

“ Can Using Only A Single Transdermal Fentanyl Patch Be Fatal? ”

Tek Doz Fentanil Yama Kullanımı Ölümcül Olabilir Mi?

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Özet

Fentanil potent ve kısa etkili narkotik analjezik olma özelliğinden dolayı akut ve kronik ağrı tedavisinde kullanımı yaygınlaşmıştır. Transdermal fentanil üretildiğinden itibaren kronik ağrı tedavisinde yaygın olarak kullanılmıştır. Transdermal fentanil kullanımına bağlı yan etkiler diğer opioidlere bağlı gelişen yan etkilerle benzerdir. Biz bu yazımızda bel ağrısı şikayeti ile tek doz fentanil yama kullanımı sonrasında opiyat toksisitesi gelişen 80 yaşındaki olguyu sunmak istedik.

Anahtar Kelime Transdermal, fentanil, opiyat, toksisite

Abstract

Fentanyl is a potent and short-acting narcotic analgesic which is used in the treatment of acute and chronic pain. Transdermal fentanyl have been widely used in the treatment of cronic pain. The side effects of transdermal fentanyl are similar to other opioids side effects. In this report we presented an 80 years old patient with lumbago who developed opiate toxicity after using one dose of fentanyl patch.

Keywords Transdermal, fentanyl, opiate, toxicite

Introduction

Fentanyl is a potent and short-acting narcotic analgesic which is widely used in the treatment of acute and chronic pain. Fentanyl has been used also as transdermal therapeutic system (TTS-transdermal patch) because of its' low molecular weight and lipophilic properties, in recent years.¹ In the 1990s, a TTS delivering a constant dose of fentanyl for three days was commercialized. The dosage must be increased by titrating because it is 50-100 times more powerful than morphine and absorbed rapidly.² Pharmacologically, fentanyl, like all μ agonists, acts on the central nervous system causing analgesia, sedation, severe respiratory depression, muscle rigidity, seizures, coma and hypotension. Adverse reactions include mood changes, euphoria, dysphoria, drowsiness, constricted pupils, decreased gastrointestinal motility, nausea and vomiting.^{1,2}

In this report we presented an 80 years old patient with lumbago who developed opiate toxicity after using one dose of fentanyl patch (75 mcg / hour).

Case

An 80-year-old male patient was brought to our emergency department with complaints of altered consciousness, and drowsiness. His consciousness was

confused in the examination in the emergency department and Glasgow Coma Scale: 12 (E: 3 M: 5 V: 4). Vital signs were: Arterial blood pressure: 150/85, pulse: 76 beats / min, temperature: 36.7 C°, respiratory rate: 6-8 breaths / min, respectively. The systemic examinations were normal except miotic pupils and shallow breathing. There was no abnormality in the electrocardiography (ECG). Blood glucose was measured as 145 mg / dl from the fingertip.

In the patients story, he had hypertension and coronary artery disease and he was given 75 mcg / h fentanyl patch for chronic lumbago by his son who is also a doctor. Patients' relative told that he removed this patch soon after complaints of dizziness and drowsiness started.

In physical examination no patch was observed in regions where transdermal patch is applied normally. The routine laboratory tests, arterial blood gas and urine toxicology panel is performed. Biochemical parameters and blood count was normal in laboratory examination. In arterial blood gas analysis pH: 7.30, pCO₂ 61 mmHg, pO₂: 67.9 mmHg, satO₂: 93.4%, respectively. In urine toxicology screening panel it was opiate-negative (1st and 6th hours). Cranial computed tomography (CT) and thorax CT were performed in order to explain change of consciousness and respiratory distress and were reported as normal

In the clinical course miosis became more evident, shallow breathing worsened, Ph decreased to 7.27 and pCO₂ increased to 67.7 mmHg. The patients' respiration worsened and he was given naloxane 0.4 mg iv bolus due to consideration of a prolonged effect of fentanyl patch. One minute after administration of naloxane the patient began to recover, and when he was asked when he had removed the patch he found and removed the patch that he plastered on the medial of his subgluteal region. After 6 hours of naloxane infusion his consciousness fully recovered and blood gas levels returned to normal parameters. At the end of 6th hour naloxane infusion discontinued and the patient was followed for the next 6 hours. At the end of follow up vital signs were normal and no alterations in consciousness was observed and the patient was discharged with instructions.

