COMPARISON OF CLINICAL PROFILE, INVESTIGATIONS,AND MANAGEMENT OF PATIENTS WITH ACUTECORONARY SYNDROME BETWEEN 60-80 YEARS ANDABOVE 80 YEARS OF AGE – STUDY FROM A TERTIARYCARECENTERINSOUTH KERALA

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Abstract:

Aim:The study aimed to compare the clinical profile, management pattern, outcomes and comorbidities among two groups of ACS patients aged 80 years and above as very elderly (group I) vs those aged between 60 – 80 years as elderly (group II).

Materials and Methods: This was a prospective observational study of 240 patients admitted to the CCU of atertiary care teaching hospital in Kerala (120 patients in each group) over a period of oneyear (2019-2020).

Results: The mean age of the study population was (84.07 years in group I vs 67.54 years in group II), and the male: female ratio was(1.5: 1 vs 1.14:1). Atypical and delayed clinical presentations of ACS were more common in group I (33.3%vs12.5%,pvalue 0.0001and 62.5% vs 33.3%, p 0.0001, respectively). Among the cardiovascular risk factors, systemic hypertension was more common among group I patients (58.3% vs33.3%,p0.0001),while smoking(45%vs24.16%,p0.001),hypertriglyceridemia(20.8%vs8.3%,p0.006)and obesity was more often seen in group II(25%vs12.5%,p 0.0001) respectively. Regarding the ACS subtypes, NSTEMI was the most common ingroup I (54.16 % vs 50%), while it was STEMI in group II (45.83% vs 25%). Group Ipatients were sicker, with more of complications including acute pulmonary edema,(41.6% vs 16.6%, p 0.0001), cardiogenic shock (7.5%vs 1.6%, p value 0.031). The in hospital mortality was significantly higher in group I (15.8% vs 3.3%, p 0.0001). Group I patients less often received guideline directed medical treatment ,p value0.0001.The rate of coronary angiography after ACS was much less in group I (25% vs 75%, p 0.120). Among patients with STEMI, group I patients underwent primary angioplasty less often (50% vs 90.9%, p 0.934). CABG surgery was not done for any patient in group I (0 vs 9.16%). Comorbidities like chronic kidney disease (23.3% vs 15.83% p value0.143), chronic obstructive pulmonary disease (18.3% vs16.6% p value 0.734) and stroke(24.16% vs 4.16% p value 0.0001) were more among group I patients.

Conclusions: There is heterogeneity among the elderly ACS patients, with the octogenarian subset ofpatients demonstrating a more adverse clinical profile, higher rates of complications,mortality and comorbidities. There is a need for earlier diagnosis and optimal use ofmedical and interventional therapy in this vulnerable population to further improve theiroutcomes.

Keywords: Elderly, Octogenarian, Acute coronary syndrome, Non ST segmentelevation myocardial infarction, ST segment elevation myocardial infarction,

Introduction:

Coronary artery disease remains the leading cause of death in the developed world.Advanced age is the single strongest risk factor for coronary artery disease(CAD)and independent predictor for poor outcomes following an acute coronary syndrome(ACS).The elderly represent an increasingly important and challenging subset of the population of patients with ischemic heart disease.[1,2,3]They are more likely to have comorbid conditions,a typical presentations,and unfavorable outcomes than their younger counterparts. Some of these findings are undoubtedly related to the structural and functional changes in the cardiovascular system associated with aging.

A significant number of people older than the age of 60 years have significant CAD with increasing prevalence of left main or triple-vessel disease.Evidence of myocardial infarction(MI),abnormal echocardiogram,carotidintimal thickness,or abnormal ankle-brachial index have been detected in 22 percent of women and 33 percent of men aged 65to70 years and 43 percent of women and45percent omen older than age 85 years.[4,5]

After the age of 80, a minority of patients complain of chest pain. Symptoms likeangina are less frequent, ischaemia is more likely to be silent and pain description differsfrom the classic symptoms. Symptoms may be described primarily as dyspnea, should eror backpain, weakness,fatigue or epigastric discomfort. Some patients describe symptoms with effort, but others may not, because of limited physical activity, mentalimpairmentoralteredmanifestationsofpaincausedbydiabetesoragechanges.Symptomsmay occuratrestorduringmentalstress.Thisstudywillaimtocomparetheclinicalpresentation,riskfactors ,complications,managementandoutcomeofpatientswithacutecoronary syndromebetween 60-80 years and above 80 years of age – from a tertiary care center in southKerala.[6,7,8]

Materials and Methods:This was a prospective observational study of 240 patients admitted to the CCU of atertiary care teaching hospital in Kerala (120 patients in each group) over a period of Oneyearfrom1.6.2019 to1.6.2020.All patients admitted to the Intensive Coronary Care Unit of Pushpagiri Institute of Medical Sciences and Research Centre, with acute coronary syndrome above the age of60years.

