Body mass index predicts new-onset atrial fibrillation after cardiac surgery

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Abstract

Objective: New-onset postoperative atrial fibrillation (POAF) after cardiac surgery is associated with increased morbidity and mortality. Since obesity is becoming increasingly prevalent, identifying body mass index (BMI) as a risk factor for POAF could be of importance. The aim of our study is to investigate the effect of BMI on POAF, independent of other risk factors. Methods: We analyzed data of 6788 men and 2560 women who underwent coronary artery bypass grafting, valve surgery, or a combination of both, and who had no history of atrial fibrillation. Men and women were analyzed separately because risk factors of POAF were expected to be distributed unequally over both sexes. Results: The independent effect of gender was analyzed in a combined model. POAF occurred in 2517/9348 (27%) of patients. Multivariate logistic regression analyses showed that BMI (odds ratio (OR) 1.03; 95% confidence interval (CI): 1.01–1.04; p < 0.001 in men and OR 1.03; 95% CI: 1.02–1.05; p < 0.001 in women), age (OR 1.06; 95% CI: 1.05–1.07; p < 0.001 in men and OR 1.05; 95% CI: 1.04–1.06; p < 0.001 in women), valve surgery compared to coronary surgery (e.g., mitral valve surgery compared to coronary artery bypass grafting: OR 3.4; 95% CI: 2.4–4.6; p < 0.001 in men and OR 2.9; 95% CI: 2.0–4.3; p < 0.001 in women) and male gender (OR 1.23; 95% CI: 1.09–1.38; p < 0.001) were the only independent risk factors for POAF, whereas chronic obstructive pulmonary disease, hypertension, off-pump coronary artery bypass grafting, extra corporal circulation time, and transfusion of blood products were not. Conclusion: Body mass index, age, undergoing valve surgery and male gender, are independent risk factors for POAF.

Keywords: Cardiac surgery; Atrial fibrillation; Database; Statistics; Regression analysis

1. Introduction

New-onset postoperative atrial fibrillation (POAF) is a well-known and frequently occurring complication after cardiac surgery [1–3] and is associated with postoperative morbidities such as cerebrovascular accidents (CVAs), infections (e.g., sepsis, pneumonia and mediastinitis), renal failure [1,4–6], and mortality [4–7]. Reduction in the incidence of POAF may reduce the risk for morbidity and mortality associated with atrial fibrillation (AF). Identification of patients at increased risk of POAF is therefore important, as preventive measures in these patients can be taken accordingly.

Previous studies have identified several risk factors for POAF, with age being the most consistent independent risk factor [2,3,6,8–16]. Obesity is a known risk factor for AF in the general population [17]. Whether obesity is a risk factor for POAF is less obvious, with only few studies identifying obesity as an independent predictor of POAF [3,10,12] and many other studies that do not find obesity to be a risk factor [2,6,8,9,11,13,14,16]. The effect of body mass on POAF may have been underestimated in these studies, as body mass is not equally distributed over age groups and gender, with the mean age of men and women undergoing surgery. Since obesity is getting more prevalent in the general population [19] and it is a potentially treatable factor, further investigation of body mass in relation to POAF is warranted.

The aim of our study was to investigate the effect of body mass index (BMI) on POAF after coronary, valve, and combined surgery, independent of other risk factors. BMI
was investigated in men and women separately, as the
distribution of these predictors may be different within men
and women.

2. Patients and methods

2.1. Patients

Data of patients who consecutively underwent coronary
artery bypass grafting (CABG), aortic or mitral valve surgery,
or a combination of coronary and valve surgery, between
January 2003 and June 2009 in the Catharina Hospital,
Eindhoven, the Netherlands, were prospectively collected in
our database. Only patients with documented preoperative
sinus rhythm (SR) and without a history of AF were included.
Patients who deceased during or within 24 h after the
procedure were excluded. The Institutional Research Review
Board approved this study and waived the need for patient
consent.

2.2. Demographical and clinical characteristics

Demographic data included age and gender. Clinical
characteristics included possible risk factors for POAF,
including hypertension, chronic obstructive pulmonary disease
(COPD), prior CVA, left ventricular function, peri-operative
transfusion of blood products, BMI, body surface area (BSA),
and in-hospital complications. BMI was calculated by dividing
body weight (in kilograms) by the square root of the length (in
meters) of the patient. Five BMI groups were defined [20]:
underweight (BMI < 20 kg m\(^{-2}\)), normal weight (BMI: 20.0—
24.9 kg m\(^{-2}\)), overweight (BMI: 25.0—29.9 kg m\(^{-2}\)), obesity
(BMI: 30.0—34.9 kg m\(^{-2}\)), and morbid obesity (BMI > 34.9
kg m\(^{-2}\)). BSA was calculated using the Mosteller formula [21].

