



Preoperative Hemoglobin A1c and the Occurrence of Atrial Fibrillation Following On-pump Coronary Artery Bypass surgery in Type-2 Diabetic Patients

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Atrial Fibrillation

- The most common type of arrhythmia
- Characterized by rapid and irregular beating





Atrial Fibrillation





Post-operative Atrial fibrillation (POAF)

- A frequent serious problem
- Associated with an increase in the length of hospital stay, morbidity, and mortality
- From 10% to 45% in various studies
- Known risk factors: older age, obesity, heart rate variability, hyperglycemia, hypertension, left atrial size and function, use of statins, and preoperative AF



Post-operative Atrial fibrillation (POAF)

- Moderate-intensity blood glucose control after
 CABG can effectively improve clinical outcomes
 and reduce the incidence of POAF
- Data on the association of the magnitude of hyperglycemia, as detected by preoperative hemoglobin A1c (HbA1c) as a surrogate marker of glycemic control and its impact on the development of POAF is insufficient



Aim of the study

To investigate the association of the preoperative HbA1c with occurrence of POAF in a cohort of type-2 diabetic patients who underwent isolated CABG at our center.



Methods

Prospective cohort

 Enrolling type-2 DM patients, aged 40-80 years, who underwent elective CABG
 between March 2012 and March 2013 at
 Tehran Heart Center

follow-up for developing POAF



Methods

Primary endpoint:

Onset of atrial fibrillation following CABG



Methods

• Exclusion criteria :

(1) the presence of AF or atrial flutter before the surgery;

(2) pacing rhythm;

(3) treatment with amiodarone or other specific antiarrhythmic drug;



(4) emergency operation; (5) prior or concurrent valve replacement surgery or prior other cardiac surgeries; (6) history of any chronic inflammatory disease,





Methods

• Exclusion criteria :

(10) and any severe valvular disease in the preoperative echocardiographic evaluation.



Methods

- Data collection:
- * Demography
- * Medical history

* clinical and laboratory measurements, particularly blood glucose and Hb A1c



Methods

AF diagnosis:

- * 12-lead ECG before the surgery
- * Telemonitoring at ICU for 72 hours
- * Confirmation by ECG





Results

From a total of 740 recruited patients, 708 patients were eligible

Mean age of the cohort was 60.8±8.7 years and 433 (61.2%) cases were men.



Results

▶ 109 (15.3%) patients developed POAF.

most frequent on the 2nd post-operative day (43 [39.4%] patients)



Results

- patients with Hb A1c>8% had a longer duration of diabetes (P<0.001),
- more males (P=0.001),
- higher levels of serum creatinine (P=0.001),
- larger left atrial size in the preoperative echocardiography (P=0.002)
- But no significant difference regarding POAF (P=0.71)





Table: Multivariable model for detecting the adjusted effect of hemoglobin A1c on the development of post operative atrial fibrillation

Characteristic	Odds ratio	95% CI	P-value
Age	1.04	1.01-1.06	0.001
COPD	4.66	1.41-15.39	0.012
Hypertension	1.67	1.06-2.65	0.027
Preoperative Cr	1.65	1.20-2.28	0.002
LA size	1.07	1.02-1.12	0.004
Full perfusion time	1.00	1.00-1.01	0.014







Thank you

Any question?