Predisposing Risk Factors Associated with Acute Myocardial Infarction (AMI): A Review

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Abstract

Among non-communicable diseases, cardiovascular diseases are major contributors to the resulting morbidity and mortality all over the world and India is no exception. Being one of the densely populated country and categorized as developing country, the proportion of subjects who are being afflicted with this disease has been progressively increasing. One of the leading causes for cardiovascular complications is myocardial infarction. The incidence of Acute Myocardial infarction has been observed across all the populations and from early adulthood to old age. Over the years there has been change in life style and dietary habits which is further contributing to increased prevalence. A number of risk factors have been found to be causative factors for development of the disease. Which include, genetic, environmental, life style modifications etc. The risk factors can be categorized in modifiable and non-modifiable risk factors. Those factors which can be controlled are categorized as modifiable and by changing them the risk level can be decreased whereas non modifiable risk factors cannot be changed and by knowing them one can assess the amount of risk involved. The present review is focused on various risk factors which are known to cause cardiovascular diseases and the role of each risk factor in the development of Acute Myocardial Infarction.

Keyword: *Acute myocardial infarction, Modifiable risk factor and Non-modifiable risk factor.*

Introduction

Acute myocardial infarction (AMI) is one of the leading causes of deaths in developed and developing countries. In event of irreversible damage of heart muscle, a complete absence or deficient of oxygen supply will lead to impairment of cardiac function making the person prone to arrhythmias. All this ultimately leads myocardial necrosis that's we call it Heart attack. [(1-2).] Most commonly it occurs due to a sudden decrease or stoppage of coronary blood flow as clogging (cholesterol pilling up in the inner wall) and narrowing of coronary artery leads to necrosis of heart muscle. As per the function of cardiac muscle is concerned like any other tissue, which is depending upon the demand or workload. The blood supply or oxygen must be ensured if there is any imbalance between supply and demand ratios, especially when there is rapid heart rate under these condition as there is higher demand and the demand is not fulfilled than there is occurrence of damage of cardiac muscle will lead to drop in blood pressure and ultimately leading myocardial damage. Chest pain is the hallmark symptoms of acute myocardial infarction, which may start from center or left side of the chest and may radiate into left arm, neck or back and remains for few minutes [(3-4)]. Globally the incidence of acute myocardial infarction varies greatly. Approximately 6, 50,000 and 1, 80,000 acute myocardial infarction patients are reported from USA and UK respectively every year [(5)]. More than 3 million people with STEMIs and 4 million with NSTEMIs episodes are reported every year globally.[(6)] However with the comparison of different population of other developing countries, it is reported that Indians

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have four time higher AMI due to various predisposing factors (mainly genetic and lifestyle factors) and leading to one or other metabolic dysfunction in them. The incidence rate of myocardial infarction in India is 64.37 per 1000 people and the mortality rate of MI in India is 31.7% whereas in other countries its 30 %[7-8].

Risk Factors:

Many risk factors have been documented and the prevention of those would immensely help to reduce the burden of diseases. But this requires an increase in the knowledge and awareness of type of risk factors existing among various geographical populations. As per the INTERHEART study, there are various predisposing risk factors for acute myocardial infarction which are generally categorized into modifiable (treatable) and non-modifiable (untreatable) risk factors. Which are described hereunder; [9]

Modifiable risk factors: Among the various modifiable risk factor such as habits, smoking, imbalance in dietary intake, sedentary lifestyle etc. other modifiable risk factor confined each individual which are impaired glucose tolerance, hypertension, diabetes mellitus, changes in blood lipid, overweight and obese condition.[10]

A. Physical activity or Sedentariness:

Physical activity is a key determinant for energy balance and weight control. Enhancement of vasodilatation and vasomotor activity is endothelial function, if this function is improved it will reflect on these functions also. Physical activity improves this function. Apart from this physical activity has many positive implications such as contributing in glycemic control, improving blood pressure and regulating blood lipid profile and improving insulin sensitivity [11, 12&13]. Approximately 20-30% reduction is the risk of coronary heart disease may be contributed by physical activity [14]. Many studies have reported people with sedentary life styles with multiple cardiac risk factors have more likely to develop AMI than others. A number of worker reported, there is no common effect of different physical activity. Effect of one physical activity may differ from other physical activity in the theory of development of risk of cardiovascular disease It has also been reported and it is difficult to pinpoint the effect of one type of physical activity from another but there will be definitely a cumulative positive effect. When we look at various physical activity, somewhere someone is involved in various domestic that may not provide much protection against cardiovascular diseases. But regular walking, climbing of steps and cycling are known to provide protection against myocardial infarction. [15, 16, & 17]. **Many workers have carried out studies to explore the relationship between type of physical activity. Some workers have reported the effects of low physical activity with relation to AMI. [18]One group of workers reported that less physical activity is an indicator of consequent risk of AMI whereas other suggested beneficial effect of light indoor, activity to reduced risk of AMI (AMI**D'Avanzo et al-1993 &Gong et al.-2013)[19, 15]