2.3. Endpoint

POAF was defined as any evidence of new-onset AF (by
electrocardiography or continuous monitoring) with duration
of at least 30 min during the postoperative stay in our
hospital. Hospital stay was defined as days after cardiac
surgery until discharge to the referring hospital or home.

2.4. Operative technique and postoperative policy

Cardiac medication, including β-blocking agents and
acetylsalicylic acid, was continued until the day of the
operation. Extracorporeal circulation (ECC) was performed
using normothermic non-pulsatile flow. Intermittent cold
 crystalloid cardioplegia (St. Thomas solution) or intermittent
warm blood cardioplegia was used to induce and maintain
cardioplegic arrest, according to the surgeon’s preference. In
most cases of coronary surgery, the left internal thoracic artery
was used for the left anterior descending artery, and either the
great saphenous vein, or a second arterial graft for the other
 coronary arteries, depending on the age of the patient, and
preference of the surgeon. In mitral valve surgery, two-stage
right atrial appendage, or bi-caval cannulation, was per-
formed, according to the preference of the surgeon. In all
other patients, the right atrial appendage was cannulated for
venous drainage. Postoperatively, metoprolol was prescribed
as AF prophylaxis in all patients (unless β-blocking agents are
contra-indicated) and electrical cardioversions were done
when indicated. The heart rhythm was monitored continuously
during at least 48 h postoperatively and afterwards at least 3
times a day or continuously in case of dysrhythmia. If AF
persisted for more than 48 h, an anticoagulant was started.
The referring cardiologist determined AF treatment regimen
after discharge.

2.5. Statistical analysis

SPSS version 17.0 (SPSS Inc., Chicago, IL, USA) software was
used for all statistical analyses and a p-value < 0.05 was used
for all tests to indicate statistical significance.

Categorical variables were compared with the Chi-square
test and are presented as percentages. Continuous variables
were compared with the Student’s t-test and are presented
as mean ± standard deviation (or with the Mann–Whitney
U-test and presented as median with interquartile range (IQR)
in case of non-normal distribution). The Bonferroni post hoc
test was used to test for differences of continuous variables
between groups.

Univariate and multivariate logistic regression analyses
were performed to evaluate predictors of POAF. Variables
with a p-value < 0.05 in one or both sexes in univariate
analyses were included in the multivariate models. Predicted
mean imputation was used for missing data. BMI (or BSA) was
included irrespective of p-values in univariate analysis. BMI
(or BSA), and age were entered as continuous variables in the
regression models. To investigate the independent effect of
gender on POAF, a multivariate model with both sexes was
used. Odds ratios (OR) with 95% confidence intervals (CI) and
p-values are reported. The area under the receiver operating
characteristics (ROC) curve of the multivariate models of
predicting POAF was calculated to evaluate the discrimina-
tory capacity of these models, with a value of >0.7 indicating
a fair capacity. Hosmer–Lemeshow statistics were used to
describe the calibration of the models, with p > 0.05
indicating adequate fit.

For each patient, the independent effect of BMI, compared
to mean BMI, on POAF was calculated, thus adjusted for all
other predictors. Scatter plots were produced of this
calculated independent effect of BMI on POAF, against BMI.
Regression lines were drawn in these scatter plots.

3. Results

Data of 9348 patients were analyzed. Twenty-seven
percent of the patients were women and the mean age of
patients was 65 ± 10 years. Median hospital stay was 5 days
(IQR: 3–7). In women, 43% of the procedures involved any
kind of valve surgery, in men this percentage was 24%
(p < 0.001). POAF was more frequent in men than in women
(29% vs 26%, p = 0.002). Table 1 shows the incidence of POAF
in both genders according to the type of procedure performed.

Table 2 displays differences between patients with and
without POAF, stratified by gender. Age is significantly higher
in men and women with POAF compared to patients without
POAF, BMI and BSA were significantly higher in women with POAF, compared to women without POAF, although differences were small. Mean BMI and BSA did not differ between men with and without POAF.

