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Predictors of Mortality in Acute Coronary Syndrome Patients: A Literature Review

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ABSTRACT
Acute coronary syndrome (ACS) is a serious medical condition that includes myocardial infarction and unstable angina. This study aimed to determine the factors that can predict mortality in ACS patients. This study used qualitative research methods. Data collection techniques in this study use literature study research methods obtained from Google Scholar. The data that has been collected in this study is then analyzed using three stages, namely data reduction, data presentation and conclusions. The results showed that Acute Coronary Syndrome (ACS) occurs because the coronary arteries experience the thickening of lipid plaques and can develop into Unstable Angina Pectoris (UAP), Non-ST Elevation Myocardial Infarction (NSTEMI), or ST Elevation Myocardial Infarction (STEMI). Risk factors involve age, sex, smoking, dyslipidemia, diabetes, hypertension, and obesity. Symptoms of Acute Myocardial Infarction (IMA) include chest pain, shortness of breath, and fatigue. Prognosis is influenced by treatment speed, left ventricular ejection fraction (FEVKi), and risk factors for comorbidities. Initial therapy of MONACO (Morphine, Oxygen, Nitrate, Aspirin, Clopidogrel/Ticagrelor) with statins. Administration of anticoagulants and reperfusion measures such as fibrinolysis or percutaneous coronary intervention (IKP) is important. Therapy options are adjusted to risk factors to improve prognosis.

INTRODUCTION

Acute coronary syndrome (ACS) refers to a group of conditions that include ST elevation myocardial infarction (STEMI), non-ST elevation myocardial infarction (NSTEMI), and unstable angina. It is one type of coronary heart disease (CHD), which causes one-third of total deaths in people over the age of 35. ACS is a manifestation of CHD (coronary heart disease) and is usually due to plaque disorders in the coronary arteries (atherosclerosis). Common risk factors for the disease are smoking, hypertension, diabetes, hyperlipidemia, male sex, lack of physical activity, obesity in the family, and poor diet. Cocaine abuse can also cause vasospasm. A family history of early myocardial infarction (age 55) is also a high-risk factor. Some forms of CHD can be asymptomatic, but ACS always shows symptoms (Singh et al., 2017)

Symptoms are triggers that prompt individuals with suspicious symptoms of acute coronary syndrome (ACS) to seek emergency care for this potentially life-threatening condition. After 3 decades of research on differences in ACS symptoms by sex, a wealth of evidence suggests that although there are differences in symptoms by sex, the differences are not very large and do not contribute significantly to risk stratification or provide a rationale for diagnostic testing by sex. A large prospective study found that only 3 out of 13 common symptoms could predict a diagnosis of ACS compared to non-ACS. The predictive values

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of shoulder pain (odds ratio: 2.53 [95% CI, 1.29–4.96] versus 1.11 [95% CI, 0.67–1.85]) and arm pain (odds ratio: 2.15 [95% CI, 1.10–4.20] versus 1.21 [95% CI, 0.74–1.99]) in females were nearly twice as high as in males. Shortness of breath is a non-ACS diagnosis predictive only for men. Many researchers find some sex differences in ACS symptoms, but small differences are usually based on the frequency and distribution of symptoms, not the type of symptoms (DeVon et al., 2020).

Based on data processed by Riskesdas in 2013, the prevalence of ACS in Indonesia was 1.5% or estimated at around 2,650,340 people. The exact cause of ACS is unknown, although many factors play an important role in the onset of SKA (Suling et al., 2018). ACS significantly impacts health, with a high incidence rate worldwide. One essential aspect of ACS management is the ability to predict the risk of death in patients.

Previous research by Dhamarjati (2021) examined the predictor of death of hospitalized patients after acute myocardial infarction with st segment elevation at DR. Sardjito Hospital, the results showed that the predictor of death of patients with st segment elevation showed the incidence of cardiac arrest acute renal failure, age >= 65 years, ventricular fibrillation, female sex, ventricular tachycardia, diabetes mellitus, polypharmacy >= 10 drugs, and atrioventricular block is an independent predictor of hospitalized mortality of IMA-EST patients. The predictor model had good calibration (p>0.05) and good discrimination (AUC 0.898 (IK 95%: 0.873 - 0.924, p<0.001). Conclusion: A predictor model with nine variables with good calibration and discrimination was obtained.