B. Smoking:

Among the many habits, one of the well-established habit proven to a definitive major risk factor for development and progression of cardiovascular diseases and myocardial infarction is smoking and tobacco chewing. The mechanisms behind increase in the risk of AMI by Cigarette smoking are such as **(a) The damaging effects of cigarette smoking is due to the presence of** Nicotine and production of carbon monoxide and these components cause arteries to lose their distensibility leading to plaque development. (b) In cigarette smokers there are high levels of non-esterified fatty acids and also increase in serum LDL and triacylglycerols and decreased HDL cholesterol leading to increased risk. In addition to, smokers there is high production of free radicals which oxidize LDL cholesterol triggering monocyte recruitment and T-cells facilitating more uptake of damaged LDL through receptors and finally leading to formation foam cells which form in intima and leading to atherosclerotic plaque. These events evoke inflammatory response (higher serum C-reactive protein levels)[19, 20].(c) In cigarette smokers there is a short supply oxygen from oxyhemoglobin to myocardium as there is more production of carboxyhemoglobin as this type of hemoglobin does not allow release of oxygen by hemoglobin. (d) One of the toxic products of cigarette smoking and tobacco is nicotine. Nicotine has many detrimental effects as it activates sympathetic nervous system(SNS) leading to arterial vasoconstriction and that in turn increases the heart rate and systolic blood

pressure[21, 22]. Other effect of the toxins of tobacco smoke are decreasing cardio protective HDL cholesterol levels and increasing the atherosclerotic LDL cholesterol levels [21]. The extent of risk may be different in males and females. Males are reported to have more risk ranging from two to six fold risk to develop myocardial infarction compared to females who are exposed to cigarette smoking. If we compared with smokers and non-smokers are associated with three fold increase for unstable angina. In the literature, there are many reports regarding the congestive heart diseases and years or duration of the smoking, number of cigarette smoked and the age of starting of smoking. [23].

C. Alcohol Consumption:

Many occasional alcohol consumers have been reported to be associated with hugely higher risk of myocardial infarction in the successive hour of its consumption. However, regular alcohol consumers with light to moderate consumption of alcohol known to be associated with a decreased risk of development of coronary artery disease, angina pectoris and myocardial infarction [24, 25].Heavy alcohol consumption which is episodic (called as binge drinking) is known to promote the progression of atherosclerosis in the carotid arteries and the binge drinking most likely to trigger an embolic stroke and MI [26-28]. Two studies, one from Finland and the second one from Austria have reported a strong association between binge drinking with fatal myocardial infarction.

Kauhanen*et.al.-1997*[28] reported that the risk of death from fatal MI was more than six times greater in men who consumed six or more beers per session than in those who drank less than three beers. In another study, McElduff and Dobson-1997[30] revealed an odds risk ratio of 2.62 for a major coronary event in men who consumed nine or more drinks daily for 1 or 2 days per week compared with those men who consumed the same amount of alcohol spread over the entire week. [27,29] Martin McKee et al-1998 [31] reviewed potentially four main possible mechanisms of Binge drinking pattern, which are reported to be the causes of cardiovascular deaths. These are:

(1) Effect on lipids: Binge drinking increases the risk of coronary artery disease. Regular, moderate alcohol consumption is believed to exert its cardio protective effect by increasing the anti-atherogenic high density lipoproteins (HDL). Though there is an evidence that chronic alcohol consumption suppresses levels of the atherogenic lipoprotein (a), but once the alcoholics stop drinking it is shown that this lipoproteins rises substantially.

(2) Effect on clotting: increasing chances of the risk of thrombosis. Regarding binge drinking there is no certain pattern of its effect on clotting system. Alcohol known to inhibit platelet responses to a range of physiological factors leading to reduction in platelet aggregation but in heavy drinkers there may be thrombocytopenia and other effects may lead to myocardial infarction whereas moderate regular drinking with meals have been reported to carry cardio protective effects.

