NUTRITIONAL CARE FOR PATIENTS WITH NON ST ELEVATION MYOCARDIAL INFARCTION (NSTEMI)

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Abstract
Background: The case study was conducted based on the Standardized Nutritional Care Process (PAGT) on a 65 year old patient, Mrs. AR. **Method**: The variables monitored during the study were anthropometry, biochemistry, clinical physical nutrition focus, and eating patterns for three days. **Results:** the study showed that the anthropometric data for a BMI of 27.5 kg/m2 was included in the obesity category, with a nutritional diagnosis of NC-3.3 and at the end of the intervention the patient's nutritional status was still obese. The patient's laboratory examination, RGB, HGB, and HCT decreased by 3.2 mg/dl, 8.8 mg/dl and 28 mg/dl and hemoglobin decreased by 8.8 gr/dl, with a nutritional diagnosis of NI-5.1 and until the end intervention, RGB, HGB, and HCT levels still decreased. The dietary interventions given were the heart diet and the DASH diet with the consistency of chopped rice. Based on the results of the 24 hour recall, the patient's food intake was in the deficient category, namely 43.9% energy, 37.6% protein, 54.7% fat, 42.6% carbohydrates with a nutritional diagnosis of NI -2.1 and until the end of the patient's intake intervention continue to increase. **Conclusion:** that there was an improvement in the patient's condition after being given intervention, especially regarding the patient's diet/intake.

Introduction

Cardiovascular disease is the leading cause of death in the country progresses and is estimated to range from unstable angina pectoris to infarction myocardium. Acute Myocardial Infarction (AMI) is a spectrum of Coronary Syndromes Acute consisting of Unstable Angina Pectoris, STEMI and NSTEMI. NSTEMI, namely Non ST elevation myocardial infarction is Partial occlusion of a coronary artery without involving the entire thickness of the myocardium so there is no ST segment elevation on the ECG. NSTEMI is a type damage to the heart that does not cause typical abnormalities in the results heart record examination caused by blockage in heart arteries. This blockage will make the heart deficient oxygen(1).

According to the American Heart Association (2015) in the Asian region the prevalence population with coronary heart disease 3.7%. Based on the WHO report on Non Communicable Disease (NCD) Country Profile was found in Indonesia Cardiovascular disease is the highest cause of death, namely 37% of the total death rate (1).

NSTEMI disease is caused by a decrease in oxygen supply and increased myocardial oxygen demand exacerbated by coronary obstruction (2). This occurs due to acute thrombosis and processes coronary vasoconstriction, acute thrombosis begins with rupture of atherosclerotic plaque unstable, at the location of the plaque rupture there is an inflammatory process seen from number of macrophages and T lymphocytes (3). One who suffers NSTEMI will experience signs and symptoms such as severe pain in the left chest spreads to the left shoulder, left neck and left upper arm, the pain will improve with rest, accompanying symptoms dyspnea, cold sweat, nausea, difficulty breathing, anxious, and weak (4).

The development of NSTEMI disease begins with blockage of the vessels heart by blood vessel plaque and can begin to occur when a person is still young. Blockage of blood vessels is initially caused by increased levels Low Density Lipoprotein (LDL) cholesterol in the blood is excessive and accumulates in the blood artery wall. This condition continues for years and causes plaque which clogs arteries so that blood flow is disrupted and can also cause damage blood vessels so that symptoms appear for a long time (WHO, 2012). Hypertension is one of the main risk factors with a prevalence of approx 68.6% of patients with hypertension were most commonly found with STEMI followed NSTEMI. In general, the prevalence of hypertension increases progressively Increasing age in both men and women is a strong risk factor occurrence of cardiovascular disease (5).

The impact of the problem that will arise if it is not handled immediately, namely damage to the heart muscle that causes problems with the heart's pumping affects the body systemically (6). NSTEMI too resulting in dysrhythmia problems, cardiogenic shock, heart failure, pulmonary edema and pulmonary embolism (4).