According to Andromeda (2022) examined the comparison of KAsH Score with the Grace Score at First Medical Contact as a Predictor of Hospital Death in Acute Myocardial Infarction Patients at H. Adam Malik Hospital Medan, the results showed that the KAsH Score had a better ability than the GRACE score in predicting death at the first medical contact with an AUC value of 0.914 compared to an AUC value of 0.821. The KAsH score showed better sensitivity and specificity than the GRACE score in predicting death at first medical contact, with 82.4% sensitivity and 90% specificity, compared to the GRACE score, with 76.5% sensitivity and 84% specificity. The KAsH score has LR+ and LR- scores better than the GRACE score of LR+ 8.24 and LR – 0.195 compared to LR+ 4.78 and LR – 0.275 Conclusion. The KAsH score is better than the GRACE score in predicting death at the first medical contact in IMA patients seeking treatment at H. Adam Malik Hospital.

Previous studies have provided a good understanding of the risk factors and characteristics of ACS patients, but more research is needed to identify specific predictors of mortality in this population. Death is a critical outcome and requires appropriate management strategies. This research has significant practical implications in the clinical management of ACS patients. The results of studies identifying predictors of mortality in ACS patients can provide valuable guidance for medical personnel in managing ACS cases more effectively. This study aimed to determine the factors that can predict mortality in ACS patients.

METHODS

This study used qualitative research methods. Qualitative research is a scientific approach that aims to understand and explain phenomena or reality in its natural context. This approach focuses more on deeply understanding the meaning, procedures, and context in which a phenomenon occurs (Nugrahani & Hum, 2014). Data collection techniques in this study use literature study research methods obtained from Google Scholar. Literature study data collection techniques are data collection methods that involve literature review and analysis, including books, written materials, and references related to research topics (Jailani, 2023). After the data is collected, the analysis process is carried out through three main stages. The first stage is data reduction, where the collected data is compiled and disaggregated to identify key patterns or findings. The removal of irrelevant data and the grouping of data into specific categories is part of this stage. After the data reduction stage, proceed with the presentation of data. At this stage, the data that has been sorted and organized is presented using various methods, such as tables, graphs, or narratives. The presentation of data aims to facilitate the understanding and interpretation of research results. The final stage is concluding, the results of data analysis are evaluated to identify the main findings and emerging patterns. Conclusions are drawn based on the interpretation of the analysis results, and the implications of the findings can be spelt out.

RESULTS

The pathophysiology of ACS involves the thickening of coronary arteries by lipid-filled plaques. Initially, the plaque is often small, and the patient may be asymptomatic. Patients with stable angina show chest pain during exertion or exercise due to the presence of plaque, causing an insufficient decrease in coronary flow to maintain increased oxygen demand and output (Saenger & Korpi-Steiner, 2017). Pathological, imaging, and biological observations have shown that atherosclerotic plaque rupture or erosion, with varying degrees of thrombosis, forms a basic pathophysiological mechanism in most ACS conditions (Gomes & Reis, 2019). Patients with ACS generally show symptoms of fatigue, shortness of breath, and chest discomfort. These symptoms can affect the quality of life of ACS patients (Sulastri et al., 2020). Acute Coronary Syndrome (ACS) is a collection of symptoms that indicate acute myocardial ischemic, which includes Unstable Angina Pectoris (UAP), Non-ST Elevation Myocardial Infarction (NSTEMI), and ST Elevation Myocardial Infarction (STEMI) (Zègre-Hemsey et al., 2018). Stable angina can progress to ACS consisting of unstable angina (UA) and Acute Myocardial Infarction (IMA).

Acute Myocardial Infarction (IMA) is a disease in which blood flow to the heart experiences a sudden partial or complete blockage so that the need for oxygen supply to the heart is not met (Ojha & Dhamoon, 2023; Pratistha & Ardiana, 2023). According to the American Heart Association in 2022, IMA is a situation where blood flow to the heart is blocked completely or partially. Furthermore, IMA is often called a Heart Attack (Mayerhofer et al., 2023). IMA is differentiated based on the diagnosis established upon admission to the hospital, namely STEMI and NSTEMI (Zhao et al., 2023). According to the Decree of the Minister of Health of the Republic of Indonesia No.HK.01.07/MENKES/675/2019 concerning National Guidelines for Medical Services for Management of Acute Coronary Syndrome, the classification is determined based on the results of anamnesis, physical examination, ECG, and laboratory examination in the form of heart markers.

