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AYURVEDIC REMEDIES OF MYOCARDIAL ISCHEMIA

[1]Uppuluri Spandana, [2]Guntaka Kavyasri, [3]Vatturi Sai Sudeep, [4]Sabbarapu SharonNamitha, [5]Nallagorla. [6]Pramodh Venkata Sai.

Nirmala College of Pharmacy.

Corresponding mail I'd: spuppuluri@gmail.com.

ABSTRACT:

Myocardial ischemia is defined as a diseased condition which is caused by reduced oxygen supply in a blood flow of coronary artery due to atherosclerosis and occlusion of an artery bya thrombus. Myocardial ischemia is caused by blockage of coronary blood flow by coronary plaques, blood clot and shrinking of macro vascular coronary arteries in the estrogen hormone state. The impaired fibroblast regulation is involved in the immuno pathogenesis of a wide variety of cardiovascular diseases and therefore is an important therapeutic target.

Keywords:

Myocardial ischemia, Atherosclerosis, Arteries.

INTRODUCTION: Ischemic heart disease is one of the leading causes of disease in worldwide. Myocardial ischemia is defined as imbalance between oxygen supply to the coronary artery due to atherosclerosis and occlusion of an artery by a thrombus. They result in partial or complete blockage of heart arteries and leads to sudden death. (1,2)

The coronary artery is the circulation of blood flow and oxygen with vascular resists of fibroblast, where the endothelium as place major role to regulates the vascular smooth muscle cells and release some relaxing factors like Nitric oxide, prostaglandin and they can also release vasodilation factors are super oxide anions, thrombocyte in pathological conditions. (2,3)

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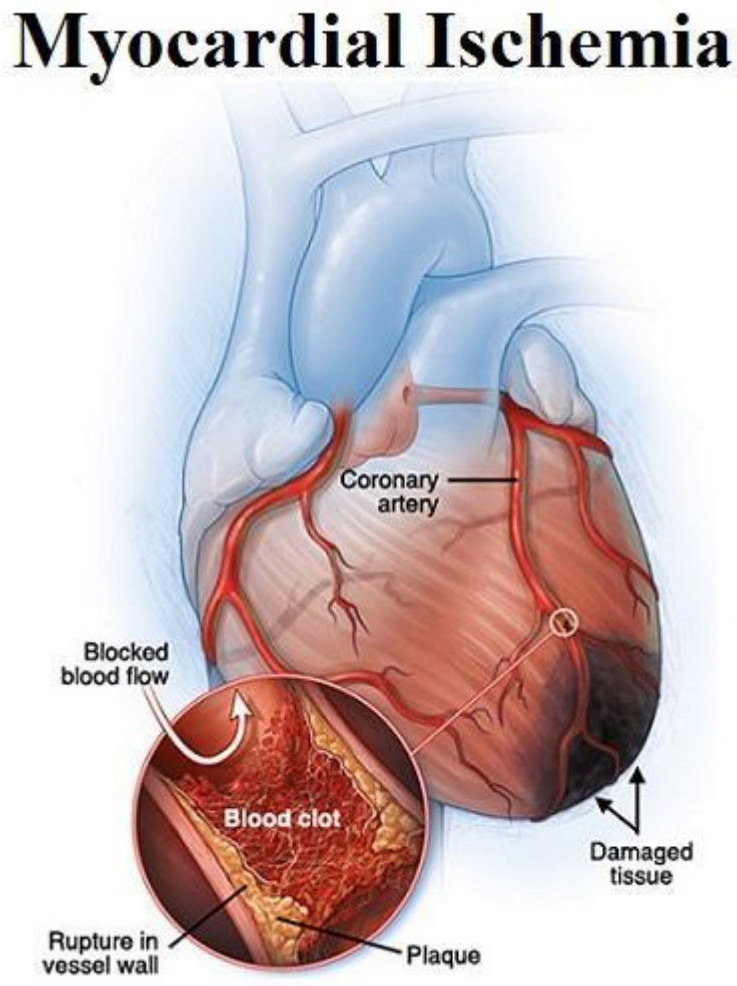

Development and anatomy of the coronary arteries:

The heart can require it own supply of the blood for functions and other organs in the body. The supply of blood through myocardium and via to the coronary artery circuit.

The coronary system is connected with two main arteries. The left coronary artery, and the right coronary artery. (4,5,6)

Epidemiology of ischemic heart disease:

As per WHO, the chronic diseases like heart disease are the largest contributing category, for 63% of deaths are in worldwide.

The ischemia heart disease is higher than cancer diseases or other non-cardiovascular disease leading of death causes in western countries in the worldwide.

