A Cure of Coronary Artery Disease by Removing Atheromatous Plaques from Coronary Arteries in a Diabetic Patient

Anis Ahmad
Unity Point Health Trinity Hospital, Rock Island, Illinois, USA

*Corresponding author: Anis Ahmad, Department of Internal Medicine, Unity Point Health Trinity Hospital, 2701 17th St. Rock Island, Illinois, USA, Tel: +1-309-762-6161, Fax: +1-309-762-5387, E-mail: aahmad1950@gmail.com

Received date: September 25, 2018; Accepted date: November 22, 2018; Published date: November 29, 2018

Copyright: © 2018 Ahmad A. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

**Objective:** A cure for coronary artery disease is desperately needed as more people die of this disease. The coronary disease can be cured by removal of all atheromatous plaques by pharmacological intervention. This pharmacological treatment can also prevent acute myocardial infarction, unstable angina, chronic stable angina, CABG, PTCA and cardiac death.

**Case presentation:** The patient is 75 years old, who had CABG and PTCA and suffered from daily chest pain which was relieved with nitroglycerin. Also had pain in both upper arms and both forearm several hours a day and this arm pain did not respond to nitroglycerin. She suffered with coughing wheezing and shortness of breath. No treatment helped her. Chest X-Ray showed cardiomegaly. EKG showed right bundle branch block. The coronary angiogram of 2013 showed advanced obstructive disease involving LAD and left circumflex artery with disease of the grafts. The right coronary artery was completely blocked with partially blocked graft. The patient was given standard treatment of coronary artery disease and for other conditions she suffered. The medications given for the removal of atheroma from coronary arteries were Carvedilol, Metformin, statin and Evolocumab. The patient was symptom free in 3 months. A repeat coronary angiogram in 2018 showed that LAD, left circumflex and right coronary arteries and their branches had no disease and no obstructive lesion. The graft to right to the right coronary artery was open and other grafts remained unchanged.

**Conclusions:** 1) The atherosclerotic coronary artery disease can be cured. 2) Primary and secondary prevention of coronary artery disease can be achieved. 3) Intractable angina can be cured. 4) Stroke and TIA can be prevented. 5) Totally occluded coronary arteries can be opened.

Keywords: CABG-Coronary artery bypass grafting; PTCA-Percutaneous transluminal angioplasty; LAD-Left anterior descending artery; MI-myocardial infarction; TOC-Totally occluded coronary artery; Pharmacological Intervention-Pharmacological treatment; PCI-Percutaneous coronary intervention

Introduction

The coronary artery bypass surgery (CABG) and percutaneous trans luminal coronary angioplasty (PTCA) have been standard treatments for acute coronary syndromes and advanced coronary disease except in 20-30% of patients [1,2].

The coronary artery disease can be cured by removal of all atheromatous plaques. This can be done by pharmacological intervention. Patients who cannot go through CABG because of age, and or, comorbidities, and patients who cannot have PTCA because of previous adverse outcome can be treated by pharmacological intervention.

This the first time that a patient has been treated with pharmacological intervention to cure coronary artery disease, the patient had CABG and PTCA but also had refractory angina [3,4]. Patient was not advised PTCA or CABG by her cardiologist after last angiogram [1,5,6].

Case Presentation

The patient is 75 yrs old and suffered from chest pain almost daily, relieved with nitroglycerin. Patient also had pain in both upper arms and both forearms lasting for several hours daily and this pain did not respond to nitroglycerin [3,4]. Patient suffered also with dyspnea, wheezing and edema on feet. All these symptoms were going on since 2012 and no treatment helped the patient.

Investigations

The EKG showed right bundle branch block. Chest X-Ray showed cardiomegaly. The echocardiogram showed diastolic dysfunction and an ejection fraction of 60%. A coronary angiogram was done in 2013, which showed the following:

- The main coronary artery showed no disease.
- The left circumflex coronary artery gave rise to a moderate sized obtuse marginal one coronary artery. The large obtuse marginal coronary was completely occluded. The proximal circumflex has had a 70% lesion. The mid and distal circumflex had 70-80% long diffuse lesion.
- The left anterior descending artery (LAD) gave rise to moderate size diagonal 1&2 coronary arteries with diffuse disease. The proximal and mid LAD had diffuse disease of 70-80% and distal LAD had diffuse disease of 70%.
The right coronary artery was completely occluded in the proximal part.

The obtuse marginal coronary artery which was occluded was getting blood supply from a vein graft.

The left internal mammary artery graft had disease in the proximal part and this graft was not providing much circulation support to LAD.