Discussion

Fentanyl is a pure selective μ receptor agonist which can be administer intravenous, epidural, transmucosal and transdermal. %98.6 of administered dose is redistributed by vascularized tissues such as brain and heart because of its highly lipophilic characteristic. Therefore, the effect of intravenous or epidural administration will be swiftly effective in the treatment of acute pain.³

Fentanyl releases at a constant speed for a long time when applied by transdermal system. Transdermal fentanyl releases 25, 50, 75, 100mcg/h speed. These forms should be replaced with an interval of 72 hours to provide effective analgesia.⁴

Transdermal fentanyl have been widely used in the treatment of cronic pain. But some side effects and intoxications as a result of misuses have been reported. Ergil at all. Reported a patient has an oropharyngeal carcinoma resistant to other analgesics, developed respiratory depression and get a mechanical ventilation support 10 hours after administration of fentanyl badges.⁵ In our case patient has a respiratory depression with single dose fentanyl but no need to ventilator support and respiratory system recovered with naloxane administration.

Tok at all. has detected a 78 years old male patient with lung cancer with a complaint of dizziness and shortness of breath. Atrioventricular (AV) complete block has been spotted in the ECG and pacemaker implanted. After that the investigation of causes of AV block such as cardiac biochemistry tests, echocardiography and angiography has been performed. When there is not any other pathology they considered that AV block may developed due to fentanyl badge. 3 days after the badge removal, the patients rhythm turns to sinus rhythm and temporary

pacemaker is no longer needed. Normal heart rhythm is seen in the follow-up and discharged.⁶ In the literature, there are reports of intoxications after atypical intakes. Tekse at all. reported a 1 years old child who swallow the badge which his mother uses and falls to ground, is dead and can only diagnosed postmortem period.⁷

Reeves and Ginifer reported a 35 years old woman who administered transdermal fentanyl by intravenous use and resulting death.⁸ Desio JM at all. reported a 21 years old woman who administered transdermal fentanyl by intravenous use and developed respiratory arrest for 2 times.⁹

Jumbelic reported 8 cases resulting in death after the use of fentanyl badges. 5 of them were on prescription and 3 of them were drug abuse without prescription. 2 of the prescribed patients were die after first administration.¹⁰ In addition, there are 2 atypical ways of intoxication in the literature such as inhale the burning badge and ingesting the boiled badges water.^{11,12}

Serum fentanyl concentration decrease to %50 takes 17 hours after removal of the badges.¹³ Therefore, in patients using fentanyl badges, toxic effects may continue even after removal of the badge should be noted. In our case these side effects considered and naloxane infusion administered.

The side effects of transdermal fentanyl are similar to other opioids side effects. These side effects occur earlier and more common in especially elderly patients.¹⁴ in our case 80 years old male patient, the toksic side effects occur early after first use.

Naloxane is very effectively reverses respiratory depression and supports diagnose. In our patient the response to administration of 0.4 mg naloxane supports our diagnose and provided to create a treatment plan.

Conclusion

Transdermal fentanyl patch is widely used for pains which don't respond to other analgesics. Dose should be increased gradually and further caution should be exercised in patients who are not known whether they have used narcotic analgesics previously. It must be noted that the use of even a single dose of fentanyl can be fatal. Emergency doctors should also consider that the patch should have been plastered on unusual locations and urine toxicology panel used in emergency rooms may be negative in fentanyl use. These analgesic patches should be kept in mind while taking history of elderly patients presented with altered mental status or non-cardiac arrest.

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