicians should expect owners to ask questions. With a proper understanding of marijuana toxicosis, technicians can accurately answer and provide information with assurance.

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