Table 1. Number of procedures and percentage POAF in men and women for each procedure.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Men</th>
<th>Number</th>
<th>% POAF</th>
<th>Women</th>
<th>Number</th>
<th>% POAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPCAB</td>
<td>618</td>
<td>19.1</td>
<td>199</td>
<td>17.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CABG with ECC</td>
<td>4562</td>
<td>23.1</td>
<td>1269</td>
<td>22.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVR</td>
<td>587</td>
<td>29.5</td>
<td>424</td>
<td>37.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MVPR</td>
<td>185</td>
<td>42.2</td>
<td>156</td>
<td>36.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVR and MVPR</td>
<td>45</td>
<td>42.2</td>
<td>53</td>
<td>50.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CABG and AVR</td>
<td>482</td>
<td>36.3</td>
<td>269</td>
<td>39.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CABG and MVPR</td>
<td>271</td>
<td>47.2</td>
<td>157</td>
<td>42.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CABG and AVR and MVPR</td>
<td>38</td>
<td>60.5</td>
<td>33</td>
<td>54.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Overweight, obese, and morbidly obese men were younger compared to normal-weight men ($p < 0.001$ for all) (Table 3).

Table 2. Demographics and clinical characteristics in men and women with and without postoperative atrial fibrillation (POAF).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Men</th>
<th>No POAF (n = 5019)</th>
<th>POAF (n = 1769)</th>
<th>p-value</th>
<th>Women</th>
<th>No POAF (n = 1812)</th>
<th>POAF (n = 748)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>62.9 ± 10</td>
<td>67.7 ± 9</td>
<td>&lt;0.001</td>
<td>66.6 ± 11</td>
<td>70.8 ± 8</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSA (m²)</td>
<td>2.00 ± 0.18</td>
<td>2.00 ± 0.18</td>
<td>0.93</td>
<td>1.79 ± 0.18</td>
<td>1.82 ± 0.18</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI (kg m⁻²)</td>
<td>27.1 ± 3.7</td>
<td>27.0 ± 3.7</td>
<td>0.44</td>
<td>27.3 ± 4.8</td>
<td>27.9 ± 5.1</td>
<td>0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>19.5</td>
<td>18.8</td>
<td>0.52</td>
<td>25.2</td>
<td>26.6</td>
<td>0.466</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>44.0</td>
<td>46.2</td>
<td>0.10</td>
<td>55.6</td>
<td>58.3</td>
<td>0.208</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPD</td>
<td>10.8</td>
<td>13.4</td>
<td>0.003</td>
<td>11.9</td>
<td>13.8</td>
<td>0.198</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PVD</td>
<td>11.8</td>
<td>14.1</td>
<td>0.013</td>
<td>12.0</td>
<td>10.6</td>
<td>0.309</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior CVA</td>
<td>5.1</td>
<td>6.8</td>
<td>0.009</td>
<td>5.2</td>
<td>4.9</td>
<td>0.801</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior MI</td>
<td>38.7</td>
<td>38.2</td>
<td>0.71</td>
<td>29.7</td>
<td>25.1</td>
<td>0.019</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LVEF &lt; 50%</td>
<td>18.9</td>
<td>21.0</td>
<td>0.050</td>
<td>15.0</td>
<td>14.0</td>
<td>0.527</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creatinine (μmol/ml)</td>
<td>97 (86–110)</td>
<td>99 (86–113)</td>
<td>0.007</td>
<td>85 (73–99)</td>
<td>87 (73–102)</td>
<td>0.013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECC duration (min)</td>
<td>76 ± 34</td>
<td>85 ± 40</td>
<td>&lt;0.001</td>
<td>81 ± 38</td>
<td>94 ± 47</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redo operation</td>
<td>5.2</td>
<td>5.6</td>
<td>0.501</td>
<td>4.2</td>
<td>5.6</td>
<td>0.119</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency</td>
<td>5.2</td>
<td>4.9</td>
<td>0.64</td>
<td>6.0</td>
<td>6.4</td>
<td>0.660</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IABP</td>
<td>1.9</td>
<td>2.6</td>
<td>0.056</td>
<td>2.4</td>
<td>2.8</td>
<td>0.579</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RBC transfusion</td>
<td>20.6</td>
<td>28.8</td>
<td>&lt;0.001</td>
<td>57.2</td>
<td>61.6</td>
<td>0.037</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFP transfusion</td>
<td>11.7</td>
<td>17.5</td>
<td>&lt;0.001</td>
<td>10.8</td>
<td>16.8</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platelet transfusion</td>
<td>7.3</td>
<td>11.8</td>
<td>&lt;0.001</td>
<td>7.5</td>
<td>11.5</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reop for bleeding</td>
<td>3.2</td>
<td>5.4</td>
<td>&lt;0.001</td>
<td>2.8</td>
<td>4.1</td>
<td>0.069</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postop MI</td>
<td>3.2</td>
<td>4.1</td>
<td>0.104</td>
<td>3.0</td>
<td>3.2</td>
<td>0.818</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

POAF: post operative atrial fibrillation; BSA: body surface area; BMI: body mass index; COPD: chronic obstructive pulmonary disease; PVD: peripheral vascular disease; CVA: cerebro-vascular accident; MI: myocardial infarction; LVEF: left ventricular ejection fraction; ECC: extra corporal circulation; IABP: intra aortic balloon pump; RBC: red blood cell; FFP: fresh frozen plasma; reop: reoperation; postop: postoperative.