InclusionCriteria:

    Age 60years or above.

    Patients admitted with acute coronary syndrome.

ExclusionCriteria:

Patients who are not willing to give consent for the study.

RELEVANCE OF THE STUDY

It is well known that elderly patients often have atypical symptoms and this leads to delayed recognition of acute coronary syndromes in them, There is considerable disparity in the treatment options offered to elderly and very elderly patients in contrast to young patients. Frequently these category of patients have multiple associated comorbid conditions at the time of presentation. All these above mentioned factors lead to a sub optimal management of elderly and to a greater extent very elderly patients. This leads to an increase in the post ACS complications and mortality. Our study was designed to examine the differences in the patient profile, factors related to delay in presentation, prevalence of risk factors and treatment strategies in two different cohorts (elderly vs very elderly)of vulnerable elderly population

Results:

Table 1- Ageand Gender DistributionofPatients:

AgeGroup	Gender	N	Mean	Std. Deviation	p value (indepndentttest)
Above80 yearsGroup I	Female	48(40%)	83.79	2.736	0.410
	Male	72(60%)	84.35	4.081	
60-80yearsGroupII	Female	56(46.6%)	66.50	2.809	0.007
	Male	64(53.3%)	68.58	4.998	

Chi squarep value =0.297

The present study comprised of total 240 cases of acute coronary syndrome of which120 belonged to group I(>80 years) as very elderly and 120 belonged to group II (aged60-80years) as elderly patients.The mean age of very elderlymale patientswas higherin group I than the mean age of very elderly female patients (84.35years vs 83.79years).The mean age of elderlymale patientswas higherin group II than the mean age of elderly female patients (68.58years vs 66.50years).

CLINICAL PRESENTATION OF ACS PATIENTS

In our study, atypical chest pain (33.3%) was the commonest symptom in group I patients (p value 0.0001).Other atypical presentations were also more frequently observed in group I viz syncope, palpitation and altered sensorium. (p value<0.5).

In contrast typical chest pain was the commonest symptom noted in group II patients (65% vs 8.3%) (p value 0.0001)

TO ADD ON THE BAR DIAGRAM .

Table 2- Severity ofClinicalPresentation

	Above80years GroupI N=30	60-80yearsG roupIIN= 55	Total
KILLIPI	3 (10)	30(54.54)	33
KILLIP II	5(16.6)	20(36.36)	25
KILLIPIII	15 (50)	3 (5.4)	18
KILLIPIV	7(23.3)	2 (3.6)	9

Fisher'sexacttestpvalue=0.0001

In our study from groupIout of the 30 patients with STEMI 15 (50%) patients presented in Killip's class III (p value 0.0001). Group I patients presented with a higher killip class and more severe heart failure symptoms.Out of the 55STEMI patients   in group II only 3(5.4%)   presented in   killip   class III.(p value (0.0001).

Table 3- Distributionofriskfactors

PastHistory	Age		pvalue(chi squaretest)
	Above80years GroupI	60-80years GroupII	
SYSTEMICHTN	70(58.3)	40(33.3)	0.0001
DM	60 (50)	50(41.6)	0.195
CAD	28(23.3)	43(35.8)	0.034
DLP	60 (50)	77(64.16)	0.027

Prevalence of Systemic hypertension(HTN) was higherin group I than in group II(58.3% vs33.3%)(p value 0.001).Prevalence of coronary artery disease (CAD) was higher in group II   than group I(35.8%vs 23.3 % patients) (pvalue 0.034).Prevalence of dyslipidemia (DLP)was higher in group II than group I(64.16%vs50%)(p value0.027).

COMPARISON OF COMORBIDITIES- TO ADD ON , INCLUDE BAR DIAGRAM
Prior Cerebrovascular accident (CVA), Chronic Kidney disease (CKD), Bronchial asthma (BA), Chronic obstructive pulmonary disease (COPD) was more in group I. Prevalence of cerebrovascular accident (CVA) was higher in group I than group II

(24.16% vs 4.16 % patients) (p value 0.0001) Prevalence of Bronchial asthma (BA) was higher in group I than group II (32.5% vs 18.3% patients) (p value 0.012) History of Chronic Kidney disease (CKD) (23.3% vs15.83%) and Chronic obstructive pulmonary disease (COPD) was more in group I than group II(18.3% vs 16.6%) but not statistically significant