Around 17.1 million people may die to cardiovascular disease per year and 82% of these deaths mostly occurs in developing countries in worldwide.

In 2030 about 23 million people will die from the cardiovascular disease are estimated. The incidence of cardiovascular disease is mostly in western countries in world through the lifestyle modifications, smoking and consumption of alcohol and type-2 diabetes is an Adult- onset diabetes are increasing they leads to deaths. (4,5,6)

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Types of myocardial ischemia:

Myocardial ischemia is in Five types, they are: -

TYPE-1: Spontaneous myocardial ischemia is related to primary coronary artery such as plaques damage.

TYPE-2: Myocardial ischemia is secondary due to either supply of oxygen is increased or decreased.

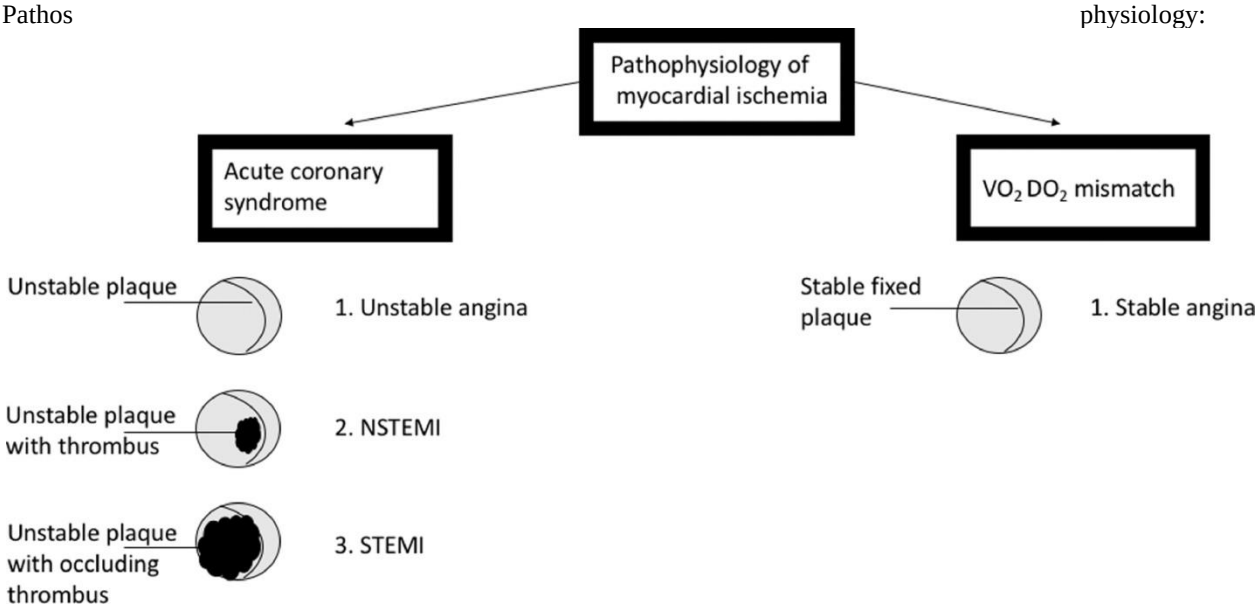
TYPE-3: Sudden /unexpected cardiac death with symptoms of myocardial ischemia.

TYPE-4: Myocardial ischemia associated with per cutaneous coronary intravenous.

TYPE-5: Myocardial ischemia associated with cardiac surgery.

INJURY: Multi factorial diagnosis of acute or chronic based on change in cardiac serum concentration with serial testing. (1)

Pathos physiology:



The pathos physiology of ischemic heart disease is the acute coronary syndrome and stable angina. Acute coronary syndrome is known as TYPE-1 myocardial infraction and it includes unstable angina, on non-ST segment on myocardial infraction.

Acute coronary syndrome occurs as a result of plaque rupture with subsequent varying degrees of thrombus formation, arterial spasm, and coronary occlusion to form necrosis leads to myocardial ischemia. (7,8,9)

Causes:

The myocardial ischemia can be mainly caused due to:

1.Coronary artery diseases(Atherosclerosis).

2.Blood clot.

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3.Coronary artery spasm.

Myocardial ischemia mainly associated chest pain due to:

1.physical exercise.

2.emotional stress.

3.In take of alcohol and tobacco substances.

4.Modifications in food habits. (10)

Signs and symptoms:

In men:

1. Most common symptoms is angina (Chest pain).
2.Shortness in breathing.
3.Pain in the jaws, neck, back, arm and shoulder.
4.Increase in sweating.
5.Palpitations.
6.Anxiety.
7.Sleeplessness.
8.Hypertension.
9.Arrhythmia.

