

Postoperative mortality and morbidity of octogenarians undergoing coronary artery bypass graft surgery

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Abstract

Background : Elderly patients are the fastest growing segment of the CABG patient population over the last two decades , and despite a steady increase in acuity , the mortality from CABG surgery has consistently declined . In many goals of surgical care for the elderly , although cure might not be possible , palliation and comfort are equally important . The purpose of the present study was to examine the postoperative course and events in octogenarians undergoing CABG and compare it with younger patients.

Methods : Demographic , mortality , morbidity and resource utilization data were collected from the records of patients undergoing CABG from January 2005 until July 2007.

Results : Mean time to extubation was 9.3 h in octogenarians and 6.3 h for their younger cohorts ($p<0.01$) Blood transfusion was required in 87.8% of octogenarian compared with 58.5% of younger ($p<0.01$) . Mean ICU stay was 2.1 days for octogenarians and 1.4 days for non octogenarians ($p<0.001$) . The 30 - days mortality rate was 9% for the octogenarian vs 2.8% for the younger group ($p<0.001$) .

Conclusion : Octogenarians undergoing CABG had significantly higher morbidity , with increased incidence of postoperative renal failure , neurological complications , and 30 - day mortality.

Keywords : Octogenarian, CABG, Mortality

Introduction

Caring for increasing numbers of elderly persons , who have more illness and complicating psychosocial sequelae than younger cohorts , makes extraordinary

demands on traditional health care systems . Geriatric medicine is an interdisciplinary approach to management of sickness and disability and to health promotion and disease prevention in the elderly that involves gerontology (the study of changes of normal aging as differentiated from disease effects) .

With aging there is a decline in physiologic function in all organ systems , although the magnitude of this decline varies among organs and individuals . In many goals of surgical care for the elderly , although cure might not be possible , palliation and comfort are equally important .

Coronary artery bypass graft surgery is efficient in alleviating symptoms of angina , improving quality of life and longevity of patients with coronary artery disease . (1) Elderly patients are the fastest growing segment of the CABG patients population over the last two decades , and despite a steady increase in acuity , the mortality from CABG surgery has consistently declined . (2) Advanced age is associated with diminished physiologic reserve and increased co - morbidity illness , including diabetes , COPD and peripheral vascular disease . (3) The conduct of CABG with CPB has evolved with continuous reduction in morbidity and mortality . Moreover , as CPB is known to induce a pro - inflammatory state with several adverse consequences , (4) off - pump CABG has been proposed in recent years as a less invasive technique of myocardial revascularization . Recently many authors have considered that elderly patients , being a high category risk , could benefit from myocardial revascularization without CPB . (5 - 7) Consequently several publications report the surgical



results using OPCABG in this age group . Unfortunately , most of these reports are retrospective and nonrandomized , precluding a rigorous demonstration of the usefulness of this technique . The purpose of the present study was to examine the time of extubation , packed RBC transfusions , ICU length of stay , and preoperative and postoperative LOS in octogenarians undergoing CABG and compare it with younger patients . The study also examined differences in postoperative morbidity and mortality .

Methods

This retrospective study was performed between January 2005 and July 2007 in Imam Khomeini Tehran university hospital on 2095 patients ; 132 octogenarians and 1963 non – octogenarians . Demographic , mortality , morbidity and resource utilization data were collected from the records of patients undergoing CABG at our institution during mentioned period . Preoperative patients characteristics are shown in Table 1.

variable

Mean age	68± 15 y
Gender	
Male	1155 (55.14%)
Female	940 (44.86%)
NYHA (1/2/3/4)	15/48/37/0 %
Diseased coronary artery	3± 0.5
Associated condition	MR++ :232
	MR+++ : 395
	TR++ : 35
	TR+++ : 11
EF > 50%	478(22.8%)
EF 30 – 50%	934(44.6%)
EF <30%	683(32.6%)

Table 1 : Preoperative patients characteristics

Results

Octogenarians had a significantly higher incidence of peripheral vascular disease , COPD , congestive heart failure , and left main disease . They weighed significantly less , and had lower preoperative hematocrit . Clinical and demographic variables were correlated with age 75 years or older . Multivariate linear and logistic regression models were constructed to show the combined effects of age and co – morbid conditions on outcomes .

