

Fentanyl Patch Overdose-Case Report

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Abstract

Fentanyl was introduced more than 50 years ago. It has become the most often used opioid for intraoperative analgesia. Since the early 1990s the fentanyl patch has been available for management of chronic pain of all forms of cancer as well as the persistent, intense pain from many noncancerous maladies. Fentanyl is inexpensive to synthesize and prepare for the marketplace and is now familiar to clinicians working in pain and perioperative medicine throughout the world. Fentanyl has also become popular for illicit use and commonly being combined with other drugs and many overdose cases have been reported.

Keywords: Fentanyl patch; Synthetic opioid; Sedative.

Introduction

A pharmaceutical form of synthetic opioid, fentanyl, has several uses in a clinical setting for the treatment of severe pain. Regarding synthetic opioids, a sharp rise in fatal overdoses was observed between 2019 and 2022. For instance, in fentanyl analogs and illicitly manufactured fentanyl this has been observed. Research shows that an overdose of synthetic opioids led to the death of around 56,000 people in 2020. Fentanyl is around 100 times more potent than morphine and 50 times more potent than heroin [1]. Pharmaceutical fentanyl is one of those synthetic drugs that help reduce pain,

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whereas illicitly manufactured fentanyl is fentanyl that is created and distributed unlawfully. Illegally produced fentanyl is highly associated with major health-related concerns. Unluckily, illicit fentanyl is commonly combined with other drugs that have also been obtained illegally, including cocaine, heroin, methamphetamine, ecstasy, and many others. The effects of the medications are dangerously compounded with those of the illicit drugs they are mixed with, and occasionally a person may not even be aware they are taking fentanyl, increasing the dangers of fentanyl overdose and

poisoning. It may lead to an overdose of fentanyl which involves several complications.

Unfortunately, an individual does not need to purposefully consume fentanyl in order to be at risk for an overdose of fentanyl because it is frequently combined with other drugs enhancing the problems. According to one study that observed all overdoses in 10 states, almost 57% of those who died from an overdose also tested positive for methamphetamine, cocaine, or heroin. It can be more harmful to consume fentanyl (deliberately or unintentionally) in any way. Some drug dealers also market and sell fentanyl as extremely strong heroin, putting unknowing customers in grave peril [2]. The 2022 version of this phenomenon is “rainbow” fentanyl. Fentanyl is a drug intended to treat severe pain, but when abused, its potency can cause death. In August, the DEA described this whimsical-sounding, multicolored version of the synthetic opioid as “a deliberate effort by drug traffickers to drive addiction amongst kids and young adults.” States like Florida and West Virginia have already issued warnings to parents about the danger that colorful fentanyl (sometimes in candies like Skittles) poses to children.

Fentanyl exists in several forms, such as:

- A transdermal patch is a patch that is placed on the skin to relieve pain
- A sublingual tablet is a tablet that is dissolved under the tongue
- Buccal tablet a tablet dissolved between the gums and cheek
- The sublingual spray is a solution that is sprayed under the tongue

- The nasal spray is a solution that is sprayed into the nose
- Injectable is a solution that is injected and provided only by a healthcare provider
- An oral lozenge is a lozenge that is sucked on until it dissolves

Symptoms of fentanyl

Symptoms of fentanyl overdose are extremely hazardous that may include constricted pupils, severe respiratory depression (shallow or slow breathing), and clammy and cold skin. It may also cause purple or blue lips or nails, pale, gray, and blue skin, rapid reduction in consciousness, inability to speak and slurred speech, unresponsiveness, vomiting, flimsy or limp arms or legs, and gurgling sounds [3].

Different forms of IV subdermal fentanyl patch

Dosage forms and strengths

Transdermal patch

- 12mcg per hour
- 25mcg per hour
- 50mcg per hour
- 75mcg per hour
- 100mcg per hour

Severe chronic pain

- Intended for individuals with chronic pain who are opioid-tolerant and whose pain is severe enough to need daily long-term and round-the-clock opioid medication and for whom alternate treatment alternatives fall short [4].
- Whenever fentanyl transdermal therapy is started, all other extended-

release opioids should be stopped or tapered.

- Reapplied every 72 hours, 25-100 mcg per hour, until appropriate analgesia is attained.

Who is opioid tolerant?

Individuals who have been using at least 60 mg per day of morphine, 30 mg per day of oxycodone, 25 mcg per day of transdermal fentanyl, 25 mg per day of oxycodone, 8 mg per day of hydromorphone, 60 mg per day of hydromorphone, or an equianalgesic dose of another opioid for a week or more are considered opioid-tolerant [5].

Conversion of IV opioids to fentanyl transdermal

- For up to 72 hours, each transdermal system is worn.
- The conversion of IV opioids to fentanyl transdermal will end up overestimating the dose which may lead to overdosage and eventually cause many health problems, even death in severe cases.
- Starting with the suggested dose and titrating the dose for no more than 3 days after the initial dose until analgesic efficacy can be attained.