(3) Effect on the myocardium or its conducting system leading to a greater risk of arrhythmias. Excessive indulgence of alcohol drinking occasionally will lead to histological changes in myocardium and also to a reduction in threshold for ventricular fibrillation.

(4) Effect on blood pressure: causing either an acute increase or sustained hypertension. Alcohol has an acute presser effect, binge drinking pattern reported to lead to significantly higher systolic but not diastolic blood pressures [30].Augustin *et al*.-2004 [32] and Biyik et al.-2007 [32]reported that regular alcohol intake during meals was inversely related to the risk of AMI, whereas alcohol intake during and outside mealtimes or only outside mealtimes was not related to the risk. This might be related to the metabolic effects of alcohol consumption as alcohol induces an increase in the HDL-C level, reductions in low-density lipoprotein and lipoprotein (Lpa) levels and a decrease in insulin resistance[31,33]. Some workers reported that 35% of acute myocardial infarcted patients show hypoglycemic and hypoinsulinaemic effect when alcohol (especially wine) ingested with food [33]

A large controversy has been generated regarding beneficial and detrimental effects of alcohol consumption and risk of AMI. One group of workers [34] reported that alcohol consumption can increase HDL cholesterol, apoprtoein-a1 and Adiponectin and reduction in fibrinogen levels and among these HDL cholesterol proved to be main protective factor which could explain that a 50% causal relationship attributed to increased

HDL cholesterol and decreased risk of acute myocardial infarction. But some of the other workers believed based on low HDL cholesterol under these conditions and attributed only 16% causal relationship between HDL-cholesterol levels and the risk of acute myocardial infarction [35, 36]

Some more workers who believe in the beneficial effects alcohol consuming give reasons for this beneficial effects such as increase in the levels prostacyclin in blood vessel walls leading to improvement in the functions of vascular endothelial cells not only that there is an increase in the sensitivity of insulin and resistance to thrombosis. Moreover, long-term regular alcohol consumption is known to improve heart rate variability (HRV) and thus diminished risk for onset of MI. But many other workers did not find beneficial effects of alcohol consumption. These workers reported that alcohol consumption would lead to increase in LDL cholesterol, triacylglycerols, heart rate and blood pressure increases the risk of atherosclerosis, atrial fibrillation and anoxia resulting in the damaging of cardiac muscle cells and cardiovascular system and also another effect is production of an inhibitor of fibrinolytic enzyme. [38,39] Some of the worker found that there is no association between consumption of alcohol and morbidity but heavy drinking on day to day basis might lead to increase serum triacylglycerol leading to increase in blood pressure, cardiomyopathy and stroke development.[40].

Table-1: Effects of alcohol consumption on clinical outcomes, atherosclerosis progression and blood coagulation parameters.32

Events	Binge drinking large Regular light-to-moderate	Binge drinking large Regular light-to-moderate
Morbidity and mortality	Increase	Decrease
Major coronary event	Increase	Decrease
Atherosclerosis progression	Increase	Decrease
Fibrinolysis	Decrease	Increase
Platelet activity	Increase	Decrease
Vascular tone	Increase	Decrease

D. Hypertension (Blood pressure):

One of the risk factors which has a direct correlation with an increased probability of developing coronary artery diseases and substantially documented in various populations across the globe.[41] Blood pressure (systolic and diastolic) increases the risk for MI, hence hypertension increases and there will be greater risk for the development of disease. Hypertension can be a considered as major risk factor for causing atherosclerosis in coronary artery, and that can leads to heart attack or myocardial infarction. As age advances hypertension becomes even worse to heart and many studies reported that 70% of heart diseases are due to this condition. [42]. **In the prospective Ttrialists groups study it is concluded that, rise in blood pressure by 20/10 mmHg can double the risk of ischemic heart disease**

and stroke over the range of 115/75 mmHg to 185/115 mmHg in those individuals who are between the age group of 40-90 years Lewington et al. [41]. It is one of the predisposing condition to develop atherosclerosis. It is a synergistic mechanism where inflammation and oxidative stress is observed in arterial wall, of course there is every possibility that the effect of hypertension on the onset of coronary artery diseases may be influence or modulated by hereditary and environmental factor [43] In the older patients an association between the development of acute myocardial infarction and hypertension has been reported by **Sadeghi R et al. [44]** It is further reported that, for the development of coronary artery diseases, increase in the blood pressure is one of the frequently found risk factor. Ciruzzi et al. [45] showed that hypertension is also frequently found independent risk factor for acute myocardial infarction in argentine population and suggested that the control of hypertension can be done with strict compliance of appropriate medications and adopting life style modifications facilitating the reduction in the risk of myocardial infarction. [45]