In women:

1.Chest pain is less.
2.Feeling nausea.
3. Unusual tiredness.
4. Headache.
5.Palpitations.
6. Anxiety. (11)

Mechanism of action:

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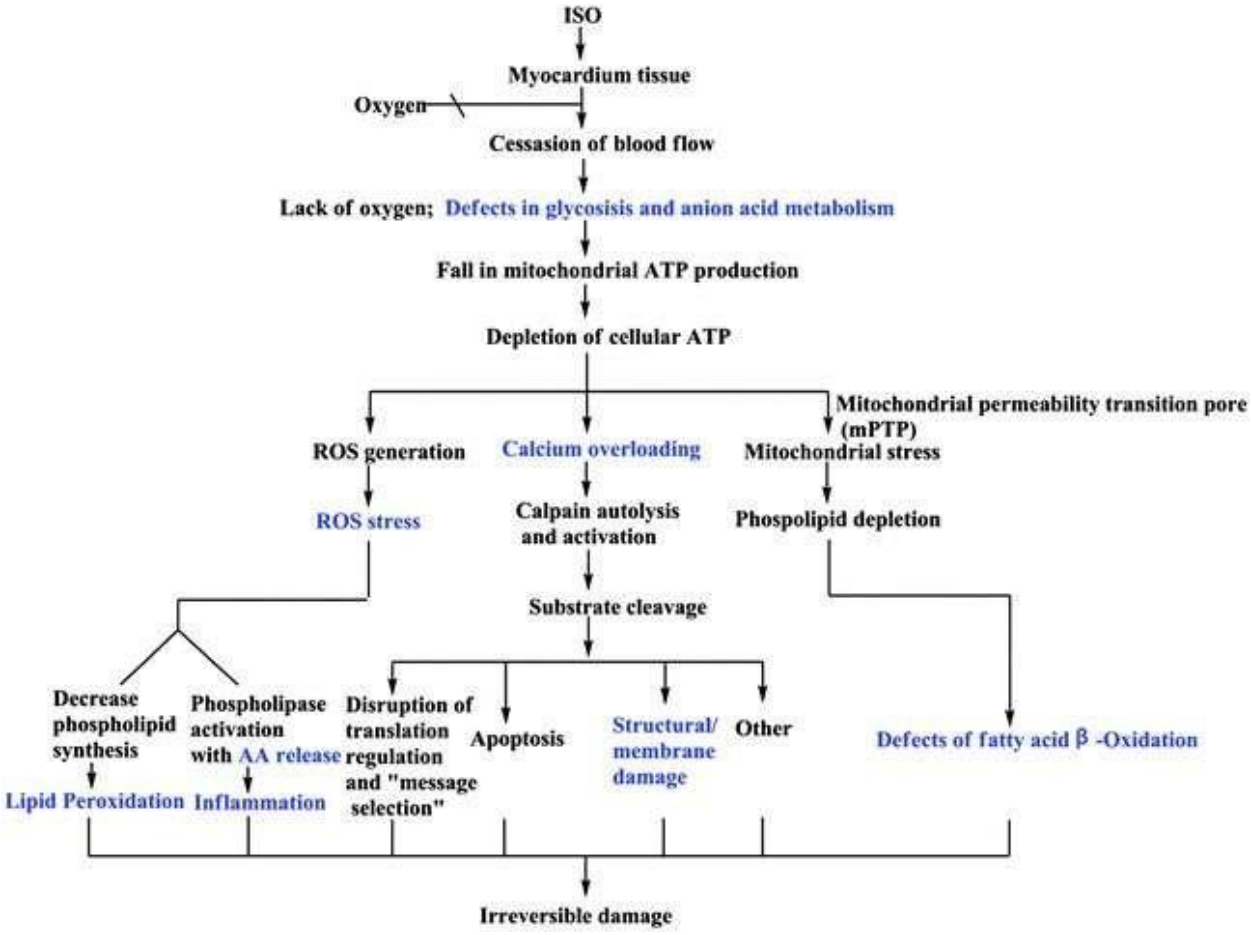

Risk factors:

Risk factors that may increase the myocardial ischemia are:

1.Modifiable risk factors:

a. High blood pressure.

b. High level cholesterol in blood.

c. Lack of physical exercise.

d. Stress.

2.non-modifiable risk factors:

a. Diabetes.

b. Age.

c. Family history of heart diseases.

Complications:

Myocardial ischemia can lead to some complications like

1.Heart attack.

