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UNDERLYING DISEASE PREVALENCE IN CAROTID STENOSIS PATIENTS CANDIDATE FOR CORONARY ARTERY BYPASS GRAFT (CABG) SURGERY

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ABSTRACT

CABG is one of surgeries with high morbidity and mortality. One of major causes of mortality after CABG is brain stroke and Carotid stenosis is one of its major factors and increases stroke after CABG. Considering other diseases reduces strokes after operation. Purpose of this study is investigating underlying diseases prevalence rate in a carotid artery stenosis patients in Ahvaz Jondishapour University of Medical sciences Hospitals. This is an epidemiological cross sectional study between 2011 to 2012. Participants (608 patients) were selected from the patients who underwent CABG. The carotid Doppler ultrasound was performed before operation. A researcher- made questionnaire was used to collect the data. This questionnaire included the age, gender, smoking, blood pressure, hyperlipidemia, hypertension, diabetes the report of the Doppler ultrasonography of carotid arteries. Highest underlying diseases prevalence in carotid stenosis patients were hypertension (100%), hyperlipidemia (70.4%), smoking (43.8%), diabetes (40.9%) and Lung diseases (11.4%), respectively. Regarding results of this study, history of related diseases and diagnosis tests before CABG can provide suitable awareness from outcome for patients and reduces strokes after CABG.

Key Words:- CABG, Carotid stenosis, Hypertension, Hyperlipidemia, Smoking, Diabetes, Lung diseases.

INTRODUCTION

The coronary artery bypass graft (CABG) surgery is one of surgeries with high morbidity and mortality. One of major causes of mortality after CABG is brain stroke which is common in coronary disease patients (Li *et al.*, 2009; Naylor *et al.*, 2002; Selim, 2007; Likosky *et al.*, 2003) and its reported prevalence rate is about 2-5% (Baker *et al.*, 2005, Bucerius *et al.*, 2003). Stroke etiology after CABG is very wide - scale and multi - factored

including time of patient pumping, aging, diabetes and hypertension (McKhann *et al.*, 2004), but it is certain that Carotid stenosis is one of its major factors and increases stroke after CABG (Naylor *et al.*, 2002) . There is a wide literature about carotid stenosis which is a coronary stenosis leading to stroke by researchers (Gates *et al.*, 2002; Hofmann *et al.*, 2005; Nalysnyk *et al.*, 2003). Carotid stenosis factors include aging, female gender, hearing bruite carotid in examination, history of brain stroke or transient ischemic seizure, peripheral artery obstruction, diabetes, smoking, hypertension, coronary diseases and hyperclostromia (Durand *et al.*, 2004; Kim *et al.*, 2011; Shirani *et al.*, 2006; Doonan *et al.*, 2007). Managing carotid stenosis patients who have CABG faces

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considerable discussion, in spite of its significance and experts' attention (Naylor, 2009). Therefore, knowing their history is necessary for better management and gives a good Prognosis from atherosclerosis in patients to us. Carotid stenosis is an important predictor factor for brain stroke after cardiac surgery (Baiou *et al.*, 2009). Of course, Doppler ultrasound is golden standard in diagnosing atherosclerosis (Khaira and Crowson, 1995) but considering other diseases reduces strokes after operation. Stroke after CABG increases hospitalization time and treatment costs and reduces patients' satisfaction (Tarzamni *et al.*, 2007, Durand *et al.*, 2004), while by reviewing history and suitable actions these dissatisfactions will be reduced. Purpose of this study is investigating underlying diseases prevalence rate in a carotid artery stenosis patients in Ahwaz Jondishapour University of Medical sciences Hospitals

METHODS

This is an epidemiological cross sectional study that was conducted in the Cardiac Anesthesia Department at the Referral Hospitals of Golestan and Imam, Ahwaz, Iran, between 2011 to 2012. Participants (608 patients) were selected from the patients who underwent CABG. The carotid Doppler ultrasound was performed before the CABG. The patients who underwent cardiac surgery were included the study. Exclusion study criteria were: the patients who did not undergo cardiac surgery with an

exception the CABG prior to the Doppler ultrasonography of carotid arteries. The ethical committee of the Ahwaz Jundishapur University of Medical Sciences approved the study. A researcher-made questionnaire was used to collect the data. This questionnaire included the age, gender, smoking, blood pressure, hyperlipidemia, hypertension, diabetes the report of the Doppler ultrasonography of carotid arteries.