Table 4- Distribution of nstemi,stemi,unstable angina patients

Age	NSTEMI		STEMI		UNSTABLE ANGINA	
	Female	Male	Female	Male	Female	Male
>80years N=120 GroupI	25(38.4)	40 (61.5)	10(33.3)	20(66.6)	15 (60)	10(40.0)
60-80 years N=120 GroupII	20(40.0)	30 (60)	15(27.27)	40(72.72)	5(33.3)	10(66.6)

In our study out of the total 120 patients inthe age group above 80 years NSTEMI was seen in 25 (38.4%) of female patients , 40 (61.5%) of male patients, STEMI was seen in 10 (33.3%) of femalepatients, 20 (66.6%) of male patients, Unstable angina was seen in 15 (60%) of female patients ,10 (40%)of male patients.Out of the total 120 patients inthe age group between 60 - 80 years NSTEMI was seen in 20 (40%) in femalepatients, 30 (60%) in male patients, STEMI   was seen in15(27.27%)in female patients,40(72.72%)in male patients,Unstable angina was seen in5(33.3%) in female patients,10(66.6%) in male patients.

Table 5- Summaryoftreatmentforacs patients

TYPE OF TREATMENT	Above 80years GroupI	Between 60-80years GroupII	Total
Prmaryptca Forstemi	15(50%)	50(90.9%)	65
Ptcafor Nstemi	20(30.7%)	34(68%)	54

Ptca forunstable Angina	5(20%)	10(66.6%)	15
Ptcatotal	40(33.3%)	94(78.3%)	131
Cabgsurgery	0	11	11
Thrombolysis	2	4	6
Conservativemedical Treatment	78(65%)	11(9.16%)	89
Total	120	120	240

Fisher'sexacttest(p=0.0001)

Primary PTCA for STEMI was done more in 50(90.9%)in group II as compared to15(50%)in group I.(pvalue 0.0001).PTCA for NSTEMI was done more in 34(68%)in group II as compared to 20(30.7%) in group I(P value 0.0001).PTCA for unstable angina was done more in 10(66.6%)in group II as compared to5(20%) in group I(P value=0.003).PTCAwas done more in group II94(78.3%)vs40(33.3%)of group I patients(Pvalue0.0001).

Table 6- Complications of acute coronary syndrome

Complications	Age		Total	pvalue(Fisher'sExactTest)
	>80years GroupI	60-80 yearsGroupII		
Ventricular Tachycardia(vt)	3(2.5)	2(1.6)	5	0.651
Ventricular Fibrillation(vf)	2(1.6)	1(0.83)	3	0.561
Accelarated Idioventricularrhythm(aivr)	6 (5)	5(4.16)	11	0.518
Atrial Fibrillation(af)	18(15)	10(8.3)	28	0.108

Completeheart Block(chb)	7(5.8)	2(1.6)	9	0.089
Acutemitral Regurgitation(mr)	5 (4.16)	3(2.5)	8	0.472
Ventricularseptal Rupture(vsr)	4 (3.3)	1(0.83)	5	0.175
Cardiogenicshock	9(7.5)	2(1.6)	11	0.031
Acutepulmonary Edema	50(41.6)	20(16.6)	70	0.0001
Heartfailure(hf)	70(58.3)	40(27.3)	110	0.001
Cerebrovascular Accident(cva)	2(1.6)	1(0.83)	3	0.561
Atheroembolicrenal Disease	2(1.6)	1(0.83)	3	0.561
Pericarditis	4 (3.3)	3 (2.5)	7	0.701
Inhospitalmortality	19(15.6)	4 (3.2)	23	0.0001
Contrast-induced Nephropathy(cin)	6 (5)	4 (3.3)	10	0.518

Assessment of complications of ACS at the time of hospitalization revealed that the incidence of heart failure was more in groupI70(58.3%)vs40(27.3%)of group II(p value 0.001).Acute pulmonary edema was more in group I 50 (41.6%) vs 20 (16.6%) of group IIpatients(p value 0.0001).Cardiogenic shock was more in groupI 9(7.5%)vs2(1.6%)of groupII patients(p value 0.031).In hospital mortality was found to be significantly higher in group I population than group II patients with ACS {19 (15.6%) versus4(3.2%)} (p value 0.0001).There was no statistical difference between the two age groups with regard to occurrenceof other complications.