Research has shown that the onset of transdermal patches' action and its efficacy are based on various factors, including local and more generalized warmth, site of attachment, and skin abrasions [6]. It is recommended to apply patches to the non-damaged part of the lateral, dorsal thorax, and deltoid muscles. Additionally, cleaning the area with water is much needed, and

external heat applications should not be given to the patch side [1].

It was observed that pharmacologically fentanyl patch metabolites are not active. There is no influence of the first-pass effect by gastrointestinal absorption or liver to fentanyl patch metabolites. Its affinity is higher for μ_1 receptors. Hence, there are no adverse effects caused by μ_2 receptors activation, such as vomiting, constipation, or nausea, observed with morphine [7].

Adverse effects

The adverse effects of overdosing fentanyl transdermal patch may include asthenia, confusion, constipation, dry mouth, nausea, somnolence, sweating, vomiting, abdominal pain, anorexia, apnea, diarrhea, dyspepsia, dyspnea, and euphoria. People may also experience hallucinations, headaches, hypoventilation, pharyngitis, pruritus, and amnesia.

Precautions

- While using fentanyl, it is highly necessary to consult a doctor so they can observe whether it's working precisely or if a patient needs to stop taking it. Unwanted effects can be checked through urine or blood tests [8].
- The sticky side of the gel or the patch should not be touched as it can rapidly be absorbed through the mouth and eyes and is more likely to cause damage. It's important to let the doctor or nurse know if an individual touches the gel or patch's sticky side accidentally. An individual should be increasing the fentanyl skin patch

when they use the medicine for a while, and the pain occurs. This pain might not be going away through regular doses. However, consulting doc is one of the most crucial steps in this situation [9].

- The effects of alcohol and other CNS depressants will be intensified by this medication. The nervous system is slowed down by the drugs known as CNS depressants, which may lead the patient to feel sleepy or less attentive. Antihistamines, tranquilizers, medications for hay fever, or colds, other allergies, sleeping aids, painkillers or narcotics, muscle relaxants, benzodiazepines, seizures or barbiturates medications, or anesthetics, including dental anesthetics, are a few examples of CNS depressants. After a person stops using this medication, this effect could last for a few days [8].
- Before undergoing a technique termed a magnetic resonance imaging (MRI) scan, the Ionsys® patch must be removed. If left in position during the process, it can result in skin burns.
- Serious skin responses are possible with the Ionsys® patch. If an individual experience redness, lesions, burning, swelling, or a rash on the skin, particularly at the application site, they need to approach the doctor [10].
- Some persons who use fentanyl may end up experiencing lightheadedness, drowsiness, or a false sensation of well-being. Until people are certain of how this medication affects them,

they need to avoid driving or engaging in any activity that could be hazardous.

- Using fentanyl patch excessively led to overdose that may cause breathing problem, unconsciousness, and sometimes even death. Severe signs may include pinpoint pupils of the eyes and extremely low blood pressure [1].
- People taking monoamine oxidase (MAO) inhibitors in the past couple of weeks should avoid using fentanyl patches. Tranylcypromine (Parnate®), isocarboxazid (Marplan®), selegiline (Eldepryl®), and phenelzine (Nardil®) are some MAO inhibitors examples [10].

Contraindications

There are a few medications that are highly contraindicated with the use of fentanyl transdermal. They include alvimopan, isocarboxazid, phenelzine, rasagiline, safinamide, selegiline, selegiline transdermal, and tranylcypromine. Alternatives may include abametapir, amiodarone, amobarbital, benzhydrocodone, bicalutamide, brigatinib, ceritinib, chloral hydrate, chlorpromazine, cimetidine, cisatracurium, cyclosporine, desflurane, desipramine, eluxadoline, erythromycin base, erythromycin ethylsuccinate, ethanol, fluconazole, fluoxetine, fluphenazine, and a few others [4].

Case report

69-year-old male patient presented with respiratory distress secondary to fentanyl patch overdose arrived to ER via rescue. This

patient was transported with a supraglottic airway prior to arrival. Patient removed the airway when the patient was more awake as no sedative or paralytics were given by rescue prior to arrival. Narcan was given. EMS found patient had a fentanyl patch on. Patient required emergent airway management as soon as the patient arrived to the ER. Patient was given supplemental oxygen to help control symptoms of agitation so medical care can be provided. ABG was preformed no hypoxemia, normal PH findings. CT of the head impressions showed unremarkable findings, Chest CT showed possible infiltrates. Antibiotics were ordered; patient labs reviewed and showing leukocytosis. Electrolytes showed no significant abnormalities. This patient was admitted for further management. Patient was treated for

sepsis hyponatremia extracellular fluid depletion.

Conclusion

Fentanyl is a lethally potent drug that is driving a rapid rise in overdose deaths. Deaths involving synthetic opioids other than methadone (primarily fentanyl) continue to rise. It is important to educate and bring awareness to the subject matter primarily to the use of Fentanyl mix into other recreational drugs concluding higher rates of deaths. Fentanyl is killing thousands of people who don't even know they've taken it. The recent increase in overdoses can be traced to the potent synthetic opioid fentanyl and other similar substances, which are increasingly laced into heroin and other street drugs, making them even more deadly.

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