The vein graft to right coronary artery had 50% disease.

The blood work which was done on 9/26/17 showed A1c of 6.2, total cholesterol of 298 mg/dl, triglycerides of 421 mg/dl, HDL level of 47 mg/dl. The LDL level could not be determined because of high triglyceride level. The blood work was repeated on 1/24/18, showed total cholesterol was 194 mg/dl, the level of triglycerides was 291 mg/dl, HDL level was 53 mg/dl and LDL level were 83 mg/dl. The various ratios were excluded. The BNP was 606.

Personal and Past Medical History

The patient smoked two and a half packs of cigarettes a day for 50 years and was trying hard to cut down the smoking. She is now smoking half pack of cigarettes a day. She suffered with hypertension, chronic congestive heart failure, COPD, diabetes mellitus Type 2, peripheral neuritis and osteoarthritis. She had acute myocardial infarction in 2014.

Past Surgical History

She had CABG with three grafts in 2009, PTCA with five stents in 2011. Also had hysterectomy and cholecystectomy.

Treatment

The patient received the following medications for different conditions.

- Carvedilol-25 mg twice a day [7,8].
- Metformin-500 mg twice a day [8-10].
- Pravastatin-80 mg daily [11].
- Bumex-1 mg daily.
- Aspirin-81 mg daily.
- Nitrdur patch-0.4 mg/hr daily.
- Glymeperide-4 mg twice a day.
- Nitroglycerin tab-0.4 mg, sublingual as needed.
- Evolocumab-140 mg every two weeks sub-cutaneously [12].
- Albuterol unit dose with a hand nebulizer to be used every 4 hours as needed.

The medications that were given to open the coronary arteries by removal of atheroma were, Carvedilol, Metformin, Pravastatin and Evolocumab [7].

Carvedilol

This is a third-generation beta blocker and blocks beta1, beta2 and alpha-adrenergic receptors. It is used to treat hypertension, coronary artery disease and congestive heart failure. It reduces insulin resistance and stimulates insulin receptors. It prevents the conversion of a stable atheromatous plaque to an unstable or a vulnerable plaque by reducing insulin resistance [6]. It is a vasodilator, anti-inflammatory and antioxidant. It prevents platelet aggregation, prevents LDL oxidation and raises level of HDL. It improves the function of endothelial cells by reducing insulin resistance. The dose is 25 mg given twice a day. The side effects are low blood pressure, bradycardia, dizziness, drowsiness, nausea, vomiting, diarrhea, dry eyes, fatigue, joint pain, cough and decreased sex drive.

Metformin

It belongs to biguanide group and is used to treat diabetes mellitus. It lowers blood sugar and sensitizes insulin receptors. Metformin is anti-inflammatory and prevents platelet aggregation. It lowers cholesterol and LDL levels and increases the level of HDL. Metformin must not be used in patients with renal failure, serious infections and liver failure. The side effects include nausea, vomiting, diarrhea and lactic acidosis.

Evolocumab

This is a monoclonal antibody and a PCSK9 inhibitor. It can lower LDL level by 71% over 12 weeks if used at its maximum dose with statins. It is given subcutaneously; therefore, there can be pain, swelling and redness at the site of injection. Evolocumab can cause acute infection of nose, throat and sinuses. The dose is 140 mg twice a month or 240 mg once a month.

Statins

These statins are HMG-CoA (HMOA) reductase inhibitors and are used to lower cholesterol and LDL levels; simvastatin and rosuvastatin also increase HDL levels. The statins are anti-inflammatory agent. When used as a secondary prevention measure for myocardial infarction, statins lower the rate of relapse by 24%. Statins can cause mild or severe muscle pain, jaundice and abdominal pain. Rarely Statin can cause rhabdomyolysis with liver and kidney damage, especially if used at a high dose. The average of atorvastatin statin is 40 mg daily and the maximum dose is 80 mg daily. The average dose of rosuvastatin is 10 mg a day and the maximum dose is 40 mg a day.

Results

The patient was free of chest pain, arm pain and dyspnea and wheezing in 3 months after starting the treatment with Carvedilol, Metformin, Pravastatin and Evolocumab. The other medications have been continued. The edema of feet was gone much earlier. The coronary angiogram was repeated after eight months of treatment, and the period of eight months was a random choice. Following were the findings of the angiogram done in 2018.

