

*A Case Report*

## **Coronary artery disease with co-morbidities**

**Disha\***

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### **Abstract**

Coronary artery diseases are becoming very common in now a day in all segments of society and in all age groups. Most of the times, it is associated to many types of co-morbidities also such as hypertension, diabetes, obesity and many more. Therefore, the present report depicts the medical and nutritional management of the patient with coronary artery disease having co-morbidities. Learning the management of cases is of utmost importance for medical professionals. Here, patient's present complaints were noted with medical history and family history. General examination was done by medical team along with investigations. On the basis of which final medical diagnosis was derived. According medications were started. Simultaneously patient's nutrition care process started by dieticians. In this process, first of all nutritional status was assessed on the basis of anthropometry, biochemical reports, diet intake. Nutritional diagnosis was made with the start of necessitated interventions. Intervention included management of coronary artery disease along with hypertension and diabetes. Therefore a lot of fibre was included in the diet, while refined flour and saturated fat was avoided.

### **Keywords**

Coronary artery disease, heart disease, co- morbidities, hypertension, diabetes, health complications, risk factors

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## Introduction

Coronary Artery Disease (CAD) is a condition characterized by the narrowing of the coronary arteries due to formation of plaque as shown in Fig. 1. The plaque may be composed of fat, cholesterol and other substances. Decreased blood supply to the coronary arteries may lead to angina that further aggravates the risk of heart attacks.

Key risk factors for CAD include smoking, high blood pressure, high cholesterol, diabetes and sedentary lifestyle.

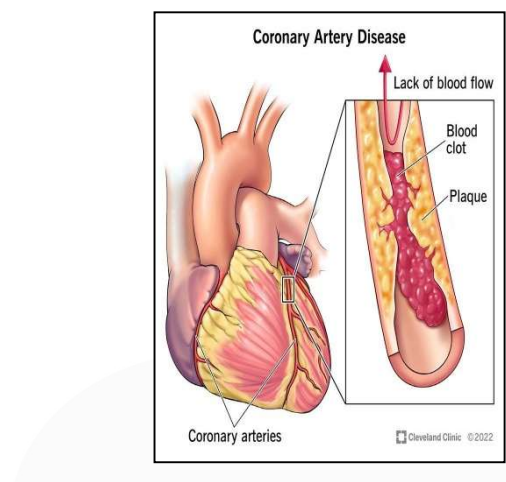


Figure 1: Formation of plaque in coronary artery

Etiological factors behind coronary artery disease may be multifaceted such as plaque builds up inside the arteries, hypertension, hypercholesterolemia, smoking, diabetes, obesity, sedentary lifestyle, genetics, unhealthy diet, chronic inflammation etc.

Major complications associated with coronary artery disease are angina, myocardial infarction, heart failure, arrhythmias, stroke, sudden cardiac arrest, peripheral artery disease, aneurysm etc.

### Treatment includes:

- Angioplasty and stenting are done to open narrowed arteries and insert a stent to keep them open. Percutaneous Transluminal Coronary Angioplasty (PTCA) is a stenting procedure that involves the insertion of a catheter with a balloon at its tip into the artery. The balloon is inflated to widen the narrowed artery. It brings the blood flow back to normal. It is a commonly used procedure to relieve symptoms of coronary artery disease and reduce the risk of heart attacks (Figure 2)
- Coronary Artery Bypass Grafting (CABG): Surgery to create a new path for blood to flow around blocked arteries.

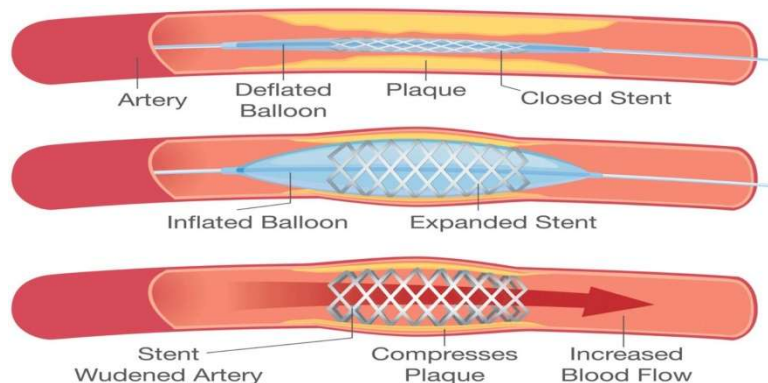


Figure 2 Percutaneous Transluminal Coronary Angioplasty

### Case profile

A 59 year old female who was a homemaker, belonged to lower middle class family, admitted to the hospital. By food habits, she was non vegetarian. Her activity pattern was sedentary. Her duration of hospital stay was for 10 days. She was admitted with complaints of shortness of breath on exertion, chest pain accompanied by anxiety and excessive sweating since last 6 months.

