Letters

Heat-Related Toxicity with the Fentanyl Transdermal Patch

To the Editor:

The following case illustrates a previously undescribed cause of heat-induced change in transdermal fentanyl delivery, which resulted in toxicity.

Case Report

A 44-year-old Latino male with painful HIV neuropathy was treated with transdermal fentanyl 75 μg every 3 days plus two oxycodone with acetaminophen once or twice each day for breakthrough pain. He had 400 CD4 cells and was also taking zidovudine and epivir, two antiviral medications, and phenytoin for a past seizure disorder. The patient also had a history of heroin use, but had been drug-free for over 2 years.

The patient had been receiving the same opioid regimen for nearly 1 year and his pain was well-controlled. During the summer, he, his wife, and his son attended a summer camp for HIV+ individuals and their families. As part of the camp's protocol, all medications were turned over to the camp nurses, who dispensed them at regular intervals during the day. No illicit drugs were permitted. The camp was located in a rural area, several miles from any town, and began on a Saturday. The weather was warm and sunny, and stayed that way for the entire week.

The patient, a large, robust-looking man, was in his usual state of health when he arrived at camp. All campers had undergone a medical screening and clearance prior to camp. At home, the patient spent most of his day indoors and his lifestyle was sedentary. At camp, most activities occurred outside and he was involved with many of them, such as arts and crafts, swimming in the lake, hiking and playing ball.

On Wednesday morning, the patient stated he was feeling very tired. He left lunch before everyone else and walked back to his cabin to rest at about 1:00 pm. The camp nurses were notified by his wife at about 2:30 pm that she could not rouse her husband. The camp nurses arrived 15 minutes later and found him stuporous. His blood pressure and pulse were normal. His speech appeared slurred. There were no focal neurological deficits. The wife insisted that no illicit substances and no new medications were taken. He had taken his usual medications, including two oxycodone tablets earlier that morning. The patch had been changed the day before. The camp physician believed that he was suffering from phenytoin overdose and the patient was taken to the local hospital, accompanied by one of the camp nurses.

In the Emergency Department, his vital signs were again normal. He continued to be difficult to arouse. His pupils were pinpoint and the doctor administered naloxone IV. He became diaphoretic, tachycardic and agitated, typical of opioid withdrawal. An hour later, however, he returned to his stuporous state. The ER physician removed the fentanyl patch.

A head CT was done and found to be normal. His urine toxicology screen was free of nonprescribed substances and his phenytoin level was actually subtherapeutic. He was admitted to the hospital and placed on a naloxone infusion, his only therapy. The patient became responsive and was discharged home 48 hours later. Soon thereafter he was put back on the fentanyl patch at his usual 75 μg dose and continues to do well.

Discussion

These events suggest that the increase in outdoor activities, combined with the sunny

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and warm environment, caused a unique situation in which fentanyl absorption increased because of a rise in body temperature. It has been reported that fentanyl serum concentrations may increase by one-third in patients with body temperatures of 40°C.[1]

Clinicians should be aware that, in addition to fever and hot tubs/saunas, which are listed on the package insert, regular exposure to any heat source plus increased activities might lead to a potential increase in serum fentanyl levels. When a patient's travel plans include a sunny, hot location, clinicians should consider temporarily decreasing the patch dose and increasing short-acting opioids during this time. Patients should also be advised to report unusual fatigue and/or drowsiness when on the patch, especially when there is a significant change in environmental temperature and activity level.

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Scopolamine Butylbromide Plus Octreotide in Unresponsive Bowel Obstruction

To the Editor:

Bowel obstruction is a serious condition in advanced cancer patients, and commonly complicates ovarian and gastrointestinal tumors.[1] Conservative management with a combination of anticholinergic, analgesic, and antiemetic drugs may be effective in controlling the unpleasant gastrointestinal symptoms of inoperable patients.[2,3] More recently, octreotide, an antisecretory agent, has been reported to be effective in reducing the gastrointestinal symptoms due to malignant bowel obstruction.[4,5] The following case demonstrates the value of combining the anticholinergic drug, scopolamine butylbromide, and octreotide in a patient with a high level of obstruction, whose gastrointestinal symptoms were uncontrolled when either drug was administered alone.

Case Report

A 35-year-old man with gastric cancer underwent laparotomy and was found to have diffuse carcinomatosis involving stomach, duodenum, and jejunum, extending to the abdominal wall. In the postoperative period, symptoms of bowel obstruction developed, including several episodes of vomiting daily and severe pain. The diagnosis was confirmed by a plain radiograph. The patient received parenteral nutrition and the family insisted in continuing hydration and nutrition by the central vein access (about 2 liters a day). Metoclopramide was unable to restore intestinal transit. Nasogastric tube insertion was refused. Ranitidine 150 mg daily and haloperidol 5 mg, and then scopolamine butylbromide 120 mg daily were ineffective in controlling the episodes of vomiting. Tachycardia occurred and scopolamine was replaced by octreotide 0.6 mg subcutaneously, but this did not reduce the episodes of vomiting. The scopolamine (80 mg daily) and octreotide (0.3 mg) were then combined and the episodes of vomiting ceased, presenting only after the oral intake of fluids or eating ice cream. Increasing doses of morphine were administered (up to 300 mg intravenously), with-