- The proximal and distal left circumflex artery which had disease of 70-80%, on previous angiogram of 2013 had no disease in 2018. The branches of this artery marginal1 coronary artery had no disease in 2018. The large obtuse marginal artery which was completely obstructed before had no obstruction and no disease in 2018.
- The LAD which had disease of 70%, in the past in 2013 had no disease in 2018. The diagonal 1 & 2 coronary arteries had no disease in 2018.
- The right coronary artery which was completely obstructed on previous angiogram of 2013 was completely open now with no disease in 2018.
- The left internal mammary artery graft to LAD showed no change in the disease in the proximal part like it was in 2013.
• The vein graft to left circumflex artery had a mid-50% lesion like in 2013.
• The vein graft to right coronary artery was open in 2018.
• The vein graft to the large obtuse marginal artery was open like it was in 2013.

In summary, the atheromatous disease of LAD, left circumflex and right coronary arteries and their branches which was found on the angiogram of 2013 was not found on the angiogram of 2018. The graft to the right coronary artery was open in 2018, but the rest of the grafts showed no change in disease when compared to the angiogram of 2013. This is a cure of coronary artery disease. The patient got relief of intractable angina, dyspnea and edema of feet. Intravascular ultrasound was not used [13].

Discussion

The patient described under the section of case presentation suffered with refractory angina. There is no standard treatment available for patients who had CABG and PTCA and have refractory angina [3,4]. The pharmacological treatment was effective in this patient by opening the coronary arteries.

The treatment using PTCA or CABG cannot be provided to 20-30% of patients because of advanced coronary artery disease. This is a group of large number of patients worldwide [2]. Regarding this group of patients, no treatment is available to prevent the complications of advanced coronary artery disease like refractory angina, multiple episodes of acute myocardial infarction, and repeated episodes of acute pulmonary edema, arrhythmias, A-V block, peripheral vascular failure, cardiac arrest and death. This group can be treated with pharmacological intervention and all the complications described above can be prevented. A trial is needed. The patients who cannot afford to have CABG or PTCA like in developing countries can be treated with the pharmacological treatment. Some patients refuse to have PTCA or CABG can be treated the same way.

The pharmacological treatment can also open chronic totally occluded coronary arteries (CTO). The opening of CTO can be a difficult problem using PCI which can also have complications [14]. The chronic total occlusion of coronary arteries (CTO) is seen in 30% of patients after cardiac catheterization. The range of CTO varies from 18 to 52% [15]. The success rate of recanalization of CTO is 47-72%. However, this number will vary between different institutions.

How can removal of atheroma from coronary arteries be achieved using certain drugs, was published earlier along with pharmacology of the drugs [7]. This treatment can reduce the relapse rate in post PTCA patients, hopefully, close to 0%. [16,17]. The recurrent cardiac events after CABG can also be prevented [18].

There is another group of patients who have intractable angina after PTCA and CABG. These patients keep on getting one or more stents placed in their coronary arteries because of recurrent multiple stenotic lesions. This stent placement can happen every year or even more often with no relief of symptoms [5,17]. This is because no different treatment is available. These patients can get relief of intractable angina and can avoid multiple stents if they receive pharmacological treatment. The enhanced external counter pulsation therapy and other treatments for refractory angina will not be needed [3,4].

According to CDC, 715,000 people suffer with acute myocardial infarction every year and 630,000 people die of heart disease every year. The episodes of acute MI, unstable angina or chronic stable angina, can be reduced significantly in patients who have coronary artery disease, using pharmacological intervention to cure coronary artery disease. The incidence of death due to coronary artery disease can also be reduced [7].

The same pharmacological treatment can be applied to the atheromatous disease of cerebral arteries. The strokes and TIAs due to thrombotic episodes can be prevented or their incidence can be reduced [14]. The peripheral vascular disease can probably, also be treated [16].

According to CDC, one billion dollar a day is spent for heart disease and stroke. This is expected to increase to one trillion dollar a day by 2030. This huge cost of billion dollars a day and escalation of this cost to one trillion dollar a day can be prevented by using pharmacological intervention.

Conclusion

• The coronary artery disease can be cured by removal of atheromatous plaque.
• The primary and secondary prevention of coronary artery disease can be achieved.
• Intractable angina can be cured.
• The total occlusion of coronary artery can be cured.
• The stroke and TIAs can be prevented.

References

9. Saisho Y (2015) Metformin not only improves chronic inflammation through improvement of metabolic parameters such as hyperglycemia, insulin resistance and atherogenic Dyslipidemia but also direct anti-inflammatory effect. Endocr Metab Immune Disord Drug Targets 15: 196-205.
10. Ahmad A (2017) Carvedilol can replace Insulin in the Treatment of Type 2Diabetes. J Diabetes Metab 8: 726.