RESULTS

Base line data for patients in this study is presented in table 1 by gender and presence or absence of carotid stenosis (table 1). From 608 patients, 217 (35.6%) had smoking history. From 503 patients without carotid stenosis 171 (28.1%) were smokers and from 105 patients with carotid stenosis 46 (7.5%) were smokers. From 608 patients, 213 (35.1%) suffered from diabetes. From this 213 patients, 43 (7%) had carotid stenosis and 170 (27.9%) were without carotid stenosis. From 608 patients, 441 (72.5%) suffered from Hypertension. From this 441 patients, 105 (17.3%) had carotid stenosis and 362 (59.5%) were without carotid stenosis. From 608 patients, 48 (7.9%) had Lung diseases that among them, 12 (1.9%) had carotid stenosis and 36 (5.9%) had not. From 608 patients, 408 (67.1%) had hyperlipidemia history and from 408 patients, 74 (12.1%) had carotid stenosis and 334 (54.9%) had not (figures 1, 2).

Table1. Patient characteristics

	Stenos	No Stenos	Total
Female	31	100	131
Male	74	403	477
Total	105	503	608

Fig 1. Underlying disease prevalence in all of Participants

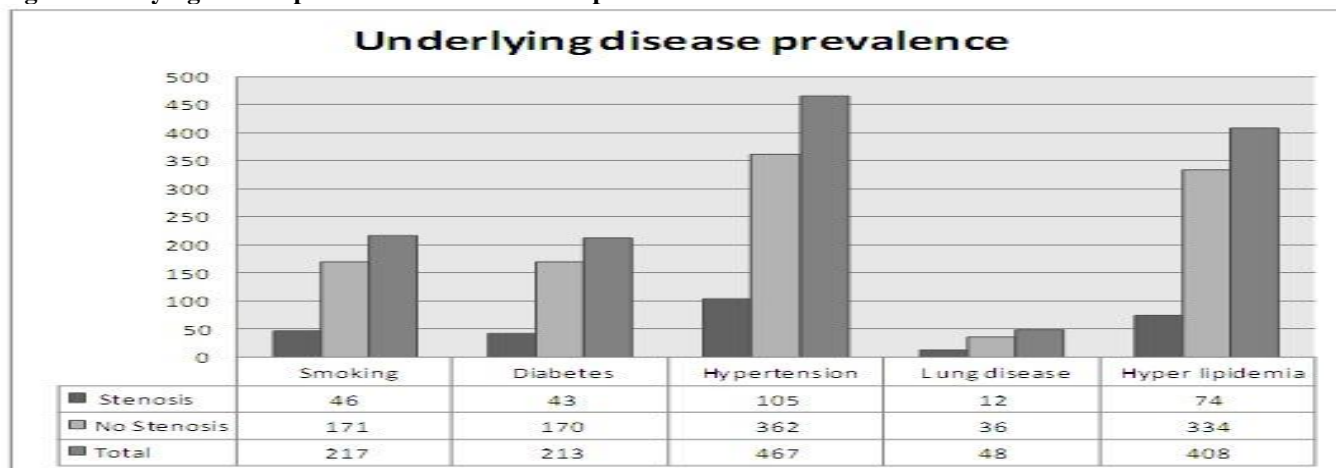
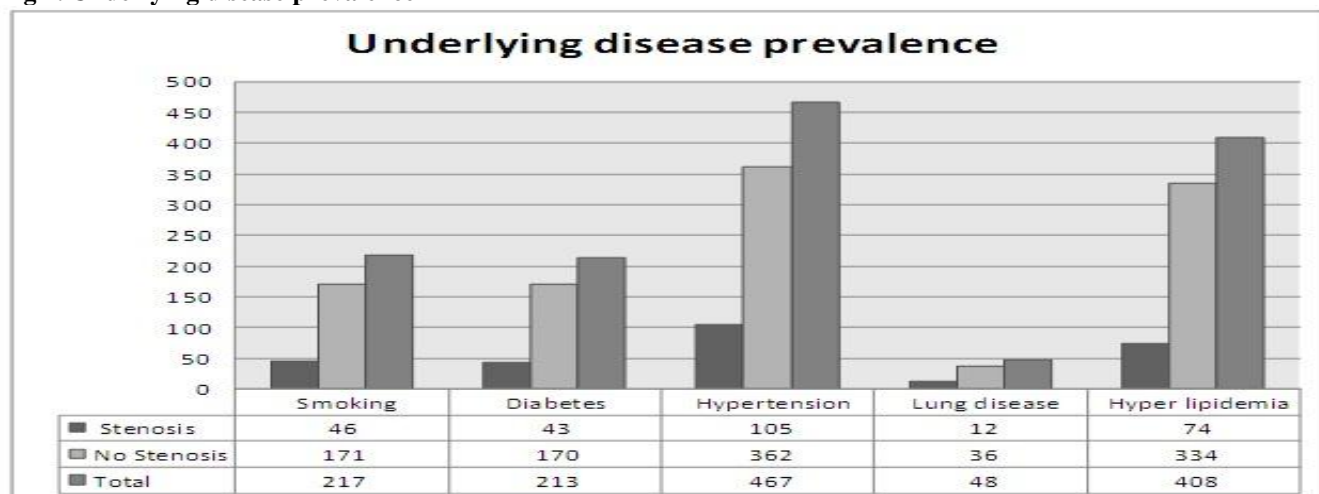