Table 3. Percentage new onset postoperative atrial fibrillation (POAF) and mean age for each body mass index (BMI) group in men and women.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>%POAF (p-value)</td>
<td>26.5 (0.94)</td>
<td>26.9</td>
<td>25.9 (0.46)</td>
<td>25.2 (0.32)</td>
<td>24.9 (0.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age (p-value)</td>
<td>60.7 (0.001)</td>
<td>65.5</td>
<td>64.1 (&lt;0.001)</td>
<td>62.6 (&lt;0.001)</td>
<td>60.0 (&lt;0.001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>%POAF (p-value)</td>
<td>24.2 (0.51)</td>
<td>27.4</td>
<td>28.8 (0.51)</td>
<td>30.9 (0.18)</td>
<td>37.1 (0.011)</td>
<td></td>
</tr>
<tr>
<td>Mean age (p-value)</td>
<td>63.3 (0.001)</td>
<td>67.5</td>
<td>68.8 (0.72)</td>
<td>68.0 (1.0)</td>
<td>66.1 (0.97)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BMI: body mass index; POAF: post operative atrial fibrillation.

*p-values calculated from comparison with the normal BMI group (20–25).*
Table 4. Results of multivariate logistic regression analysis of risk factors for post operative atrial fibrillation (POAF) after cardiac surgery in men and women.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Men (N = 6788)</th>
<th>Women (N = 2560)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>p-value</td>
</tr>
<tr>
<td>Age (years)</td>
<td>1.058 (1.051–1.065)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>BMI (kg m$^{-2}$)</td>
<td>1.025 (1.009–1.041)</td>
<td>0.002</td>
</tr>
<tr>
<td>COPD</td>
<td>2.82 (2.00–3.98)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>PVD</td>
<td>1.01 (0.85–1.12)</td>
<td>0.92</td>
</tr>
<tr>
<td>Prior CVA</td>
<td>1.13 (0.89–1.43)</td>
<td>0.31</td>
</tr>
<tr>
<td>Prior MI</td>
<td>1.05 (0.93–1.19)</td>
<td>0.42</td>
</tr>
<tr>
<td>LVEF ($^\text{1}$)</td>
<td>0.95 (0.81–1.11)</td>
<td>0.51</td>
</tr>
<tr>
<td>Creatinine ($\mu$mol/ml)</td>
<td>0.999 (0.998–1.001)</td>
<td>0.38</td>
</tr>
<tr>
<td>Procedure $^\text{2}$</td>
<td>0.87 (0.70–1.08)</td>
<td>0.21</td>
</tr>
<tr>
<td>OPCAB</td>
<td>1.48 (1.21–1.81)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>AVR</td>
<td>3.36 (2.44–4.63)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>AVR and MVPR</td>
<td>2.29 (1.21–4.31)</td>
<td>0.011</td>
</tr>
<tr>
<td>CABG and AVR</td>
<td>1.45 (1.18–1.79)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>CABG and MVPR</td>
<td>2.67 (2.05–3.47)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>CABG and AVR and MVPR</td>
<td>3.66 (1.86–7.19)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ECC duration $^\text{3,4}$</td>
<td>1.001 (0.999–1.003)</td>
<td>0.41</td>
</tr>
<tr>
<td>RBCs (units) $^\text{5}$</td>
<td>1.04 (0.89–1.23)</td>
<td>0.60</td>
</tr>
<tr>
<td>&gt;3</td>
<td>1.17 (0.77–1.34)</td>
<td>0.91</td>
</tr>
<tr>
<td>FFP transfusion</td>
<td>1.03 (0.83–1.27)</td>
<td>0.80</td>
</tr>
<tr>
<td>Platelet transfusion</td>
<td>1.19 (0.93–1.52)</td>
<td>0.17</td>
</tr>
<tr>
<td>Reop for bleeding</td>
<td>1.24 (0.90–1.71)</td>
<td>0.20</td>
</tr>
</tbody>
</table>

OR: odds ratio; CI: confidence interval; BMI: body mass index; BSA: body surface area; COPD: chronic obstructive pulmonary disease; PVD: peripheralvascular disease; CVA: cerebrovascular accident; MI: myocardial infarction; LVEF: left ventricular ejection fraction; OPCAB: off pump coronary artery bypass grafting; AVR: aortic valve replacement; MVPR: mitral valve plasty or replacement; CABG: on pump coronary artery bypass grafting; ECC: extra corporal circulation; RBC: red blood cell; FFP: fresh frozen plasma; Thrombo: thrombocytes; Reop: reoperation.