### Patient history

Type 2 Diabetes Mellitus and hypertension. She was a smoker since 30 years

The patient's vitals at the time of admission were as shown in table 1.

| Vitals | Temp (F) | Pulse (per min)  | Blood Pressure  |
|--------|----------|------------------|-----------------|
| Values | Afebrile | 80 bpm (Regular) | 120/90 mm of Hg |

Table 1: Vitals at the time of admission

Patient's investigations and diagnostics were as below as shown in table 2.1 & 2.2 respectively

| Test    | Remarks                                                           |
|---------|-------------------------------------------------------------------|
| ECG     | Suggestive of inferior posterior wall MI                          |
| 2D Echo | LVEF - 40-45%, mild LV systolic dysfunction                       |
| CAG     | Mid LAD- 70% Lesion, Proximal LCx- 100% blocked, mid RCA - plaque |

Table 2.1: Biophysical investigations

|                     | Test              | Result        | Reference         | Interpretation |
|---------------------|-------------------|---------------|-------------------|----------------|
| CBC                 | Hemoglobin        | 13.5g/dl      | 13.0-17.0 g/dl    | Normal         |
|                     | RBC               | 4.2 cell/cumm | 4.5-5.5 cell/cumm | Low            |
|                     | PCV               | 24.2 %        | 40-50 %           | Low            |
|                     | Lymphocytes       | 7.8 %         | 20-40 %           | Low            |
|                     | MPV               | 9.3 fl        | 7.4-10.4 fl       | Normal         |
| Electrolytes        | Sodium            | 135 mmol/L    | 137-145 mmol/L    | Low            |
|                     | Potassium         | 4.6 mmol/L    | 3.5-5.1 mmol/L    | Normal         |
|                     | Chloride          | 96.5 mmol/L   | 98-107 mmol/L     | Low            |
| Glucose profile     | RBS               | 380 mg/dl     | 80- 140 mg/dl     | High           |
|                     | FBS               | 307 mg/dl     | 60- 100 mg/dl     | High           |
|                     | HbA1c             | 12.3%         | 4.5 - 6.3 %       | High           |
| Lipid Profile       | Total cholesterol | 160 mg/dl     | < 200 mg/dl       | Normal         |
|                     | HDL               | 29.9 mg/dl    | 40- 60 mg/dl      | Low            |
|                     | Triglycerides     | 199.8 mg/dl   | <150 mg/dl        | High           |
|                     | VLDL              | 40 mg/dl      | <30 mg/dl         | High           |
|                     | LDL               | 109 mg/dl     | <160 mg/dl        | Normal         |
| Renal function test | Blood urea        | 27 mg/dl      | 15 - 45 mg/dl     | Normal         |
|                     | Serum creatinine  | 0.7 mg/dl     | 0.5 - 1.25 mg/dl  | Normal         |

Table 2.2: Biochemical investigations

Final medical diagnosis: It was diagnosed as Coronary Artery Disease with double vessel disease for which following medications were started as shown in table 3.

| Name                   | Mechanism of action |
|------------------------|---------------------|
| TAB. Deplatt-cv        | Antiplatelet        |
| TAB. Apigat            | Anticoagulant       |
| TAB. Lasilactone 20/50 | Diuretic            |
| TAB. Akt 4             | Antitubercle        |
| TAB. Zifi cv           | Antibiotic          |
| TAB. Wyslone           | Anti-inflammatory   |
| CAP. Omez-DSR          | Antacid             |

Table 3: Medications started to treat the patient

## The Nutrition Care Process

### Step 1: Nutritional assessment

Assessment of nutritional status was done on the basis of anthropometric measurement, biochemical profile and nutrient intake. Following table 4 is showing anthropometric measurements of the patient.

| Measurements             |      | Interpretation    |
|--------------------------|------|-------------------|
| Height (cm)              | 164  | -                 |
| Weight (Kg)              | 68   | -                 |
| BMI (Kg/m <sup>2</sup> ) | 25.2 | Obese             |
| Target body weight (Kg)  | 56   | 12 Kg. overweight |