Results are summarized in Table 2; 3 and also in Fig 1 and 2

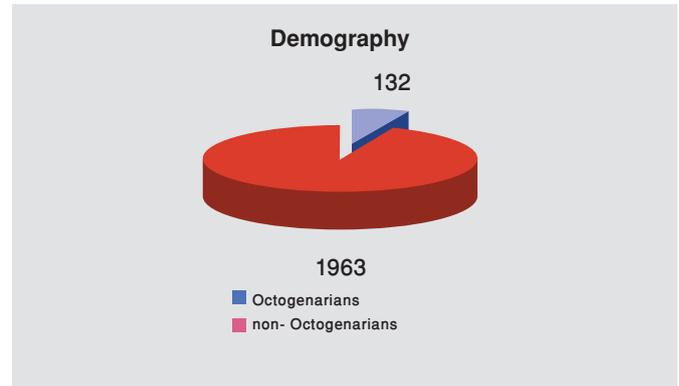


Fig .1 : Demography of patients

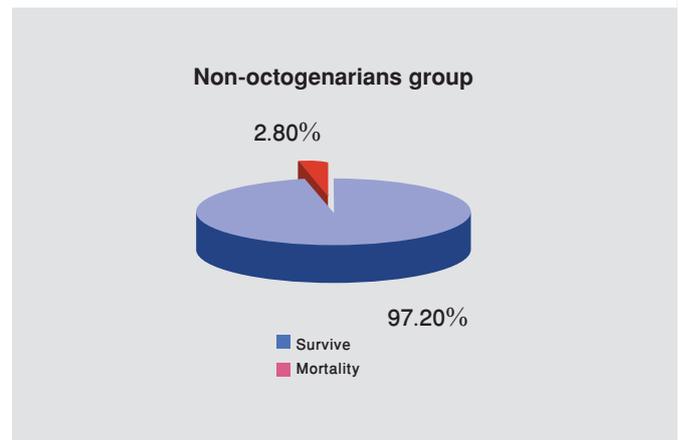
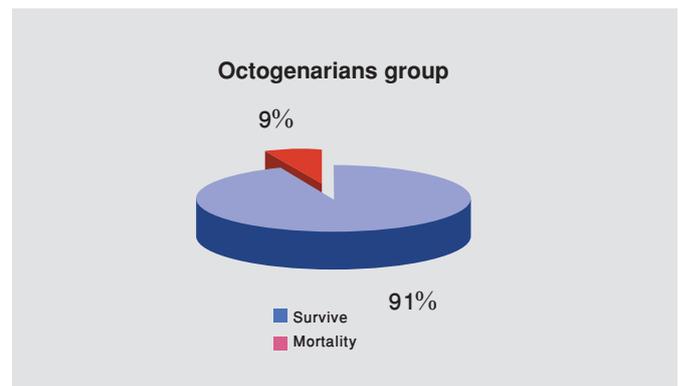


Fig .2 : The 30 – day mortality in octogenarian and nonoctogenarian patients

Table 2 : Preoperative variables in octogenarians and nonoctogenarians

variables	Octo	Non - octo	P value
Smoking	34(25.7%)	486(24.7%)	0.312
Systemic hypertension	72(54.5%)	950(48.3%)	0.231
Diabetes mellitus	40(30.3%)	556(28.3%)	0.26
Old MI	19(14.3%)	204(10.3%)	0.07
Renal dysfunction	4(3%)	55(2.8%)	0.081
Left main disease	24(18.1%)	165(8.4%)	<0.01
Congestive heart failure	21(15.9%)	169(8.6%)	<0.01
COPD	25(18.9%)	235(11.9%)	0.03
Peripheral vascular disease	18(13.6%)	167(8.5%)	<0.01

Table 3 : Postoperative variables in octogenarians and nonoctogenarians

variable	octo	nonocto	P value
Extubation time	9.3 h	6.3 h	<0.01
Blood transfusion	87.8%	58.5%	<0.01
ICU length of stay	2.1 days	1.4 days	<0.001
Postoperative length of stay	9.6 days	5.8 days	<0.01
Renal dysfunction	24.4%	10.5%	<0.01
Neurologic complication	9.8%	2.6%	<0.01
MI	6%	4.6%	0.085
Supraventricular arrhythmia	18.9%	15.9%	0.32
Early mortality	9%	2.8%	<0.001

Discussion

Elderly patients are the fastest growing segment of the CABG patient population over the last two decades . Advanced age is associated with diminished physiologic reserve and increased co – morbidity illness .Although elderly comprising only 12% of the US population , they account for >40% of OTC drugs , buy >30% of prescription and >40% acute hospital bed days and use 30% of the health budget . Certainly this scenario is similar in many other countries around the world. Octogenarians had a significantly higher incidence of peripheral vascular disease , COPD , CHF , and

left main disease , they weighed significantly less , and had lower preoperative hematocrit .

Regarding the results of this study , in octogenarians undergoing CABG , mean time from the end of surgery to endotracheal extubation , need to blood transfusion , mean ICU length of stay and mean postoperative length of stay , postoperative renal failure and neurologic complications are clearly higher in octogenarians versus nonoctogenarians . Also the 30 – day mortality rate was significantly higher in octogenarians .

Our study was a retrospective study , and certainly we agree that , this is a considerable limitation . So further prospective multicenter studies are needed in future.

In conclusion, age 75 years or older was significantly associated with adverse outcome , and was an independent predictor of increased postoperative mortality and morbidity after CABG alone or combined with other operations .

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