Bibliografía Surefuser

Pharm Dev Technol. 2011 May 26. [Epub ahead of print]

Effect of coefficient of viscosity and ambient temperature on the flow rate of drug solutions in infusion pumps.

Kawabata Y.

Source

Department of Pharmacy, Niigata Cancer Center Hospital, Kawagishi-cho, Chuo-ku, Niigata, Japan.

Abstract

Context: FOLFOX6 and FOLFIRI regimens are often selected as the first- or second-line treatment for advanced or recurrent colorectal cancer. Patients are now able to undergo at-home treatment by using a portable disposable infusion pump (SUREFUSER(®)A) for continuous intravenous infusion of 5-fluorouracil (5-FU). The duration of continuous 5-FU infusion is normally set at an average of 46 h, but large variations in the duration of infusion are observed. Objective and methods: The relationship between the total volume of the drug solution in SUREFUSER(®)A and the duration of infusion was analyzed by regression analysis. In addition, multiple regression analysis of the total volume of the drug solution, dummy variables for temperature, and duration of infusion was carried out. Results: The duration of infusion was affected by the coefficient of viscosity of the drug solution and the ambient temperature. Conclusion: The composition of the drug solutions and the ambient temperature must be considered to ensure correct duration of continuous infusion.

Gan To Kagaku Ryoho. 2010 Aug;37(8):1513-8.

[Performance of a portable continuous infusion pump (SUREFUSER A) in continuous infusion of 5-FU].

[Article in Japanese]
Kimata T, Sakamoto E, Kawachi A, Takahashi Y, Kuroki A, Nakamura M, Kawade Y, Tokui K, Suzuki T, Oyama T, Uchida T, Yamada T, Kondoh M, Ogura M.

Source

Dept. of Pharmacy, Nagoya Daini Red Cross Hospital.

Abstract

Therapy with mFOLFOX6/FOLFIRI used in treating colorectal cancer is typical of the regimens performed in outpatient settings. In this therapy, 46-h continuous infusion of 5-fluorouracil (5-FU) with concomitant oxaliplatin and irinotecan hydrochloride is conducted. The portable continuous infusion pump that makes continuous infusion possible has a non-electric structure, so variation in the infusion rate is seen. There are known effects of 5-FU concentration and temperature, and many studies have reported on the precision. In our hospital, we have experienced many cases of incomplete infusion and delays for the above reasons. We changed the specifications of the infusion pump to correspond to the kinematic viscosity of 5-FU and made all drug solution amounts uniform. We measured the time required to administer the drug solution from the time the infusion was started (recorded by a nurse) and the time it was completed (recorded by the patient), and confirmed the precision of the pump after the changes were made. It was found that while there was a decrease in the infusion rate at which the effect of the kinematic viscosity of 5-FU is seen, the mean infusion time was kept to within 46+/-10% hours in more than 90% of patients. There were no effects from concentration differences in 5-FU, and the completion time was reduced. The management and lifestyles of individual patients are potential factors in precision errors, and it is important to explain in advance to patients the necessity of secure fixation and infusion pump problems that might occur.

Yakugaku Zasshi. 2009 Mar;129(3):359-64.

[The optimal volume of medicinal solution in the portable disposable infusion pump (SUREFUSER A) for FOLFOX6, FOLFIRI therapy of colorectal cancer patients].

[Article in Japanese]

Kawabata Y, Nakagawa A, Uchikoshi H, Tamiya Y.

Source

Department of Pharmacy, Niigata Prefectural Toukamachi Hospital, Niigata, Japan. mwoodmo@yahoo.co.jp

Abstract

Oxaliplatin, established as a therapeutic standard globally for advanced/recurrent colorectal cancer, was approved in Japan in April 2005. With this approval the FOLFOX and FOLFIRI regimens are often selected now as 1st or 2nd line treatment for advanced/recurrent colorectal cancer. Patients receiving these regimens needed to be hospitalized, because the total treatment period was as long as 48 hours. However, the patient who hoped for staying at home has become possible to spend more time at home by using a portable disposable infusion pump (SUREFUSER A) for continuous intravenous infusion of 5FU. The duration of continuous 5FU infusion is set at an average of 46 hours, however, large variations are observed in the duration of infusion. Due to limitation of time of a patient, there was a case that finished injection on the way. On the contrary, there was a case that finished in a much shorter time than the pre-designated 46 hours. In an attempt to resolve this problem, we analyzed the relation of the total volume of the medicinal solution in SUREFUSER A and the duration of infusion by regression analysis. The results revealed that it might be possible to bring the total infusion time to close to 48 hours by finding the most suitable volume for continuous 5FU infusion over 46 hours.