Discussion

The present study comprised of total 240 cases of acute coronary syndrome of which 120 belonged to groupI(>80 years)very elderly and 120 belonged togroupII(age 60-80 years) elderly patients. Male to female ratio in group I was 1.5:1 and ingroup II was 1.14:1.However in KERALA ACS registry, more than three quarters of patients were males.This difference may be due to the fact that, in the latter studymajority of the patients was younger with a mean age of 60.4 years. In a studydone by Holay et alwhich compared the clinical profile of elderly ACS patients withthat of young ACS patients, it was seen thatmale to female ratio was 1.37:1 inelderly ACS patientswhile it was 3:1in

young ACS patients, similar to ourfindings.[9]
In our study, atypical chest pain (33.3%) was the commonest symptom ingroup I patients. Other atypical presentations were also more frequently observed ingroup I viz syncope, palpitation and altered sensorium. In contrast typical chest painwas the commonest symptomnoted in group II patients(65% vs 8.3%).In the study by Holay et al29.6% of the elderly (>60 yrs) and 12.5% of the young patients(<60yrs) presented with atypical chest pain.[9] Similarly in the study by Applegate et alpatientsagedmorethan65yearsweremorelikelytohaveatypicalchestpain(38.2%)when compared to younger patients(4%).[10,11]Such high incidence of nonspecificsymptoms in the very elderly patients, could be due to preexisting non-cardiac problems,inability to describe their symptoms properly, memory impairment and possibly anelevatedpainthreshold.[12,13,14]

Inour study, fromgroupIout of the 30 patients with STEMI , 50% patients presented in Killip class III. Out of the 55STEMI patients,in group II only 5.4%presented in Killip Class III. However in the GRACE ACS registry, werein the meanage of patients was 64.9 years, 15 %presented in Killip class III. Our data suggest that group I patients presented with a higher killip class and more severe heart failure symptoms.

Prevalence of HTN was diverse across various studies. The occurrence of HTNwas 48.4%in Kerala ACS registry, 46% inGULF registry, 57.8% in GRACE, 68% in ACTION registry and 72.7% in PACIFIC registry.[15,16]In our study,prevalence of Hypertension was higher in group I than in group II (58.3% vs33.3%). This difference may be due to the advanced age of patients enrolled in our study compared to the other studies mentioned.

Radiological features suggestive of acute pulmonary edema was more frequent in the very elderly subgroup.Very elderly patients had a higher incidence of acute pulmonary oedema probably because of higher occurrence of hypertension, diabetes,delayed presentation and a lower ejection fraction in this subset of patients.

NSTEMI was more frequent in groupI and STEMI was more frequent in groupII. This was concordant with a study by Mehtaetal.LBBB tended to be more frequent in the groupI patients,but the differences did not reach statistical significance in our observations.[16]

Use of antiplatelet drugs (Aspirin 66.6%&Clopidogrel 75%), Betablocker50%,Statin75%,ACEinhibitor20.8%,was lesser in group I when compared to groupII(Aspirin100%,clopidogrel100%,Betablocker75%,Statin100%,ACEinhibitor58.3%).
The use of above mentioned drugs in the very elderly subset was much lesser inour study in contrast to their usage in the KERALA ACS REGISTRY.[17] (Aspirin 93% &Clopidogrel95.1%),Betablocker 65.8%, Statin70%, ACE inhibitor 27.8%.The reasonforthiscouldbe thepresenceofassociated comorbidconditions andincreasedfrailty.

Complicationssecondary to ACS occurred more frequently in GroupI.The frequency of cardiogenic shock in the very elderly was higher than that observed in theKERALA ACS REGISTRY (7.5% vs 1.9%).[17] However our results were quite similar tothe THAI ACS registry wherein they recorded an incidence of 9.6% in their elderlysubset(>54years ofage).The incidence of heart failure was more in Group I and it was distinctly higherthanthat observed in the KERALA ACS Registry(58.3%vs 1.9%).[17,18]In our study, the in hospital mortality was significantly higher in group I (15.6%vs 3.2%).

Conclusion

Our study was aimed to compare the clinical presentation, management pattern, outcomes and comorbidities among two groups of ACS patients aged 80 years and above as very elderly (group I) and those aged between 60-80 yrs as elderly patients (group II). Following observations were derived from the study. Gender disparity in patients with ACS diminishes as the age advances. The very elderly patients with ACS presented with more atypical symptoms. The very elderly patients had a more delayed presentation to the hospital. Adherence to Guideline Directed Medical Treatment was less frequent in the very eldely cohort. Coronary interventions &revascularisation were less often performed in the very elderly. Surgical coronary revascularisation was often deferred in patients with advanced age. The very elderly patients had a higher incidence of complications following ACS. The very elderly patients had a much higher in hospital mortality when compared to the elderly patients. Elderly patients form a special group of ACS patients requiring individualised treatment decisions. There is a need for earlier diagnosis and optimal use of medical and interventional therapy in this vulnerable population, especially because of higher rates of comorbidities, complications and mortality rates.

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