1. STEMI
   STEMI is a diagnosis of acute coronary syndrome that is established when there are complaints of acute angina pectoris accompanied by persistent elevation of the ST segment in two adjacent ECG leads. This diagnosis indicates that there is total occlusion / total blockage in the coronary arteries. (Ministry of Health, 2021). STEMI usually occurs when coronary blood flow is drastically reduced after thrombotic occlusion of the coronary artery previously affected by atherosclerosis. A blockage that develops slowly will not trigger a STEMI due to the large number of collateral blood vessels. STEMI occurs when the thrombus in the coronary artery develops rapidly on the injured side of the blood vessel. These injuries to blood vessels are produced or facilitated by factors such as smoking, hypertension, and lipid accumulation (Sanjani, 2020).
2. NSTEMI
   NSTEMI is a diagnosis of acute coronary syndrome that is established when there are complaints of acute angina pectoris without persistent ST-segment elevation in two adjacent ECG leads with increased heart markers (troponin I/T). ECG recordings during presentations can be in the form of ST segment depression, T wave inversion, flat T wave, pseudo-normalization T wave, or even no ECG

changes (Ministry of Health, 2021). This diagnosis identifies a generally stable partial occlusion or partial blockage in the coronary arteries (Basit et al., 2023).

IMA begins with a rupture in plaque/atherosclerosis in the coronary arteries, which causes the body's inflammatory process so that there is a body response to form macrophages and a thrombus. The thrombus can make it possible to move or walk along with the blood flow in the coronary arteries and block the blood vessels so that there is a decrease in the flow of oxygenated blood in the coronary arteries, and make the coronary arteries unable to produce ATP in the mitochondria resulting in ischemic, and apoptosis (cell death) in the endocardium which is often referred to as myocardial infarction (Oren J. Mechanic et al., 2022).

Furthermore, it was found that the location of myocardial infarction and the arteries involved can be known by looking at the results of the patient's ECG lead (AHA, 2013). This is due to the blood supply in certain coronary arteries showing the location of blood distribution in the coronary arteries, which can be divided into 3 parts (Oren J. Mechanic et al., 2022):

1. The left anterior descending coronary artery (LAD) supplies blood flow to the interventricular septum, anterolateral wall, and left ventricular apex.
2. The left circumflex coronary artery (LCX) supplies blood flow to the inferolateral and inferior walls.
3. The right coronary artery (RCA) supplies blood flow to the right ventricle and the inferior wall.

Risk factors for IMA events can be divided into 3 groups, including (Oren J. Mechanic et al., 2022):

1. Risk factors cannot be modified, namely gender, age, or family history of CAD sufferers.
2. Modifiable risk factors, namely: smoking status, history of dyslipidemia, history of diabetes mellitus, history of hypertension, obesity, sedentary lifestyle, possession of vascular disease (PAD), and increased homocysteine levels.
3. Other IMA factors are trauma, vasculitis, drug use (cocaine), coronary artery anomalies, coronary artery embolism, aortic dissection, hyperthyroidism, anaemia

Symptoms that are often felt by patients and as the most indicative sign of IMA are cold sweats and pain that radiates from the middle to the body or left arm that lasts for more than a few minutes with a sense of squeezing, fullness, or pain (CDC, 2022). Other symptoms are lightheadedness, anxiety, coughing, choking sensation, wheezing/wheezing, irregular heartbeat, and shortness of breath (Oren J. Mechanic et al., 2022). The signs experienced are related to the results of the patient's physical examination in the form of patient vital signs, lung examination, and cardiac auscultation, namely (Oren J. Mechanic et al., 2022):

