Author's response to reviews

Title: Risk factors for endotracheal re-intubation following coronary artery bypass grafting

Authors:

Liu jian (swalk0721@msn.com)
Shi sheng (shi__sheng@sina.com)
Yu min (mermaidymin@yahoo.com.cn)
Yuan zhongxiang (yuanzhongxiangvip@163.com)

Version: 2 Date: 17 May 2013

Author's response to reviews: see over
Author's response to reviews

Title: Risk factors for endotracheal re-intubation following coronary artery bypass grafting

Authors: Liujian MD(swalk0721@msn.com)
Shisheng MD(shi__sheng@sina.com)
Yumin MD(mermaid ymin@yahoo.com.cn)
Yuanzhongxiang MD(yuanzhongxiangvip@163.com)

Version: 1 Date: 10 May 2013

Author's response to reviews: see over
Reviewer # 1 (Henrique Murad)

Comment

Major Compulsory revision

1. Background, at the final comment: the aim is not prevent re-intubation, but to prevent the conditions that led to re-intubation.

The aim has been changed as the reviewer indicates and now appears as follows: the aim is to prevent and processing the conditions that led to re-intubation and avoid the condition of ischemia and hypoxia between the extubation and re-intubation after CABG.

2. The intubation time of 48 hours is a prolonged one. Probably if it was used 24 hours the information would be more sounded.

We referred some articles (1 Ji Q, Duan Q, Wang X, Cai J, Zhou Y, Feng J, Mei Y: Risk factors for ventilator dependency following coronary artery bypass grafting. Int J Med Sci 2012,9:306-310. 2 Zingone B, Gatti G, Rauber E, Tiziani P, Dreas L, Pappalardo A, Benussi B, Spina A: Early and late outcomes of cardiac surgery in octogenarians. Ann Thorac Surg 2009,87:71-78.) that they defined 48 hours as the demarcation of prolonged mechanical ventilation after cardiac or CABG. In the other way, re-intubation more commonly occurred in the patients who were extubated during the period of 24 to 48 hours after surgery. If we defined 24 hours as the demarcation the sample capacity of re-intubation group will decrease apparently (35 vs 97 cases). The decreasing of observation group will lead to the deviation statistically.
Reviewer #2 (Orlando Petrucci)

Comment

Major compulsory revision

1  The objective is a little confused. They stated, “the aim is to prevent postoperative re-intubation and avoid the condition…” They did not prevent any re-intubation. They only tried to assess the associated factors to this complication. At the Introduction section, they stated: “…undergoing selective and isolated CABG from January 2004 to July 2012…”, what do the authors mean with selective?

The aim has been changed as the reviewer indicates and now appears as follows: the aim is to prevent and processing the conditions that led to re-intubation and avoid the condition of ischemia and hypoxia between the extubation and re-intubation after CABG.

Selective surgery is the surgery except emergency operation.

2  The methods section needs an ample revision. They wrote a section MATERIAL AND METHODS, but in the following page there is another Methods section.

(please review)

The other Method in the following page has been changed to Investigated data.

3  All criteria for intubation, reintubation, and anesthesia technique will need revision. They should also describe how was considered AKI, pneumonia, etc.

We have revised the criteria for extubation and re-intubation in page 5-6

Criteria for extubation included an alert and hemodynamically stable patient with no excessive bleeding, ability of the patient to breathe with simultaneous
intermittent mandatory ventilation (machinery rate 4 breaths/min, no pressure support) for at least 30 minutes with a fraction of inspired oxygen of less than 0.60 and a total respiratory rate less than 25 breaths/min, an arterial blood PO$_2$ greater than 70mmHg, a PaCO$_2$ less than 50mmHg and a PH greater than 7.35, with no metabolic acidosis. Other criteria included a mandatory chest radiograph before extubation to rule out pneumothorax, pleural effusion and atelectasis.

Criteria for re-intubation included the condition with severe dyspnea and respiratory rate more than 35 breaths/min, apparent acceleration of heartbeat and elevation of blood pressure compared to the condition of extubation, an arterial blood PO$_2$ less than 60mmHg, a PaCO$_2$ greater than 50mmHg, a repeated PH lesser than 7.35 with or without respiratory acidosis, a large-area pneumonia or atelectasis.

Pneumonia, low cardiac output syndrome and stroke were defined in page 7.

One main point is the description of anesthesia technique, which is very important for the nature of the study.

We have described the anesthesia technique in detail in page 5.

The operation was performed in Inhalation-Intravenous General Anesthesia. Anesthesia was induced with midazolam (2-3mg), fentanyl (0.2mg), propofol (0.5-1.5mg/kg) and vecuronium and maintained with isoflurane and continuous infusion of propofol (2 to 5mg/kg/h); 0.1-0.2mg fentanyl was intravenously administered before skin incision, sternotomy, aortic cannulation and initiation of cardiopulmonary bypass, respectively; total amount of fentanyl was less than
They do not describe how many patients really underwent to surgery and many were excluded. How did they manage missing data? How many patients with combined procedures (valve +CABG) did they exclude from the study?

From January 2004 to July 2012, 1637 patients suffering from CAD underwent CABG. Because we aim to study the factors of re-intubation following isolated CABG, 295 patients underwent CABG combined with valve surgery were excluded. With reference to previous reports those who extubated after 48 hours were taken as ventilation dependency. The ventilation dependency following CABG may be unavoidable because of serious illness. But the re-intubation of the patients extubated successfully within 48 hours may be avoidable. The aim is to prevent and processing the conditions that led to re-intubation. So we also excluded the patients extubated after 48 hours or re-intubated because of non-breathing problems such as heart arrest, re-operation for bleeding. Thus, 1244 consecutive patients(912 males and 332 females, with a mean age of 67.4±9.7 years) were brought into the study.

In the Discussion section, the authors stated that AKI is a very important risk factor for re-intubation. However, the AKI is not the cause for re-intubation, in fact, the consequence. Please review.

We described the AKI as a factor that happened in 8 cases before re-intubation. The AKI as a consequence of re-intubation was described in the table1 and happened in 12 cases.
6 In the table 3, I wouldn’t state independent risk (I know what it means statistically). However, these are associated factors. Please comment.

The reviewer is correct and I have revised it in table 3 and text.

7 The statistical analysis needs some revision. They say the unpaired t test or t’-test was used according to homogeneity test for variance? What does it mean t’-test? Why did you test for homogeneity and then performed a t-test? Please review.

The comparison of pre-, intro- and postoperative data are the range of t-test for two-sample data. To compare the two-sample data, homogeneity of variance test is the prior step. If the variance is equal, t-test can be done directly. If the variance is not equal, t’ test, change of variable or rank sum test should be done. T’ test which is named approximate t test is often used when the variance unequal is not too distinct.

8 The authors did not state which method for logistic regression was used. Please review.

The method was stepwise logistic regression analysis.

Minor Essential Revisions

1 AKI or ARF? (in the text the authors used AKI and in tables was used ARF)

I have revised the ARF to AKI according to the reviewer’s comment.

2 Carbon dioxide accumulation or retention? (Figure 2)

I have made the change according to the reviewer’s comment.

3 What does it mean: anesthetics metabolic insufficiency? (Figure 2)

Weak respiratory muscle due to anesthetics metabolic insufficiency.
intro-operation?

It means the condition during the operation.