E. Dyslipidemia (Hypercholesterimia)

There is a close association between the levels of various lipid parameters and development of myocardial infarction. Except a few most of the other lipids are increased, this condition is known as dyslipidemia, which is a predisposing risk factors for acute myocardial infarction. Lipids increased levels have a negative impact on health are: Various serum lipid parameter some of atherogenic and other are anti-atherogenic. In the group of atherogenic lipids, Triglyceride, low density lipoprotein cholesterol, very low density lipoprotein and Apo protein B where as anti-atherogenic are high density lipoprotein cholesterol and Apo protein A present in it. [46, 47].

The principle cause of injury to the artery and vascular smooth muscle cells (SMCs) is mainly due to the increased levels of triglyceride and low density lipoprotein cholesterol. The known consequences are: If there is an accumulation of LDL-cholesterol in vascular endothelial, leukocyte will start to accumulation and attachment to the endothelium leading to further accumulation of lipids finally resulting into formation of foam cells and second effect is due to oxidative damage to the LDL-cholesterol. Deregulation of receptor uptake of LDL become unregulated and that will lead more uptake of LDL cholesterol lead to formation of atherosclerosis. [23, 48]. Apart from the above some other independent predictors of cardiovascular death in very high risk patients are: High levels of vonWillebrand factor, D-dimer, ADP induced platelet aggregation, triglycerides, end-diastolic volume, end-diastolic dimension, and ventricular septal thickness etc. **(Table-2).** These indicators endorse a close relationship between lipid metabolic and hemostatic disturbances between endothelial dysfunction and intra-cardiac hemodynamic worsening in the patients. [49] High density lipoprotein-cholesterol is known to be anti-atherogenic is prevents or inhibits pro-inflammatory effects of oxidized LDL. The other effect is to permotes various factor such as platelet activation factor, acetyl hydrolase and different antioxidant enzymes like catalase, myeloperoxidase and paraoxonase. [48, 50]. One group of workers reported that dyslipidemia condition in younger age group patients with acute myocardial infarction. These workers also categorized that increased cholesterol and LDL as potential risk factor in the development of acute myocardial infarction and also decreased HDL-c levels contributed to it. A relationship between dyslipidemia and coronary artery diseases has been established. An increased in concentration of total cholesterol, triglyceride, LDL-cholesterol and decreased levels of HDL-cholesterol and also reestablished of major risk factor in development of atherosclerotic coronary artery diseases. Correction of dyslipidemia have every possibility to remove the risk of myocardial

Lipid related cardiac abnormalities	Cardiovascular abnormalities	Metabolic abnormalities
ü Various serum lipid parameters levels abnormalities including: LDL-Cholesterol, Triglycerides, HDL-Cholesterol	ü Atherosclerosis ü Endothelial dysfunction ü Vascular inflammation ü Myocardial Infarction ü Coronary Heart Diseases (CHD) ü Peripheral artery diseases (PVD)	ü Nephrotic syndrome ü Acute coronary syndrome (ACS) ü Recurrent ischemic syndrome ü Thyroid disorder ü Chronic renal failure ü Growth Hormone Disorder ü Niemann-Picks Diseases type-c

infarction by Framingham study [52]

Table-2:[49]Showing important lipid abnormalities and metabolic disorders related atherogenesis.

F. Overweight/Obesity and BMI:

In recent times overweight/obesity has become a pandemic especially in younger population due to life styles adopted. Obesity is one of the many risk factors for development of metabolic syndrome and it is directly attributed to increase in the incidence of myocardial infarction. Zhu et al. [53] in a meta-analysis of previous studies and suggested that overweight and obesity are associated with higher risk of AMI**.** Overweight is one of the major contributor for the development of obesity. In the individual with obesity, a levels of free radicals is a key precursor for development of metabolic syndrome. [54] It is also reported that obesity has an association of pro-inflammatory effects of certain cytokines as an increase in the production of interleukin with the increase adipocyte mass. Subsequently stimulate production of C-reactive protein in the liver and both play a role in endothelial dysfunction by decreasing nitric oxide (NO), leading to vasoconstriction and increasing vascular resistance. [55] This association remained significant even after adjusting for other risk factors (non-HDL, HDL, smoking and hypertension). Before the onset of clinical manifestation in adolescent and young adult obesity found to the progression of atherosclerosis. **(56).** Schargrodsky et al.-1994[57] and its co-worker observed that overweight is one of the independent risk factor for the development of myocardial infarction. Yusuf et al.-2004 [58] shown the relationship between increase in the risk of acute myocardial infarction to abdominal obesity in the different age group and in the both gender.