$^\text{1}$ Entered as continuous variable.

$^\text{2}$ Different model with BSA entered instead of BMI.

$^\text{3}$ Compared to normal.

$^\text{4}$ Compared to CABG.

$^\text{5}$ Entered in a model without OPCAB patients.

OPCAB was not an independent predictor for POAF compared to on-pump CABG. Hypertension, COPD, peripheral vascular disease, ECC time, transfusion of blood products, creatinine level, and left ventricle ejection fraction <35% did not show to be independent predictors either.

The Hosmer and Lemeshow test showed a good fit of the model with p-values of 0.393 and 0.680 for men and women. The area under the ROC curve for the model for men and women was 0.69.

4. Discussion

The main finding of this study is that BMI is an independent predictor of new-onset AF after CABG, valve surgery, or combined procedure. This finding applies to both male and female patients. Previous reports [17,22,23] have found an association between BMI and LA size. Moreover, Wang et al. [17] found BMI to be an independent predictor for new-onset AF in the general population. However, after including data of LA size in their model, the association of BMI with AF disappeared, suggesting associated LA size accounted for the effect of BMI on AF. Our database did not contain data about LA size, and therefore we could not investigate this association in our patient population. The association of BMI and POAF is described by a few other investigators [3,10,12].

Fig. 1. Independent effect of body mass index (BMI) on risk of new onset postoperative atrial fibrillation (POAF), compared to mean BMI. For both men (squares) and women (rounds) a linear regression line is drawn.
Most studies did not investigate BMI when investigating the preoperative predictors of POAF, and those who did rarely entered BMI in a multivariable model, since univariate analysis did not show a significant effect of BMI on POAF. Like in our male cohort, the effect of higher BMI on POAF could have been camouflaged by the younger mean age and thereby reduced chance of POAF of the patients with higher BMI. Zacharias et al. [3] were the first to describe obesity as an independent risk factor for POAF after cardiac surgery in 2005. They studied 8051 patients undergoing cardiac surgery, and found BMI to be a predictor of POAF, with an OR of 1.04, after adjusting for age and other covariates. These data are in agreement with our data. However, they did not analyze men and women separately. In 2007, Echahidi et al. showed that mild obesity and moderate severe obesity were independent risk factors for POAF in a retrospective study in 4583 patients over 50 years of age, undergoing CABG [10]. However, they did not study BMI as continuous factor and men and women were not analyzed separately. They did not study POAF after both valve and combined surgery. Filardo et al. [12] recently presented a retrospective study in which they found a relation between BMI or BSA and POAF in 5038 men and 1989 women after CABG.

Age is the most consistently found risk factor for new-onset OAF after cardiac surgery [2,3,6,8–16]. Our data confirm age as an important risk factor. Fibrosis and dilation of the atria are associated with advanced age and may explain the association between age and POAF [24,25]. These factors may also explain the predictive value of valve surgery, and especially mitral valve surgery, which was also shown by other investigators [2,3,5,6,9,14].

COPD, hypertension, off-pump CABG, compared to on-pump, ECC duration, and transfusion of blood products did not independently predict POAF.

As in all observational studies, there is a chance for residual confounding of measured and unmeasured variables. Onset of POAF after discharge was not registered, and therefore the incidence of POAF may have been underestimated. However, most of the first episodes of POAF occur within the first 4–6 days after cardiac surgery with an incidence peak on the second day [5]. Duration of AF and whether the patient had AF at discharge from our hospital were not documented in our database and therefore could not be analyzed. Episodes of (asymptomatic) paroxysmal AF after the 2nd day post-operative could have been missed since continuous monitoring was not standard procedure after 3 days.

Identification of risk factors for POAF is important in identifying patients with high risk of developing POAF, since POAF is associated with increased postoperative morbidity and mortality. Prophylactic strategies can be adjusted in these patients and adjustable factors such as obesity can be tackled. Prophylactic surgical interventions or postoperative administration of anticoagulants in high-risk patients might reduce poor outcome, but this remains to be investigated in randomized trials.

4.1. Conclusions

Among other previously described factors, we found BMI, age, valve surgery compared to CABG, and male gender to be independent predictors of POAF.

References