Case Report

The research method used is a qualitative method with a case study approach based on the Standardized Nutrition Care Process starting from Assessment or assessment, Diagnosis, Intervention, Monitoring and Evaluation. Case studies are carried out on patients inpatient at Dr.Wahidin Sudirohusodo General Hospital Makassar in September 2023 with The research subject is Mrs. AR, 65 years old with a medical diagnosis of Non ST Elevation Myocardial Infarction (NSTEMI). Technique Data collection was carried out by observation, interviews and documentation studies with using a data collection instrument, namely the PAGT form with the source of the data from primary data and secondary data Integrated

Patient Progress Notes. The research was preceded by observing or assessing patients with take basic data (assessment) on September 18 2023, then determine nutritional diagnosis and providing nutritional intervention as well as monitoring and evaluating development patients related to nutrition for 3 consecutive days. The things that are monitored during the research are the patient's anthropometry or nutritional status, biochemistry, clinical physical, nutritional focus, and dietary or intake. The patient's anthropometry or nutritional status is looked at from measuring the patient's weight and height to determine the patient's nutritional status using Body Mass Index (BMI), biochemistry is known through the results of laboratory examinations which are listed in the integrated patient progress record, clinical physical and nutritional focus known through observation and interviews as well as data on vital signs listed in the integrated patient development record, and dietary or intake seen from food-recall results 24 hours for three consecutive days.

Results

Table 1 shows that anthropometric measurements begin to be carried out during the initial assessment, namely before the intervention by measuring the patient's height (TB) and weighing the patient's body weight (BB). This measurement is carried out to determine the patient's Body Mass Index (BMI) value so that the patient's nutritional status can be known.

Table 1. Evaluation of Anthropometric Monitoring

Inspection	Before Intervention	Intervention I	Intervention II	Intervention III
BB	65 kg			65 kg
TB	155 cm	No measurements were taken		155 cm
BBI	49,5 cm			49,5 cm
IMT	27,05 (Obesity)			27,05 (Obesity)

Based on the results of the assessment through BMI calculations that have been carried out, the nutritional diagnosis made is NC-3.3 Obesity related to physical activity which is characterized by a BMI of 27.05 kg/m2. After the intervention was carried out for 3 days, the results of monitoring and evaluating the patient's anthropometry showed that the patient's anthropometric values had not changed, so that until the end of the intervention the patient's nutritional status was still in the obesity status category so that the NC-3.3 nutritional diagnosis was still upheld.

Often patients with heart disease have an obese nutritional status because basically obesity can increase the risk of developing degenerative diseases. A diet that does not pay

attention to the balance between food intake and needs, as well as a sedentary lifestyle, is thought to be the main cause of most degenerative disorders (7). A sedentary lifestyle is a type of lifestyle in which a person moves less or does not do significant physical activity, which can increase the risk of obesity and make them susceptible to degenerative diseases. Fat accumulation in obesity can cause hormonal changes and also increase systolic and diastolic blood pressure, total cholesterol, LDL cholesterol, and triacylglycerol and low HDL levels. Therefore, obesity can trigger degenerative diseases and metabolic disorders, one of which is heart disease (8). The research results show that of 500 obesity sufferers, around 88% are at risk of developing heart disease. The increase in risk factors for heart disease is in line with a person's weight gain (9).

Table 2 show that biochemical examination is seen from laboratory results obtained from the patient's medical record data. The biochemical data seen consists of Red Blood Cells (RBC), hemoglobin (HGB), hematocrit (HCT)

Table 2. Monitoring Evaluation of Biochemical Examinations

Parameter	Results				Reference Value	Inf
	Before Intervention	**Intervention I**	**Intervention II**	**Intervention III**		
RBC (ul)	3,2	-	-	3,5	4-6	↓
HGB (gr/dl)	8,8	-	-	9,3	12-16	↓
HCT (%)	28	-	-	32	37,0-48,0	↓
Trigliserida (mg/dl)	225	-	-	-	<200	↑
Kolesterol (mg/dl)	303	-	-	-	<200	↑
HDL (mg/dl)	40	-	-	-	>65	↓
LDL (mg/dl)	271	-	-	-	<130	↑

Based on the results of this study, the nutritional diagnosis that was established was NI-5.1. Increased need for a specific nutrient, namely iron, is related to the condition of reddish urination mixed with blood, which is characterized by Hb 8.8 gr/dl (↓). After 3 days of intervention, the results of the patient's biochemical monitoring and evaluation showed that the patient's Hb level was 9.3 gr/dl (↓) so that at the end of the intervention the patient was still experiencing anemia and the NI-5.1 nutritional diagnosis was still being made.