G. Type 2 diabetes mellitus (T2DM):

Diabetes mellitus is another potential risk factor, and its predominant form especially type 2 diabetes mellitus (T2DM). There is a distinctive association between type 2 diabetes and cardiovascular diseases. Diabetes mellitus is due to decreased secretion of insulin or decreased effect of insulin. There are many factor behind the diabetes mellitus, they can be either genetic or environmental being the part of metabolic syndrome. Patients of diabetes mellitus have disturbance in the glucose metabolism leading to increase in its production. It has been clearly established a strong link between diabetes mellitus and increased mortality and morbidity of cardiovascular diseases compared with non-diabetic subjects the rate of mortality is very high in patients with diabetes mellitus. Patients with diabetes bear greater risk of atherosclerotic vascular disease in the heart as well as in other vascularized areas. Coronary artery disease accounts for more than 80% of all deaths and 75% of all hospitalizations in diabetic. **(59-61)**

Diabetes mellitus escalations the chances for the risk of MI because it upturns the rate of atherosclerotic progression and having an adverse effects on lipid profile, which facilitates the formation of atherosclerotic plaque. **(62)** Some workers reported diabetes as one of the major individual risk factor in the causal of heart diseases. In myocardial infarction case fatality, diabetes can be considered as an important risk factor as the available

data suggests that myocardial infarction is more fatal in diabetic subjects compared to non-diabetic individuals. (63)

G. Stress:

An element stress is present in every individual and many times it gives impetus to carry out a task but chronic high levels of stress will definitely lead to disturbances in homeostatic aspects as it affects the status hormones and ultimately many metabolic process and including free radical generation. Many studies have clearly delineated a relationship between constant chronic stress, social isolation and anxiety to the increased risk of heart attack and stroke. It is a common observation preceding that there are various reasons like affected person have intense grief, which may be due to death of close relatives leading to onset of myocardial infarction. The relation between acute attacks of myocardial infarction followed by stressful emotional behaviour. This results hemodynamic changes leading to the stress of coronary artery causing the rupture of atherosclerotic plaque and thrombosis.(64)

Non-modifiable risk factors:

Many of the risk factors which cannot be changed or controlled and bound to be happen. Theses factor will not be much use in the part of its management.

A. Age:

There are many studies which reported the incidence of myocardial infarction in different age groups but majority of these studies indicated a relationship between advancing age with an increased mortality in acute myocardial infarction. There are no definitive answers to explain the mechanism behind the significant mortality rate in the older people though some inference can be drawn linking to the processing of ageing along with the metabolic changes which take place like hardening of blood vessels etc. It is often reported that 80% of heart diseases related mortality occur in people with 65 years or above. The age range of occurring this event in most of the males is between 50-65 years whereas in females it is 10 years later especially after the onset of menopause. This aspect has many serious implications in many countries as there is an increasing trend in the number of geriatric populations in many countries. (67)

A. Gender:

It is well established that more men suffer from heart attacks compared to corresponding age group of females. Men tend to get heart attack at a younger age compared to females. The incidence of heart attack in female increases after onset of menopause even then the post-menopausal incidence rate in females is lower than that of males. While going through the data of deaths due to heart diseases one can certainly come to know that males are more prone than females (66). Sex hormones play very important role to provide protective mechanism against CAD during premenopausal years in women. Women before menopause are protected against CAD, because of the impact of sex hormones function. (68)

B. Family history

Among the different non modifiable risk factors family history is one of the most important independent risk factor for AMI. If a first degree relative is associated with AMI then there is a double risk to be afflicted with this disease. Comparison is drown from the number of cohort study and observed that person who have first degree of relative with cardiovascular diseases have higher risk of afflicting with the diseases compared to those person who do not affected with first degree of relative. (69) In case of family history of acute myocardial infarction is one of the crucial risk factor while assessing various modifiable or non-modifiable risk factors. A of strong evidence suggested that the family history have strong association. (70, 71)

