Anesthetic Management is a Major Determinant of Early Exubation After Elective Cardiac Surgery

To the Editor:

In a recent article in CHEST (July 1997),1 Reyes and coworkers reported their experience with early extubation after cardiac surgery and its impact on ICU stay and postoperative complications.

To investigate the hemodynamic effects and the influence on the postoperative ICU course of remifentanil/propofol anesthesia compared with fentanyl/propofol anesthesia, we prospectively studied 55 patients (mean age, 63.7 years; 32 male, 23 female; mean ejection fraction, 43.5%) undergoing elective cardiac surgery. After induction with fentanyl 10 μg/kg, thiopentone 1 mg/kg, and vecuronium 0.15 mg/kg, maintenance was obtained with 3 to 5 mg/kg/h propofol infusion randomly combined with fentanyl 2 μg/kg/h (group A, 29 patients) or remifentanil 0.5 to 1 μg/kg/min (group B, 26 patients), running throughout the surgical procedure. Invasive arterial pressure, thermomodulation, and omniprobe transesophageal echocardiography were registered intraoperatively. No relevant hemodynamic differences were found between the two groups. Postoperatively, mean duration of intubation was 7 h in group A and 4 h in group B (p<0.05), while duration of mechanical ventilation was 3 h in fentanyl patients and 1.5 h in remifentanil patients (p<0.05). ICU stay was shorter in group B (18 h) than in group A (27 h) (p<0.05). One patient in group A and none in group B failed extubation. No differences were found between the two groups in postoperative complications.

Reyes and coworkers observed a high incidence of extubation failure due to persistence of anesthesia (44% of patients who failed), and anesthesia was responsible for reintubation in one patient. They also performed “early” extubation between 7 and 11 h after operation in low- and moderate-risk patients. We agree with the authors on the importance of anesthesia in this field, but we think that the use of long-acting drugs (fentanyl, diazepam) should be reduced. In our opinion, extubation can be performed earlier than 7 h, and also in uncomplicated high-risk patients, if hemodynamic end-points are strictly kept with extensive monitoring (pulmonary artery catheter, transesophageal echocardiography) and aggressive therapy.

We conclude that in a setting where short-acting anesthetics are used and hemodynamics are respected, early extubation is feasible, even in compromised cardiac surgical patients, without increasing postoperative complications.

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To the Editor:

We read with interest the data of Guarracino and coworkers, who compare the effect of two anesthetic protocols on hemodynamics, duration of intubation, and ICU stay of patients undergoing cardiac surgery. We think that their data reinforce the opinion of other authors (including ourselves) that the key factor to early extubation is the type of anesthesia used.1,2

There is no doubt that the use of inhalational or short-acting IV anesthetics allows extubation of cardiac surgery patients very early after operation.3,4 This practice is gaining popularity because it allows more efficient use of high-cost postoperative beds. However, the question is whether it increases postoperative complications over the traditional opioid anesthesia and overnight sedation and ventilation. Using high-dose fentanyl anesthesia, we showed that most low- and moderate-risk patients could be extubated between 7 and 11 h after surgery with no increase in complications. We think that earlier extubation is unlikely using this type of anesthesia. Cheng et al5 compared a high-dose fentanyl anesthesia and late extubation (18.9±1.4 h) protocol to a low-dose fentanyl and propofol infusion protocol that allowed early extubation (4.1±1.1 h). They found no difference in postoperative complications.

Guarracino et al compared two protocols based on propofol infusion and small maintenance infusion of either fentanyl or remifentanil. It is interesting that even this small difference allowed earlier extubation in the remifentanil group. It is not surprising that they found no difference in postoperative complications between groups because the protocols are very similar and the number of patients studied is too small. Guarracino et al also believe that early extubation can be performed safely in high-risk patients. Unfortunately, this cannot be concluded either from their data or from the literature. Among the 55 patients they report, the number of high-risk patients must be small and therefore comparisons in subgroups are meaningless. On the other hand, most large studies of early extubation specifically exclude subjects considered at high risk.5-7 Clearly, further studies are warranted before expanding the practice of early extubation to high-risk patients.

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REFERENCES

1 Shapiro BA, Lichtenthal PR. Inhalation-based anesthetic techniques are the key to early extubation of the cardiac surgical patient. J Cardiothorac Vasc Anesth 1993; 7:135-36