Anemia is a condition where circulating erythrocytes and/or hemoglobin cannot fulfill their function of providing oxygen to body tissues. Clinical hemoglobin levels are usually used to determine the presence of anemia, namely the insufficiency of red blood cells to deliver adequate oxygen to peripheral tissues. Anemia in heart failure patients is most often classified as normochromic normocytic anemia due to chronic disease. Normocytic-normochromic anemia is a type of anemia that commonly occurs in people with degenerative diseases. This type of anemia is characterized by a decrease in hemoglobin (Hb) values below normal limits but Mean Cell Volume (MCV) and Mean Cell Hemoglobin (MCH) values within normal limits. Normocytic normochromic means that red blood cells have normal size and shape but contain below normal amounts of hemoglobin (mean corpuscular volume [MCV] and Mean Corpuscular Hemoglobin Concentration [MCHC] are normal or low normal) (10).

Table 3 show that the patient's clinical physical data consists of general condition data and the patient's vital signs. Data on the patient's general condition is obtained from direct observation and supported by data from the patient's medical record, while data on the patient's vital signs is seen from the patient's medical record data as measured by the doctor or nurse in charge.

Table 3. Monitoring Evaluation of Physical/Clinical Examinations

Variable	Before Intervention	Intervention I	Intervention II	Intervention III
KU	• KU: Limp, composmentis • The body looks fat, there is nausea, lack of appetite, reddish urination mixed with blood which appears to be reduced, defecation is normal yellow			
Pressure Blood	166/98 mmHg	160/80 mmHg	170/90 mmHg	160/89 mmHg
Pulse	70x/ minute	80x/minute	80x/ minute	80x/ minute
Breath	20x/ minute	20x/ minute	20x/ minute	20x/ minute
Temperature	36,8^{0}C	37^{0}C	36,8^{0}C	37^{0}C

The patient's medical history data shows that the patient has a history of hypertension for 10 years and does not regularly take medication. Hypertension is one of the main risk factors with a prevalence of around 68.6% of patients with hypertension who are most commonly found with STEMI followed by NSTEMI (5). The results of research by Putra and Darliana (2017) show that the most common risk factor in heart attack patients is hypertension. Pricillia (2021) in his research shows that there is a relationship between hypertension and heart attacks in elderly patients. The risk factors for hypertension and the incidence of heart attacks are closely related. Hypertension is the main risk factor for atherosclerosis. Atherosclerosis causes plaque to form in the arteries so that when the atherosclerosis ruptures there will be occlusion or blockage of the coronary arteries. This

plaque narrows blood flow and can trigger a heart attack. The risk of having a heart attack increases as a person's blood pressure increases. The higher a person's blood pressure, the higher the risk of a heart attack. Hypertension in old age accounts for 70% of cases of heart disease and is even more severe than heart disease. Compliance with taking medication, lifestyle modifications, and controlling hypertension can reduce heart attacks.

Monitoring and evaluating patient intake is carried out by direct observation of the patient and 24 hour recall. During the intervention, patients were given a heart and DASH diet with the usual consistency, namely team rice with chopped side dishes with a frequency of 3x main meals and 1x oral snack.

Table 4. Monitoring Evaluation of Energy and Nutrient Consumption

Indicator	Energi (kkal)	Protein (g)	Lemak (g)	KH (g)	Zat Besi (mg)	Natrium (mg)
Before Intervention						
Intake	755,3	27,5	20,9	115,5	6,7	233,6
Need	1721,8	73,2	38,3	271,2	8	<2300
%Adequacy	43,9	37,6	54,7	42,6	84,1	10,2
Intervention I						
Intake	809,3	34,5	20,8	133,2	4,6	349,5
Need	1721,8	73,2	38,3	271,2	8	<2300
%Adequacy	47,0	47,2	54,4	49,1	57,7	15,2
Intervention II						
Intake	935,8	35,4	22,9	151,7	6,8	138,1
Need	1721,8	73,2	38,3	271,2	8	<2300
%Adequacy	54,4	48,4	59,8	55,9	84,9	6
Intervention III						
Intake	1050,9	48	27,1	156,6	9,6	320,2
Need	1721,8	73,2	38,3	271,2	8	<2300
%Adequacy	61,0	65,6	70,9	57,8	230,5	13,9

Based on the results of the dietary data review, the nutritional diagnosis made was NI-2.1 Inadequate oral intake related to nausea felt while eating, indicated by the results of a 24 hour recall, energy intake of 755.3 kcal (43.9%), protein of 27.5 g. (37.6%), fat 20.9 g (54.7%), and carbohydrates 115.5 g (42.6%). After the intervention and monitoring

evaluation for three days, the percentage of intake from the 24 hour recall continued to increase until the end of the intervention even though it was still in the deficient category (<80%), namely energy 1050.9 kcal (61.0%), protein 48.0 g (65.6%), fat 27.1 g (70.9%), and carbohydrates 156.6 g (57.8%) so that the nutritional diagnosis of NI-2.1 until the end of the intervention was still confirmed.