1. Heart rate becomes tachycardia, atrial fibrillation, or ventricular arrhythmia.
2. The patient's blood pressure tends to be high unless there is a shock then the patient experiences hypotension.
3. Breathing rate that is too fast (tachypnea) and fever.
4. There is an increase/dilation in the patient's venous jugular pressure, which indicates right heart failure.
5. In the heart, there is found to be a transfer of apical to lateral impulses, S1 is weak, S4 is palpable, and there is a murmur that indicates the occurrence of new mitral regurgitation. There is a holocystolic that radiates to the breastbone, which can indicate a ventricular septal rupture.
6. There is a wheezing sound or rales are found on lung examination, which can be a sign of pulmonary oedema.
7. There is swelling / edema in the extremity, cyanosis occurs, and it feels cold.

IMA still has a high mortality rate, with most deaths occurring before reaching the hospital, and at least 5% to 10% of CHD sufferers who have experienced IMA die within the first 12 months after the first IMA episode, and 50% of patients requiring hospitalization/rehospitalization in the first 1 year (Oren J.

Mechanic et al., 2022). The patient's prognosis depends largely on the degree of necrosis or muscle damage suffered by the patient. A good prognosis can be seen in patients who undergo fibrinolytic therapy in the first 30 minutes after arriving at the hospital or IKP within 90 minutes after arriving at the hospital as well as patients who have good Ejection Fraction and take aspirin, beta-blocker, and ACE (Angiotensin-Converting Enzyme) Inhibitors (Oren J. Mechanic et al., 2022). The poor prognosis of patients is caused by a history of diabetes mellitus, old age, having a history of myocardial infarction, a history of vascular disease, a history of stroke, delayed reperfusion, decreased Ejection Fraction as the strongest predictor, and experiencing chronic heart failure, an increase in C-Reactive protein and BNP (Brain Natriuretic Peptide) levels and depression (Oren J. Mechanic et al., 2022). The risk factors for intrahospital death in IMA patients are as follows.

1. Demographic Factors
   a. Age

      It was found that ≥ aged 65 years had a higher risk of intrahospital death than patients aged < 65 years. Patients aged 65 - 75 years had a 2 times higher risk of intrahospital death than those under 65 years (OR = 2.01; 95% CI = 1.22 - 3.32), and patients aged > 75 years were found to have a 7 times higher risk of intrahospital death than patients aged < 65 years (OR = 7.07; 95% CI = 3.89 - 12.86) (Sanjaya et al., 2023).

   b. Gender

      The results of research related to sex found that women have 2 times the risk of experiencing intrahospital mortality compared to men (OR = 2.0; 95% CI = 1.28 – 3.11) (Sanjaya et al., 2023).
2. Risk Factors
   a. Body Mass Index (BMI)

      Analysis related to BMI found that patients who had a BMI of ≥ 30 kg/m2 were at risk of intrahospital death with the cardiogenic shock of 3 times compared to BMI < 30 kg/m2 (OR=3.06; 95% CI = 1.96 — 4.77; p-value <0.0001) (Hashmi, et al, 2018).

   b. Smoking Status

      Patients' smoking status was found to be a protective factor against intrahospital mortality (OR= 0.39; 95% CI = 0.25 – 0.59) (Sanjaya et al., 2023).

   c. History of Diabetes Mellitus

      Possession of a history of diabetes mellitus has a significant relationship with the incidence of intrahospital mortality (p-value <0.0001), with a proportion of 5.5% in those who died with diabetes mellitus and 4.2% who died without diabetes mellitus (McNamara et al., 2016).

   d. History of Hypertension

      Having a history of hypertension has a risk of 1.65 times experiencing intrahospital death with the incidence of a cardiogenic shock compared to not having a history of hypertension (OR = 1.65; 95% CI = 1.05 – 2.59; p-value 0.029) (Hashmi et al., 2018).

   e. History of Heart Failure

      Possession of a history of heart failure has a significant relationship with the incidence of intrahospital death (p-value <0.0001), with a proportion of 8.5% in those who died with a history of heart failure and 4.1% who died without a history of heart failure (McNamara et al., 2016).

   f. History of dyslipidemia

      Based on research conducted by Rohani in 2022, it was found that a history of dyslipidemia is a protective factor against intrahospital mortality (OR = 0.23; 95%CI = 0.11 – 0.44; P value <0.001) (Rohani, 2022).

   g. Family History of CAD Sufferers

Family history of CAD sufferers has a relationship with the incidence of patient death, with the description of patients who have a family history of CAD sufferers, 12% (15 patients) experience death, while in those without a history, 7% (12 patients) experience death (p-value 0.003) (Babapour et al., 2022).