Fig 2. Underlying disease prevalence

DISCUSSION

As we can see in study results, the most frequent prevalence of underlying diseases in carotid stenosis patients relates to hypertension such that all carotid stenosis patients suffer from hypertension. The least prevalence belongs to Lung diseases with 11.4%. Other diseases had considerable prevalence that the most frequent prevalence cases were hyperlipidemia (7.04%), smoking (43.8%) and diabetes (4.09%), respectively. With reviewing other researchers' studies we can reach these results: in Fassiadis et.al study (Fassiadis *et al.*, 2008) "occult carotid artery disease in patients who have undergone coronary angioplasty" which was published in 2008, it is stated that the most frequent prevalence of underlying disease in carotid stenosis patients was related to high cholesterol (55%), hypertension (47%), diabetes (25%) and smoking (11%). Rosa and Portal, (2010) in their study titled "prevalence of carotid stenosis in patients referred to myocardial revascularization surgery" had stated that the most frequent prevalence of underlying diseases in 50% carotid stenosis patients was related to hypertension (78.6%), diabetes and dyslipidemia (28.6%) and smoking (17.9%), respectively. also Rosa *et al.*, (2013) in 2011 in their article " Carotid Artery Stenosis Associated with Increased Mortality in Patients who Underwent Coronary Artery Bypass Grafting: A Single Center Experience" argued that the most prevalence of underlying diseases in carotid stenosis patients relates to hypertension (85.2%), diabetes (30.1%), dyslipidemia (25.7%) and smoking (17.5%), respectively. Li *et al.*, (2009) in their article "Strokes After Cardiac Surgery and Relationship to Carotid Stenosis" had reported that the most prevalence of underlying diseases in studied patients

were hyperlipidemia (90%), hypertension (84%), diabetes (35%) and smoking (14%). Kim et.al in the article "Biomarkers of Asymptomatic Carotid Stenosis in Patients Undergoing Coronary Artery Bypass Grafting" has stated that the most prevalence of underlying diseases in 50% carotid stenosis patients during 2006-2008 was hypertension (59.1%), diabetes (44%), smoking (25.7%) and hyperlipidemia (21.8%), respectively. As studies show, findings of Kim, Rosa and Marcelo about most prevalence of underlying diseases in carotid stenosis are more consistent with our study and mostly relate to hypertension. In Li and Fassiadis studies hypertension was the second prevalent diseases in carotid stenosis patients which all results indicate significant impact of hypertension on carotid stenosis. With careful look at results we can find that smoking has the least prevalence in Rosa, Marcelo and Fassiadis' studies. Although smoking is in third place in our study but its prevalence in all studies is same. It is necessary to mention that lung diseases are considered in this study but it is not considered in other studies perhaps because of low prevalence in carotid stenosis patients but its 11.4% prevalence indicates importance of paying attention to this disease in carotid stenosis patients. Regarding results of this study, history of related diseases and diagnosis tests before CABG can provide suitable awareness from outcome for patients and reduces strokes after CABG.

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