Conclusion

The patient's nutritional status was based on Body Mass Index, namely obesity, so the nutritional diagnosis that was made was NC-3.3 and until the end of the intervention the patient's nutritional status was still in the nutritional status category of overweight or obesity so that the nutritional diagnosis NC-3.3 was still upheld. The patient's laboratory examination, namely RBC, HGB, HCT and hemoglobin decreased, so that the nutritional diagnosis that was made was NI-5.1 and until the end of the intervention it was still decreasing so that the nutritional diagnosis of NI-5.1 was still upheld. Clinical physical assessment focuses on nutrition by looking at the patient's general physical condition and vital signs showing no changes. The dietary interventions given to patients were the heart diet and the DASH diet with the usual consistency of chopped rice orally. The patient's food intake was in the deficient category, so the nutritional diagnosis that was made was NI-2.1 and until the end of the intervention the patient's intake continued to increase but was still in the deficient category.

Reference

(1) Ulinnuha, 2017. Perbedaan Rerata Profil Lipid Pasien STEMI dan Non STEMI di RSUD Kota Yogyakarta tahun 2016. Yogyakarta: Fakultas Ilmu Kesehatan Universitas Aisyiyah
(2) Morton G.P. 2012, Keperawatan Kritis, Edisi 2, Jakarta: Penerbit EGC.
(3) Hendriarto, H. S. 2014. Patofisiologi Penyakit jantung Koroner, SMF Anestesi. dan Terapi Intensif, Fakultas Kedokteran Universitas Diponegoro/RSUP.
(4) Joyce, B. M. 2014. Keperawatan Medikal Bedah Manajemen Klinis untuk Hasil yang Diharapkan edisi 8 buku 3. Singapore: Elvesier.
(5) Picariello C, Lazzeri C, Attanà P, Chiostri M, Gensini GF, et al. 2011. The Impact of Hypertension on Patients with Acute Coronary Syndromes. Int J Hypertens 2011: 563657.
(6) Rahmawati AN. 2011. Hubungan penyakit jantung bawaan dengan perkembangan anak usia 0-5 tahun di unit perawatan jantung RS Dr. Kariadi Semarang. KesMaDaSKa. 2(1):27-36.

(7) Arovah, N.I. 2012. Status Kegemukan, Pola Makan, Tingkat Aktivitas Fisik Dan Penyakit Degeneratif Dosen Dan Karyawan Universitas Negeri Yogyakarta. Jurnal Medikora Vol. VIII, No 2 April 2012.

(8) Kusteviani, F. 2015. Faktor Yang Berhubungan dengan Obesitas Abdominal pada Usia Produktif (15-46 Tahun) di Kota Surabaya. Jurnal Berkala Epidemiologi. 3 (1): 45-56.

(9) Purwati, S., Sutjahjo, S.R., Salimar. 2011. Perencanaan Menu untuk Penderita Kegemukan. Jakarta: Penebar Swadaya.

(10) Dzakiyah, A., Anggriyani, N., Wijayahadi, N. 2018. Hubungan Anemia Dengan Kualitas Hidup Pasien Gagal Jantung Kronik. Diponegoro. Medical Journal (Jurnal Kedokteran Diponegoro), 7(2), 962-976.

(11) Putra, M., Darliana, D. (2021). Hubungan Fatigue dengan Kualitas Hidup pada Pasien Gagal Jantung. JIM FKep, 5(2), 74–80. https://jim.usk.ac.id/FKep/article/view/18473

(12) Pricillia A. (2021). Hubungan Hipertensi dengan Angka Kejadian Infark Miokard Akut pada Pasien Usia Lanjut di RSUP Dr. Muhammad Hoesin Palembang Periode 2018-2019.