Constant-pressure Irrigation for Arterial Catheters

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To keep an arterial needle or catheter patent, many physicians use a pressurized sleeve enclosing a plastic bag of sterile heparinized saline solution for slow continuous infusion through the catheter. Flow can be kept constant and slow by recently introduced devices like the Sorenson CFS Intraflow described by Gardner *et al.*[1] or the Statham P37 transducer or their Micro-Flush system (model TA 3002). The pressure in the sleeve is maintained by a squeeze-bulb inflating system which requires an attendant to keep the pressure above systolic levels. Because there is a ready source of oxygen and air at 50 psi in our intensive care units, we are utilizing a constant-pressure regulator powered by oxygen or air to replace the squeeze bulb, thereby eliminating one chore in a busy unit.

Regulators * are available in several pressure ranges. Figure 1 shows model H-10XT-H (0–15 psi) adapted to the regular wall fitting for either air or oxygen (depending upon which is being used for therapy) by using a size 9/16-18TH × 1/4NPT (male both ends) adapter. Figure 2 shows a Y piece attached for occasions when both air and oxygen outlets are in use. In this situation there is a one-way check valve in the other arm. The regulator has a control for the outlet pressure, which we usually set at 300 torr. A lock nut forestalls inadvertent changes, and the regulator is set with the control screw on the bottom to discourage tampering. We have had no problems in maintaining a constant pressure in the sleeve; the unit is silent, inexpensive, and has needed no upkeep.

Fig. 1. Pressure regulator, model H-10XT-H (0–15 psi).

Fig. 2. Pressure regulator with Y piece for use with both air and oxygen outlets.

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* Manufactured by Conoflow Corporation, Blackwood, N. J. 08012; available from John M. Vossler & Co., 4917 Lankershim Boulevard, North Hollywood, Calif. 91601.

After our experience with this system and the preparation of this report, we found that Johnson and Ito [2] had reported a system using small oxygen tanks for a pressure source in 1969. However, tanks have to be replaced, and their pressure watched. Using the regulator with piped gas is simpler, requires less attention, and is less expensive.

REFERENCES

1. Gardner RM, Warner HR, Toronto AF, et al: Catheter-flush system for continuous monitoring of central arterial pulse waveform. J Appl Physiol 29:911–913, 1970
2. Johnson DG, Ito T: Continuous flush of arterial pressure-recording catheters. J Thorac Cardiovasc Surg 57:675–678, 1969

The Effect of Warming Blankets on Maintenance of Body Temperature of the Anesthetized, Paralyzed Adult Patient

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Surgical patients frequently become hypothermic (body temperature less than 36 C) during operation. Thermal blankets have been recommended for preventing intraoperative heat loss,[1–5] but their usefulness and safety have been questioned.[6–8] Maintenance of ambient temperatures in the range of 21–24 C has also been recommended as a means of decreasing intraoperative heat loss.[3, 9, 10] This study was undertaken to determine the effectiveness of warming blankets, as used clinically, in preventing hypothermia, compared with the effect of operating room temperatures.

METHODS

Fifty adult patients undergoing either intra-abdominal surgery or procedures not involving any body cavity were studied. A warming blanket covered by two thin layers of cotton blanket was placed beneath each patient in the study group. Thermal blankets were attached to previously warmed blanket-heating units (selected temperature 41 C) before induction of anesthesia. Anesthesia was induced in the operating room with thiopental sodium (Pentothal), followed by succinylcholine hydrochloride (Anectine) for intubation. Maintenance was accomplished with nitrous oxide, 3–4 l/min, and oxygen, 2 l/min, supplemented by an intravenously-injected narcotic (alone or in combination with a tranquilizer).‡ A nondepolarizing muscle relaxant ‡ was given, and ventilation was controlled. All intravenous fluids were infused at room temperature.

Temperatures measured with either mercury thermometers or calibrated thermistors and telethermometers were: 1) preoperative oral; 2) warming-unit fluid; 3) upper surface of the cotton blanket covering the thermal blanket; 4) esophageal (38 cm from the incisors); 5) operating room.

Patients in cold (18–21 C) rooms have been shown to have significantly greater decreases in esophageal temperature than those in warm (21–24 C) rooms.[9, 10] Therefore, in order to compare the efficacy of warming blankets in preventing hypothermia with the effect of room temperature, the patients were grouped as follows: I. ten study patients versus 17 con-

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‡ Choices of narcotic (morphine, meperidine, or fentanyl), tranquilizer (diazepam, droperidol, or none), and muscle relaxant (*d*-tubocurarine or gallamine) were those of the individual administering anesthesia (not of the authors conducting the study) and hence were uncontrolled.