Table 4: Anthropometric measurements of the patients

### Dietary Assessment: 24 hr. home diet recall

| Time    | Meals      | Ingredients | Amount (g) | Energy Kcal | CHO (g) | Protein (g) | Fat (g) | Sodium (mg) |
|---------|------------|-------------|------------|-------------|---------|-------------|---------|-------------|
| 9-10 am | Rice       | Rice        | 40         | 142.67      | 31.33   | 3.2         | 0.27    | 1.26        |
|         | Aloo sabzi | Potato      | 50         | 50          | 11.5    | 0.75        | 0       | 1.99        |
|         |            | Onion       | 15         | 7.5         | 1.5     | 0           | 0       | 0.61        |
|         |            | Oil         | 5          | 45          | 0       | 0           | 5       | -           |
|         | Dal        | Tur Dal     | 30         | 100         | 17      | 7           | 0.5     | 3.26        |
|         |            | Tomato      | 10         | 1.96        | 0.27    | 0.09        | 0.05    | 6.1         |
|         |            | Oil         | 5          | 45          | 0       | 0           | 5       | -           |
|         | Curd       | Curd        | 100        | 60          | 3       | 3.1         | 4       | 32          |
|         |            | Besan       | 40         | 154.8       | 23.13   | 8.96        | 2.68    | 25.6        |

|              |                |             |     |                |               |              |              |               |
|--------------|----------------|-------------|-----|----------------|---------------|--------------|--------------|---------------|
| 4-5 pm       | Pakoda and Tea | Onion       | 20  | 10             | 2             | 0            | 0            | 0.81          |
|              |                | Oil         | 20  | 180            | 0             | 0            | 20           | -             |
|              |                | Milk        | 100 | 66.67          | 4.67          | 3.33         | 4            | 25.46         |
|              |                | Sugar       | 5   | 20             | 5             | 0            | 0            | -             |
| 7-8 pm       | Mutton Curry   | Mutton      | 100 | 100            | 0             | 18           | 0.53         | 33            |
|              |                | Onion       | 30  | 15             | 3             | 0            | 0            | 1.22          |
|              |                | Tomato      | 30  | 5.88           | 0.81          | 0.27         | 0.14         | 18.3          |
|              |                | Oil         | 15  | 135            | 0             | 0            | 15           | -             |
|              | Roti           | Wheat Flour | 90  | 288            | 57.9          | 9.6          | 1.5          | 1.84          |
| <b>Total</b> |                |             |     | <b>1427.48</b> | <b>161.11</b> | <b>54.30</b> | <b>58.67</b> | <b>151.45</b> |

Table 5: Home diet recall (24 hours)

### Interpretation of 24 hours home diet-recall

|                | Energy (Kcal) | CHO (g) | Protein (g) | Fat (g) |
|----------------|---------------|---------|-------------|---------|
| Total          | 1427.48       | 161.11  | 54.30       | 58.67   |
| % Distribution |               | 45.14%  | 15.21%      | 36.99%  |
| RDA            | 1903          | 285     | 96          | 42.2    |
| % Distribution |               | 60%     | 20%         | 20%     |
| Difference     | -476          | -124    | -42         | +16     |

Table 6: Interpretation of 24 hours home diet recall

- The patient was skipping lunch
- Inclusion of mutton curry, a source of animal protein, may contribute to essential amino acids but could increase saturated fat intake
- Inclusion of fried snack may add to the overall fat content
- Consumption of rice could also lead to glucose spike

### Diet therapy provided during hospitalization

| Days   | Diet | Calorie (gm) | Protein (gm) | CHO (gm) | Fat (gm) | Na (mg) | K (mg) |
|--------|------|--------------|--------------|----------|----------|---------|--------|
| 1-2 PM | NBM  |              |              |          |          |         |        |

|         |                                 |           |         |         |       |        |         |
|---------|---------------------------------|-----------|---------|---------|-------|--------|---------|
| 3:00 PM | Liquid diabetic diet            | 762 Kcal  | 33.2 gm | 83.8 gm | 30 gm | 332 mg | 1473 mg |
| 4:00 PM | High protein soft diabetic diet | 1159 Kcal | 63.6 gm | 128.89  | 26.64 | 358.13 | 2098    |
| 5-10 PM | Soft + full diabetic diet       | 1605      | 64.6    | 130     | 44    | 634    | 2386    |

Table 7: Diet provided during hospitalization

## Step 2: Nutritional Diagnosis - PES Statement

- Uncontrolled Type 2 Diabetes Mellitus and Coronary Artery Disease with double vessel disease.
- Due to inadequate glycemic control as evidenced by poor dietary habits, long-standing history of smoking, and lack of adherence to diabetes management protocols.
- Evidenced by elevated Random Blood Sugar (380 mg/dl), Fasting Blood Sugar (307 mg/dl), HbA1c (12.3%), and dyslipidemia (HDL Cholesterol: 29.9 mg/dl, Triglycerides: 199.8 mg/dl, LDL: 109 mg/dl), along with clinical symptoms of shortness of breath, chest pain, anxiety, and excessive sweating.

## Step 3: Nutritional Intervention

### Goals of Medical Nutrition Therapy (MNT)

#### Short term goals –

- Achieve better glycemic control
- Improve lipid profile
- Manage symptoms: Alleviate chest pain, shortness of breath, and anxiety through lifestyle modifications, medication, and stress management techniques over the next month
- Smoking withdrawal: Counseling for reducing smoking gradually and eventually stopping it completely.