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2.Heart failure.

3.Arrhythmia. (11,12)

Diagnosis:

Myocardial ischemia can be diagnosed by various tests:

1.Electro cardiogram (ECG): Electrocardiogram is the test to records the electrical signals in heart. It is also called as ECGs or EKGs. It is a painless test to detect the heart problems and monitor the heart health. (13,14)

2.Stress test: It is an exercise stress test shows working condition of heart during physical activities. The stress test involves in walking a treadmill or stationary cycle with monitor the medical devices like breathing, blood pressure, heart rate and heart rhythm. (15,16)

3. Echo cardiogram: It is a graphic outline of the movements of the heart. This test is performed by using ultrasound to show the working of heart muscles and valves. It helps the ultrasound evaluate the pumping action of the heart.(17,18)

4. Stress echo cardiogram: it is a test used to functions the heart while working under stress. stress can be triggered by exercise on a treadmill or medicine used as dobutrex. (19)

5. Nuclear stress test: It is the test that are used to a small amount of radio active material an imaging machine to create pictures that shows the blood flow in heart. (20)

6.Coronary arteriography: It is a test that used a special dye and x-rays to shows blood flows through the arteries in heart. (21)

7. Cardiac CT scan: This test uses anx-ray to observe specific areas of the body. Theyuse some amount of radiation to detect the problems in the heart. A heart CT scan may also call as coronary CT angiogram. (22)

8. Intra vascular ultrasound: The intra ventricular ultrasound is a test used some sound waves to seen inside the blood in coronary arteries to the heart. (23)

9. Magnetic resonance imaging: This test can be done by using some strong magnetic fields and radio waves to produce the images of the heart and blood vessels of the body. (24)

10.X-Ray chest: Chest x-rays are done by the produce images of the hearts, lungs, blood vessels etc., The chest x-ray can be detecting the heart problems, a collapsed lung, pneumonia and other several conditions. (25)

Treatment:

Myocardial ischemia can be treated by various drugs like:

1. Coronary vasodilation:

Nitrites and nitrates:

According to duration of action

A. Short acting (3-60 min): Isoamyl nitrite, Nitroglycerin (sub lingual), Isosorbide dinitrate.

B. Intermediate acting (3-6 hrs.): Isordil, Nitroglycerin (ointment).

C. Long acting (6-10 hrs.): Erityl tetranitrate, Nitroglycerin (Transdermic).

2. Potassium channel activators:

Nicorandil, pinacidil monohydrate.

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3.Anti platelet drugs:

Aspirin celecoxib.

4.Angio tensin - converting enzyme inhibitors:

Capoten ,Vasotec, prinvil.

5. Cholesterol lowering medications:

Lipitor, Fenofibrate.

6. Calcium channel blockers:

Verapamil, Nifedipine. (26)

Importance of ayurvedic medicines:

Ayurveda is the one of the most ancient traditional system originated in India. The word Ayurveda is taken from Sanskrit means "AYU - LIFE" and "VEDA - SCIENCE" called as "SCIENCE OF LIFE".

"CHARKA SAMHITA" is the father of ayurvedic medicines and it was originated around more than 3,000 years ago in Sanskrit, in the four sacred texts called as vedas: the Rig veda, Yajur veda, Sam veda, and Atharva veda. (28)

Now-a-days most of the people they might interest in ayruvedic medicines mainly due to:

Synthetic drugs are;

1. cost effective drugs.

2. lot of side effects are like

a. paranoia

b. Extreme anxiety

c. Delusion.

d. Seizures.

e. Aggression.

f. Suicidal or violent behaviour.

3. Adverse reactions.

Ayurvedic medicines are prepared by plants extracts and they don't use any chemicals in preparation of medicines. They may contain many therapeutic effects and they prevent the diseases and promote the health. It may show a lot effective in chronic diseases. Less cost-effective drugs also.(29)

Ayurvedic remedies on myocardial ischemia:

In Ayurveda, ischemia called as a "HRIDROGA". means "HRID - HEART‘, "ROG - DISEASE". when Vatta dosha gets vitiated and distrubs the rasa dhatu in body, it results in HRIDYAROGA causes damaging the arteries and it leads to ischemia.(30,31)

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Herbal remedies:

Some herbs are used to treat myocardial ischemia are:

