Carotid Artery Disease in Patients with Coronary Artery Disease (Incidence and Risk Factors)

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Abstract

Back ground- Carotid artery studies in ischemic heart disease patients have revealed that only 40.6% of them have intact carotid arteries and the remainder has variant degrees of atherosclerotic changes in their carotid arteries. Myocardial ischemia and cerebrovascular accidents have similar risk factors. The purpose of this study is to determine the common risk factors and incidence of carotid endarterectomy.

Methods- This is a case series study in 3340 coronary artery bypass graft (CABG) patients in the cardiac surgery department at our center conducted between April 1998 and Dec. 2001, with especial emphasis on 60 patients who underwent simultaneous CABG and carotid endarterectomy.

Results- There were sixty (60) patients with simultaneous CABG - carotid endarterectomy (CE) among the 3340 CABG patients (1.8%). The mean age of isolated CABG patients was 57.6 years, and the mean age of CABG - CE patients was 66.3 years. The mortality rate of CABG patients was 2% and the mortality rate in CABG - CE patients was 13.3%. In CABG - CE patients, 81.6% had three-vessel coronary artery disease, 16% had left main disease, and 25% had a history of stroke. Risk factors in CABG - CE patients were hypertension 60%, smoking 60%, hyperlipidemia 55%, diabetes mellitus 30%, COPD 10%, and peripheral vascular disease 20%.

Conclusion- This study showed that risk factors in CABG and CE patients are multifactorial, and smoking and hypertension are the most important risk factors ***(Iranian Heart Journal 2004; 5(4): 45-48).***

Key words: coronary artery bypass graft ■ carotid endarterectomy ■ risk factors

Angiographic studies showed that 5% of patients who were candidates for CABG had cerebrovascular disease, and 26% of all patients who were studied for cerebrovascular disease have significant coronary artery disease and needed surgery.[1-4]

Methods

This is a case series study in 3340 CABG patients from April 1998 to Dec. 2001).

There were 60 patients who underwent simultaneous CABG and carotid endarterectomy (CE).

The mean age of isolated CABG patients was 57.6 years and the mean age of CABG – CE patients was 66.3 years. Out of 3340 patients, there were 2110 males (63.2%) and 1230 females (36.8%). In the CABG - CE patients, there were 43 males (71.7%) and 17 females (28.3%, Table I).

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Table I: Distribution of gender in CABG and CABG-CE patients.

Carotid stenosis		Patients		Prior stroke	
Contra-lateral	Ipsi-lateral	No.	%	No.	%
< 50%	< 50%	0	0	0	0
50-70%	< 50%	2	3.4	0	0
80–95%	< 50%	8	13.3	1	12.5
50–79%	50–79%	6	10	1	16.6
80–95%	80-95%	28	46.6	8	28.5
		60		15	

Table II. Incidence of coronary involvement in CABG - CE patients.

Patient group	Gender	No.	percent
All CABG patients (3340)	Male	2110	63.2%
	Femal e	1230	36.8%
CABG+CE (60 Patients)	Male	43	71.7%
	Female	17	28.3%

Results

The results were analyzed by SPSS statistical software. Among the 3340 CABG patients, there were 60 CABG - CE patients (1.8%).

These patients were 38-86 years old. The mean age in CABG patients was 57.6 years (SD±9.5), and the mean age in CABG-CE patients was 66.3 years (SD±9.3).

The incidence of coronary artery involvement in CABG - CE patients is shown in Table II.

Table III. Severity and sides of carotid stenosis.

Coronary involvement	No.	Percent
Single vessel disease	2	3.3%
Two vessel disease	9	15%
Three vessel disease	49	81.8%
Left main disease[1]	9	16%

The carotid artery involvement is shown in Table III.

15 patients of CABG - CE group had a history of stroke (25%) and 7 patients had TIA or cardiovascular accident (11.6%). The incidence of risk factors in CABG–CE patients are hypertension, smoking, hyperlipidemia, diabetes mellitus, COPD and peripheral vascular diseases (Table IV).

Table IV. Distribution of risk factors in CABG - CE patients

Risk factors	Number	Percent
Hypertension	36	60%
Diabetes mellitus	18	30%
Hyperlipidemia	33	55%
Smoking	36	60%
COPD	6	10%
Vascular diseases	12	20%

The mortality rate in CABG -CE patients was 8 (13.3%). The cause of mortality was cardiac (40%) and CVA (60%).

Discussion

In this study, there were 3340 CABG patients, among them 60 had concurrent CABG - CE (1.8%).

The mortality rate of CABG - CE in devoloped countries is much less than in this study (3.8% versus 13.3%).[6] This difference may be attributed to several factors, such as differences in surgical approach, preoperative evaluation, and postop diagnotic tests etc.[7-12] As, It has been shown in table-3 only 8(13.3%) of CABG-CE patients had 50-79% carotid stenosis, wherease 25 patients (86.7%) had 80-95% stenosis, and the severity of stenosis could cause high mortality in our study.

It is necessary to mention that special attention must be paid to ultrasound study for carotid artery disease screening. In reference books and other studies, there are well known criteria for priority of each procedure. On the basis of these criteia, CABG-CE may be either approached simultaneously orelse performed as a staged procedure.[13-17]

Table-1 shows that male .gender is a risk factor for carotid stenosis. Table 2 shows that 81.6% of CABG-CE patiens had concomitant 3 vessel coronary disiease. This high percentage, of concomitant coronary and carotid diease indicates, that screening of carotid stenosis is not routine in our centers, wherease, in other studies, 17% of those who are operated for CABG had> 50% stenosis of carotid arteries and 6% had> 80% stenosis.[18] In other words, it could be expected that the rate of CABG - CE may be 3 times of our study (6/1.8 - 3.3).

Conclusion

In our study, there is no significant relation between the severity and side of carotid stenosis and. the rate of postoperative stroke. This can be be attributed to inappropriate selection of patients for carotid endarterectomy. In other studies, bilateral and severe stenosis of carotid arteries, are risk factors for stroke.[7,19] Table IV shows that risk factors are multifactorial, and smoking and hypertension are the most important risk factors.

Concerning the literature and results of this study, it is suggested that carotid screening should be taken into consideration in patients who are candidates for CABG.

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