Long term goals:

- Attain a sustainable weight within the normal BMI range.
- Achieve sustained glycemic control.
- Maintain a healthy lipid profile.
- Reduce the risk of future cardiac events.

Discharge Diet:

Name of diet prescribed: Diabetic diet

- Total energy – 25 kcls x IBW = 1400 Kcal
- Total protein – 1.2 x IBW = 67 gm

**Exchanges:**

| Food groups | Cereals | Pulses | Vegetables | Milk | Fruits | Fats |
|-------------|---------|--------|------------|------|--------|------|
| Exchanges   | 6       | 2      | 5          | 6    | 1      | 3    |

Table 8: Exchanges of various food groups in discharge diet

**Distribution of exchanges:**

| Food groups | Breakfast | Mid morning | Lunch | Snacks | Dinner | Post Dinner |
|-------------|-----------|-------------|-------|--------|--------|-------------|
| Cereals     | 1         | -           | 2.5   | -      | 2.5    | -           |
| Pulses      | -         | -           | 1     | -      | 1      | -           |
| Milk        | 1         | -           | 1     | 1.5    | -      | 1.5         |
| Vegetables  | 1         | -           | 2     | -      | 2      | -           |
| Fruits      | -         | 1           | -     | -      | -      | -           |
| Fats        | 0.5       | -           | 1     | 0.5    | 1      | -           |

Table 9: Distribution of exchanges in whole day

**Sample Menu:**

| Meal Time | Menu Options                                                                                 |
|-----------|----------------------------------------------------------------------------------------------|
| 8:00 AM   | 1 glass milk (100 ml) + 1 bowl dalia/rabdi/poha/upma/idli + 1 bowl (100gm) cooked vegetables |
| 11:00 AM  | Fruit (100 gm)                                                                               |

|         |                                                                                                     |
|---------|-----------------------------------------------------------------------------------------------------|
| 1:00 PM | Salad 100 gm (1 plate) + 2.5 chapati/ khichdi + 1 bowl cooked vegetables                            |
|         | + 1 Bowl dal + chaach (100 ml)                                                                      |
| 5:00 pm | Tea (50 ml) + paneer (50 gm) (can have it as bhurji) + besan chilla / khaman / dhokla / chana bhuna |
| 8:00 PM | Salad 100 gm (1 plate) + 2.5 Chapati / dalia + 2 bowl cooked vegetables                             |
| 9:00 PM | 1/2 glass milk (150 ml)                                                                             |

Table 10: Sample menu provided to patient

### Dietary Recommendations:

| Eat in suggested quantity                                                                | Avoid                                                                                               |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Cereals - wheat with choker, bejad, bajra, corn, rabadi, oats, dalia, upma, poha, barley | Refined wheat flour, toast, fan.                                                                    |
| Fruits - Guava, apple, orange, pears, jamun, papaya, pineapple, mosambi, pomegranate.    | Mango, bananas, cheeku, grapes, litchi, dates, muskmelon.                                           |
| Vegetables - Raw vegetables, salad                                                       | Potato, arbi, sweet potato, yam                                                                     |
| Dairy - Double toned milk, paneer, hung curd, chhena, chhachh.                           | Full Cream milk, mawa, butter, ice creams                                                           |
| Animal products - Egg whites, fish, chicken                                              | Red meat, egg yolk                                                                                  |
| Miscellaneous - Lemon water, coconut water, vegetable soups.                             | Sweets, sugar, gur, honey, sharbat, shikanji, lassi, fruit juices, cold drinks, sweets, chocolates. |
| Dana Methi, jamun, karela, whole and husk pulses, sprouts                                | Fried foods, puri, paratha, samosa, kachori, chips, namkeen, kurkure, chana dal                     |

Table 11: Dietary recommendations

### Superfoods for good heart health:

- **Methi (Fenugreek Seeds):** These are rich in soluble fiber, which helps control blood sugar levels and improve insulin sensitivity in diabetic patients. They also help lower cholesterol and support heart health.
- **Flaxseeds:** High in omega-3 fatty acids and fiber, flaxseeds help lower triglycerides and cholesterol levels, improving heart health and supporting diabetes management.
- **Nuts (Almonds, Walnuts):** Rich in heart-healthy fats, fiber, and antioxidants, nuts help improve cholesterol profiles and reduce the risk of cardiovascular disease.
- **Oats:** A great source of soluble fiber, oats help lower LDL cholesterol and stabilize blood sugar levels, essential for both diabetes and heart health.

### Step 4: Monitoring & evaluation

Patient will be called for follow up visit after 15 days and will be evaluated for any change in weight, lipid profile, clinical signs and diet compliance.

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