Masui. 2006 Mar;55(3):344-7.

[Adsorption of local anesthetic into disposable infusion balloon].

[Article in Japanese]

Ueta K, Suzuki T, Uchida I, Mashimo T.

Source

Department of Anesthesiology, Osaka University Medical School, Suita 565 0871.

Abstract

BACKGROUND:

The aim of this study was to investigate the adsorption of local anesthetics lidocaine and ropivacaine, into disposable infusion balloons made from various kinds of plastics.

METHODS:

The concentration of local anesthetic that flows out of a balloon was measured.

RESULTS:

The concentration of both lidocaine and ropivacaine in clinical formula decreased only 4.5 percent regardless of infusion balloons. However, the concentration of lidocaine pH 7.4 decreased by 10 percent in the Syrinjector made from polypropylene and polyvinyl chloride, and that of 18-20 percent in other infusion balloons (Surefuser, Baxtor Infuser,

DIB Catheter made from isoprene rubber and polyvinyl chloride, isoprene rubber and polyvinyl chloride, silicon and polyvinyl chloride, respectively).

CONCLUSIONS:

The adsorption of local anesthetic into infusion balloons has little effect in clinical situation. Whereas, in case of lidocaine pH 7.4, the adsorption depends on the specific type of plastics.

PDA J Pharm Sci Technol. 2005 May-Jun;59(3):200-5.

Permeation risks with peracetic acid and hydrogen peroxide sterilizing agent inside ambulatory pumps.

Bourguignon C, Grain A, Schlatter J, Vermerie N.

Source

Department of Pharmacy and Toxicology, University Hospital of Jean Verdier, Avenue du 14 juillet, 93140 Bondy, France.

Erratum in

- PDA J Pharm Sci Technol. 2005 Sep-Oct;59(5):338. Celine, Bourguignon [corrected to Bourguignon, Celine]; Amandine, Grain [corrected to Grain, Amandine]; Joel, Schlatter [corrected to Schlatter, Joel]; Norbert, Vermerie [corrected to Vermerie, Norbert].

Abstract

The sterilizing agent commonly used to sterilize materials for an isolator is a peracetic acid (PA) and hydrogen peroxide (HP) mixture. The permeation of this agent through ambulatory pumps should reveal a potential toxic risk for the patient and a stability modification of the drug by a pH change. Six wrapped and six unwrapped ambulatory pumps from each laboratory were introduced in the transfer chamber for the sterilizing process over 2 h 45 min. The presence of PA and HP were determined by using analytical strips. If the analytical strips of HP were positive, the level of HP was determined by using a specific spectrometric kit. No acid permeation was found in all wrapped pumps. Acid permeation was found in two samples of Ultraflow unwrapped series and in one unwrapped sample of Easypump series by the analytical strips. In other unwrapped samples, no acid permeation was detected. In four unwrapped ambulatory pumps (Accufuser, Infusor, Ultraflow, and Easypump), the analytical strips of HP were positive in the range of 0.5 to 25 mg/L, varying by laboratory. In only one sample (Surefuser), no detection of HP was found. The quantitative dosage of HP by spectrophotometry confirmed the permeation risk inside all pumps except the Surefuser. Our investigation shows that the permeation risk inside ambulatory pumps is real when

pumps are unwrapped and exposed at high levels to PA and HP mixture. The results of our study recommend retaining the wrapping for the peracetic acid sterilization of the ambulatory pumps.

Masui. 1998 Jan;47(1):98-101.

[Evaluation of the temperature dependent flow rate in three portable epidural infusion devices].

[Article in Japanese]

Kita A, Watanabe H, Namiki A.

Source

Department of Anesthesiology, Sapporo Medical University, School of Medicine.

Abstract

We evaluated the temperature dependent flow rate of local anesthetics, 0.25% bupivacaine, in three portable epidural infusion devices, Infusor of Baxter, Surefuser-A of Nipro and Excelfuser of Kobayashi Medical. Flow rate was calculated using a digital precision scale in a large temperature controlled incubator. In two preliminary studies the temperature was 25 degrees C at the patient's side and 33 degrees C on the patient's skin. All the devices increased the flow rate with an increase in temperature and there were no clinically significant differences in the infusion quality and stability. It should be remembered that the flow rate of Excelfuser is 30% greater at 33 degrees C than the inscribed value, because this calibration temperature of 22 degrees C (a new type calibrated at 32 degrees C will come to the market soon) is about 10 degrees C lower than that of others. In critical patient care we should watch the temperature of the flow controller. Additionally, according to our viscosity measurement study, we conclude that temperature depended flow rate changes are related not to the inner diameter of the flow controller, but to the viscosity of local anesthetics.