Genetic factors:

Heredity is a crucial aspect to predict the likely event to happen in the family with the history of a coronary event at a younger age. Coronary artery disease and myocardial infarction are the repeatedly causes for death across many families. In many families every second myocardial infarction is lethal and hits the patients unexpectedly without previous signs or symptoms. A comparative analysis of molecular genetic testing had demonstrated that: In first aspect, the genetic study it has been observed that the myocardial infarction locus is unique and it does not overlap with other risk factor. Second aspect is lipoprotein a, type-2 diabetes mellitus and serum lipid and hypertension comes under strong

CVD risk factor have very strong relationship with genetic and target the candidate genes for myocardial infarction pathogenesis. (65)

Other predisposing risk factor for acute myocardial infarction (AMI): are as follows

A. Socio-economic status: - Social strata determines how a person adopts life style and social status is directly determined by economic status of that individual or family. Generally the higher the person in social status the existence better health indicators. Persons in higher echelons of society are within the reach of power, prestige and access to resources. There are many structural mechanism which are responsible for creating differential social positions of any individual such as governance, education system, labor market structures and the reach to various welfare policies by the way of causing an impact on behavioural, economical, emotional, day to day lifestyle and various metabolic aspect.(72). There is an established relationship between development of diseases and social status. Cardiovascular diseases has no exception to it. Better social status, reachability to nutritious diet and better working condition will improve to overall increasing the various cardiovascular diseases. Working into the aspects, there are some reports, which have made the recommendation. These recommendation discussed in WHO member states and passes a resolution called Health welfare policy in 2009 with three recommendation that are: (i) Day to day living condition enhancement (ii) Equal sharing of supremacy or resources. (iii) Observation of health discriminations. (73)

B. Consanguineous marriage: - In many regions of various countries there is a practice of consanguineous marriage practices. It is well known that marriages between cousins will lead not only to many hereditary diseases but also other diseases. One of such disease is cardiovascular disease. The frequency of consanguineous marriage is common in the third world countries which are 50.3%, 54.3%, 28.9%, 38.6%, and 25% in Jordan, Kuwait, Egypt, Iran, and Lebanon, respectively and in many regions of Asia including India there is a practice of this system from so many past years. Genetic studies lead to recognition of new complex diseases causing variants, and focus on the association between polymorphism and risk of coronary artery disease. (68)

C. Gout: - Gout is due to the accumulation of uric acid in the disturbance in metabolism of purine. In the patients of gouty arthritis there will be inflammatory response. One of the case of initiation and progression in the atherosclerosis. Toxin can infer the presence of inflammatory components in gout also increases the risk for acute myocardial infarction (AMI). Which in turn leads to a series of event and finally promoting a pro-thrombotic environment for acute coronary events such as angina or MI (74)

D. Periodontal Diseases: -One of the risk factor which is found to be associated with cardiovascular diseases is the presence of a periodontal diseases. Periodontal diseases are group of inflammatory disease where in the principle etiological agents, bacteria and their byproducts. (75). It is well established a strong link between dental disease, especially periodontal disease and atherosclerosis leading to increase in the risk of occurrence of CHD. (76, 77)

Conclusion

In this review, we have reviewed various risk factors, which have been found to be causative factors for development of acute myocardial infarction. Among the various risk factors, there are modifiable risk factor such as imbalance in dietary intake, habits and sedentary lifestyle. Sedentary life style is one of the significant risk factors and many workers found that the leading active life decreases the risk of AMI. Another modifiable risk factor is smoking, compared with non-smokers, smokers are associated with three fold increase in unstable angina. The risk combined by smoker is also associated with number of cigarettes he or she smoked. Alcohol is also one of the risk factor however many researchers have reported beneficial effects of limited intake of alcohol . We have also come across reports suggesting a connection between hypertension, dyslipidemia and acute myocardial infarction. One of the most important aspects is atherosclerosis, which has been directly associated with the risk CAD. Stress is one of the risk factor for the association with AMI. We have also included non-modifiable risk factors such as gender, family history, genetics etc. reported to have an association with AMI. Finally we have also reviewed various predisposing factors which act as precursor

for the development of CAD. Some of such are socio economic status, consanguineous marriage, gout and periodontal diseases.

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