CORONARY ARTERY DISEASE IN THE ELDERLY

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ABSTRACT …Objective: The objective of our study is to assess the severity of coronary artery disease in the elderly and predict the safety outcome of coronary angiography. **Study design:** A cross sectional observational study. **Setting:** AFIC/NIHD Rawalpindi. **Period:** February 2011 and August 2011. **Method:** The study population included 100 elderly patients (age>60years) undergoing coronary angiography. Coronary angiography data were obtained from the Siemens Queries software system, which maintains the database including detailed angiographic findings of all patients at this institution. Significant lesions were defined as those with >70% diameter narrowing of coronary arteries (>50% for the left main coronary artery). We attempted to quantify the "severity of CAD" by ascertaining the prevalence of high-risk coronary anatomy (HRCA, defined as >50% stenosis of the left main coronary artery and/or significant three-vessel coronary artery disease). More than 70% stenosis in more than one coronary artery was considered as severe coronary artery disease. **Results:** Our study cohort comprised of 100 consecutive subjects 82 (82.0%) men and 18 (18.0%) women with a mean age of 78.6 years (Range 70 years - 94 years). 77 patients (77.0%) had severe coronary artery disease; 50 with triple vessel coronary artery disease (TVCAD) 1 with TVCAD with Left Main Stem Disease, 26 had double coronary artery disease (DVCAD). 12 patients (12.0%) had moderate coronary artery disease with single vessel involvement (SVCAD), 6 patients (6.0%) had subcritical coronary artery disease with < 60 % stenosis in any of the vessel while only 5 patients (5%) had a normal coronary angiogram. **Conclusions:** Patients of elderly age group have more severe CAD and coronary angiography is a relatively safe procedure.

Key words: Coronary artery disease, Triple vessel coronary artery disease, Hypertension.

BACKGROUND

Coronary artery disease (CAD) is the leading cause of mortality in the elderly, and more than 80% of the mortality due to CAD occurs in persons older than 65 years[1,2]. Traditional cardiovascular risk factors (CVRFs) such as advancing age, diabetes mellitus, hypertension, dyslipidemia, smoking, obesity, and family history of CAD are well recognized for their association with clinical events and acute coronary syndromes[3]; however, the correlation between CVRFs and atherosclerotic burden, assessed angiographically, is not as well established, with studies reporting variable and inconsistent results[4-6].

It is important to recognize that the assessment of risk factors for coronary artery disease in elderly is not as straightforward as that in the younger population. This is because old age itself is a risk factor for CAD[7] and elderly population have been under represented in large epidemiological studies for assessing CAD burden[8].

The aim of our study is to assess the severity of CAD in the elderly undergoing coronary angiography.

Objective
The objective of our study is to assess the severity of coronary artery disease in the elderly

METHODOLOGY

Study Design
A cross sectional observational study.

Study Population
The study population included 100 elderly patients (age>60years) undergoing coronary angiography at AFIC/NIHD Rawalpindi between February 2011 and August 2011. Patient demographics and medical history including cardiovascular risk factor profile (age in years, gender, diabetes mellitus as per WHO criteria, hypertension per Joint National Committee 7 criteria,

cigarette smoking and family history of coronary artery disease) were abstracted from patient charts.

Coronary angiography data were obtained from the Siemens Queries software system, which maintains the database including detailed angiographic findings of all patients at this institution.Significant lesions were defined as those with >70% diameter narrowing of coronary arteries (>50% for the left main coronary artery). We attempted to quantify the "severity of CAD" by ascertaining the prevalence of high-risk coronary anatomy (HRCA, defined as >50% stenosis of the left main coronary artery and/or significant three-vessel coronary artery disease). More than 70% stenosis in more than one coronary artery was considered as severe coronary artery disease.

INCLUSION CRITERIA
1.   Age more than 60 years
2.   Suspected coronary artery disease on account of history, ECG changes or stress test
3.   Recent and old myocardial infarction cases

EXCLUSION CRITERIA
1.   Age less than 60 years
2.   Patients with proven valvular heart disease
3.   Absolute or relative contraindication to coronary angiography.
4.   Post CABG patients and patients with prior PCI.