NATURAL HERBS	USES
Arjuna (Terminalia arjuna)	1. It possess PGE2 like activity with coronary hypoxia and postural hypotension. 2. The main chemical constituents are Arjunolic acid. 3. It protects heart from chronic beta- adreno- receptors stimulation. (32)
Cinnamon (Cinnamon zeylanicum)	1.The main chemical constituents are- cinnam aldehyde, cinnamic acid are against myocardial ischemia. 2. It also used as Anti-carcinogenic, anti-oxidant, anti-inflammatory, anti-diabetic, and anti-microbial properties. (33)
Garlic (Allium sativum)	1.Reduction of risk factors form the cardio vascular diseases and cancer diseases. 2. Stimulates immune system. 3.Anti-microbial and anti-oxidant. 4.Long period of garlic consuming it attenuation of age-related factors increases in aortic stiffness has been observed. (34)
Turmeric (Curcuma longa)	1. Pre conditioning of curcumin effectively protects against myocardial ischemia through activation of prosurvival kinases- p13k - Akt, ERK1/2 and Gsk-3 beta, attenuation of p38 and JNK. (35)
Ginger (Zingiber officinale)	1. 6- gingerol is a derivative of ginger protects heart by suppressing myocardial ischemia. (36)
Saffron (Crocus sativus)	1. It consists of saffronal, crocetin, crocins treat cardio vascular diseases. 2. It also used as anti-inflammatory,anti- oxidant also. (37,38)
Sarpagandha (Rauvolfia serprntina)	1. It contains more than 50 alkaloids are Ajmaliner, Indobinine, Serpentine, Serpentinine etc., 2. It has an ability to decreases the irregular heartbeats. 3. It also treat high blood pressure, sedative and relaxing agent. (39)
Brahmi (Bacopomonnieri)	1. Brahmi is a brain and nerve tonic. 2. It is used in treatment of various disorders like cardio vascular diseases, respiratory disorders. 3. It can also treat Neuropharmacology disorders like Insomnia, Insanity, depression, anxiety, amnesia etc. 4.It also used as an anti-inflammatory, analgesic, febrifuge, anti-rheumatic etc.(40)
Elaichi (Elettaria cardamomum)	1.Elaichi seeds and oils are used to prepare medicines. 2. It is mainly used to treat high blood pressure. (41)
Guggulu (Commiphoria wightii)	1.It consists of oleo-gum resin. 2.It is used in treatment of arthritis, inflammation, gout, rheumatism, obesity and disorders of lipid metabolism. (42)

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Fenugreek (Trigonella foenum- gracem)	1. It contains trigonelline, alkaloids, steroids compounds and sapogenins. 2. It used as to treat weight loss, control of diabetic, ease child birth, to aid digestion and increase metabolism. (43)
Tulasi (Ocimum tenuiflorum)	1. It is used to treat cardio protective agent. 2. It also used as stimulant, aromatic, anti-fungal, anti-bacterial, febrifuge, anti-viral, anti-malarial, anti-inflammatory, helminthicetc. diseases are treated. (44)
Amalaki (Phyllanthus emblica).	1. It contains tannins, flavonoids, phenol carboxylic acid. 2. It is used to treat anti-fungal, anti-bacterial, anti-inflammatory, anti-cholesterolemic, anti-carcinogenic, anti-oxidant and ulcerogenic activities. (45)

Herbal formulations:

Some herbal formulations that are used in the treatment on myocardial ischemia are:

1.Arjunaristha: It strengthens the heart muscles, prevents the deposition of plaque in the blood vessels and also controls the formation of atherosclerosis. (46)

2.Arjunkshirpak: It is very useful to person, suffering from weakness of heart,angina, cholesterol and control blood pressure. (47)

3.Akikpishti:It is formulated in tonic preparation and useful in rapid or irregular heartbeats, hypertension. And it's strengthened the hearts. (48)

4.Sarpgandhaghanvati: It is mainly used in inducing sleep and reducing blood pressure and hypertension. (49)

5.Triphalaguggulu: It decreases cholesterol levels and improves strengthen the heart. (50)

6.Ashwagandhachurna: It is used in coronary artery diseases; hypertension; ischemic cardio myopathy. (51)

Modifications in lifestyle and diet:

1.Eat more healthy foods
2.Regular exercise.
3. Avoid alcohol and tobacco substances.
4. Decrease cholesterol levels.
5.Try to keep always happy and healthy. (30,31)

Conclusion: In this current situation of covid-19, myocardial ischemia of a cardiovascular diseases. So many people will affect and increasing death rate in covid-19. Allopathy or synthetic drugs will relief the symptoms till extents only and relapsing of disorder takes place upon discontinuation of medication. Hence, using the herbal remedies like arjuna ,cinnamon, garlic ,sarpagandha, brahmi, guggulu, tulasi etc., all will help as permanent solution and leading a side effects free life for the patient.

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