STATISTICAL ANALYSIS
Statistical analyses were performed using the SPSS 13.0 software package (SPSS, Inc., Chicago, Illinois).
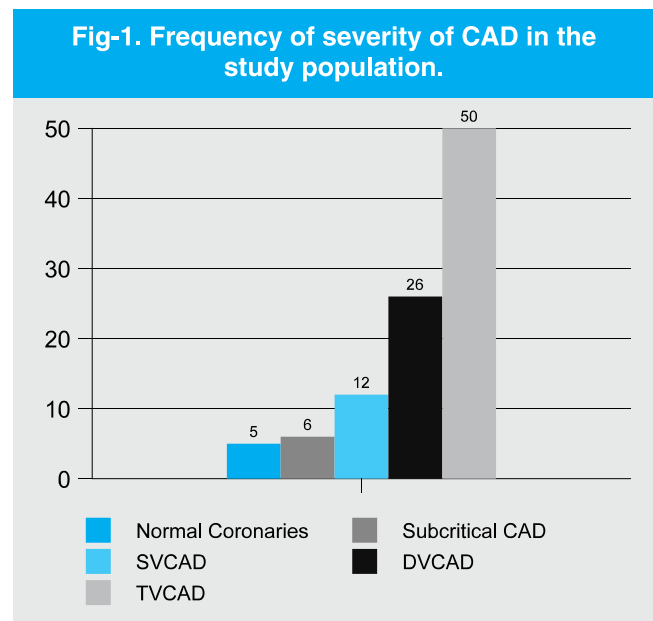
RESULTS
Our study cohort comprised of 100 consecutive subjects 82 (82.0%) men and 18 (18.0%) women with a mean age of 78.6 years (Range 70 years - 94 years).

77 patients (77.0%) had severe coronary artery disease; 50 with triple vessel coronary artery disease (TVCAD) 1 with TVCAD with Left Main Stem Disease, 26 had double coronary artery disease (DVCAD). 12 patients (12.0%) had moderate coronary artery disease with single vessel involvement (SVCAD), 6 patients (6.0%) had subcritical coronary artery disease with < 60 % stenosis in any of the

vessel while only 5 patients (5%) had a normal coronary angiogram. This result is graphically represaented in fig 1.

So it is evident that only 11.0% of the patients had either normal coronaries or subcritical CAD while 89.0% had CAD.

Fig-1. Frequency of severity of CAD in the study population.

As evident from the above bar chart.

Indications for coronary angiography are discussed in table-I.

Table-I.	
Indications for coronary angiography	**No. of patients (%)**
Positive stress test results	30 (30.0%)
Unstable angina	08 (8.0%)
Non-STEMI	16 (16.0%)
STEMI	34 (34.0%)
Others (new-onset CHF, life threatening arrhythmia)	02 (2.0%)

As evident in the table most of the patients undergoing angiography had diagnosis of acute coronary syndrome comprising unstable angina, NSTEMI and STEMI.

Table-II Shows the distribution of risk factors in the two subsets of severity of CAD.

Table-II.		
Risk factor	SVCAD / Normal Coronary Arteries / Subcritical CAD (n=23)	DVCAS/ TVCAD with LMS (n=77)
Hypertension	12 (52.2%)	40 (51.9%)
Diabetes Mellitus	7 (30.4%)	26 (33.8%)
Smoking	6 (26.1%)	19 (24.7%)
Hyperlipidemia / Hypercholesterolemia	2 (8.7%)	8 (10.4%)

It is evident from the above table that the risk factors were evenly distributed in the two groups of coronary artery disease. It is also evident that hypertension was present in 52.0% (n=52) of gthe study population. Similarly diabetes was present in 33.0% (n=33) of the study population.

DISCUSSION
The past 100 years have seen substantial increases in life expectancy. The proportion of elderly persons that constitute populations worldwide is increasing[9]. Cardio-vascular disease has reached epidemic proportion among older people, age alone being a major risk factor. Framingham Heart Study shows a marked increase in CAD as the age advances[10].

There is vast evidence that coronary heart disease increases with increasing age and is most frequent in patients with a history of myocardial infarction[11]. Angiographic studies have also shown that the extent of disease and severity is also less in younger population with comparatively fewer number of coronary arteries affected than that of older age groups[12,13]. In another study out of the 200 patients included in the study, 81(40.5%) suffered from CAD. Patients fell in the age range of 60-100 years (mean 68.3 years). Our study showed similar results with more severe coronary artery disease in advanced age[14]. A total of 89.0% (n=89) had some coronary artery disease and out of them 77(77.0%) elderly patients were suffering

from severe CAD. Coronary angiography also becomes high risk in such age groups. Apart from increased age being an independent risk factor for severe coronary artery disease other factors that might have been responsible for severe CAD are sedentary lifestyle and poor control of risk factors like diabetes and hypertension.

The increased burden of severe coronary disease in the elderly age group also puts an extra financial burden on the health authorities regarding their treatment in terms of percutaneous coronary intervention or coronary artery bypass graft surgery.

It is concluded that special emphasis be given to the elderly age group in terms of education regarding control of risk factors, medication compliance and lifestyle modification so as to reduce this heavy burden of coronary artery disease in the elderly age group.

CONCLUSIONS
We concluded that elderly patients undergoing coronary angiography have more severe coronary artery disease necessitating aggressive management of risk factors and early treatment. The angiography procedure was relatively safe procedure.
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PREVIOUS RELATED STUDIES

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