3. Comorbidity Factors
   a. Incidence of Acute Kidney Injury (AKI)
   The incidence of AKI in treatment is related to the incidence of intrahospital death in IMA patients, with a proportion of 35.2% in those who experience AKI in treatment and 8.9% in patients who do not experience AKI in treatment. It was found that patients who experienced AKI in treatment were at risk of 6 times the risk compared to those not experiencing AKI (OR = 5.61; 95% CI = 1.92 – 16.42) (Liborio et al., 2013).
   b. History of Stroke
   Research related to stroke history found that there was a significant relationship between stroke history and intrahospital mortality incidence in IMA patients (p-value 0.001), it was found that the proportion of intrahospital deaths was higher in patients who had a history of stroke with the proportion of stroke patients with non-consecutive stroke patients 32.8% vs 6.7% (Chehab et al., 2018).
   c. History of IKP
   Possession of a history of IKP has a significant relationship with the incidence of intrahospital death (p-value <0.0001), with a proportion of 3.8% in those who died with a history of IKP and 4.9% who died without a history of IKP (McNamara et al., 2016).
   d. History of CABG
   Possession of a history of CABG had a significant association with the incidence of intrahospital mortality (p-value <0.0001), with a proportion of 5.2% in those who died with a history of CABG and 4.5% who died without a history of CABG (McNamara et al., 2016).
4. Clinical Parameters
   a. Cardiac arrest events
   The incidence of cardiac arrest is one of the most powerful predictors of intrahospital mortality in IMA patients, with patients who experience cardiac arrest during admission having a 49 times greater risk of intrahospital death than those not experiencing cardiac arrest (OR = 48.7; 95% CI 14.29 – 165.98; p-value <0.001) (Sanjaya et al., 2023). The results of a study conducted on a registry in the United States obtained the same results, patients who experienced cardiac arrest during treatment with IMA had a risk of 5 times to experience intrahospital death compared to those not experiencing cardiac arrest during treatment (OR = 5.02; 95% CI = 4.61 – 5.47) (McNamara et al., 2016).
   b. Cytolic Blood Pressure (TDS)
   Systolic blood pressure at admission in patients with IMA < 90 mmHg is a predictor of intrahospital mortality when compared to normal systolic blood pressure (90 – 139 mmHg) (OR = 4.97; 95% CI = 1.37 – 14.29; p-value 0.003) (Sanjaya et al., 2023). The analysis results with registries in the United States found that every decrease of 10 mmHg increased intrahospital mortality by 1 time (OR = 1.20; 95% CI 1.19 – 1.21) (Mcnamara et al., 2016).
   c. Pulse Rate
   Research related to pulse rate found that patients with a pulse rate < 60 bpm were at risk of intrahospital death 3 times higher than patients who had a normal pulse rate (60 - 90 bpm) (OR = 2.82; 95% CI = 1.39 - 5.74), and patients with a pulse rate > 100 bpm were at risk of intrahospital

death 8 times greater than patients with normal pulse rates (OR = 7.72; 95%CI = 4.77 – 12.49) (Sanjaya et al., 2023).

d. Incidence of Acute Heart Failure
The incidence of acute heart failure was found to have a significant association with the incidence of death in IMA patients (Sanjaya et al., 2023). Patients with acute heart failure had a 3 times higher risk of intrahospital death (OR = 2.78; 95% CI = 1.64 - 4.78), and patients with cardiogenic shock had a 17 times greater risk of intrahospital death than no heart failure during the IMA episode (OR = 16.75; 95%CI = 9.53 – 29.45) (Sanjaya et al., 2023).

e. ECG Attendance
ST Elevation attendance on ECG illustrates that patients who have persistent ST Elevation segments are at 2 times higher risk for death than patients who experience ST segment depression, st-elevation that is not persistent, and abnormal T waves (OR = 2.02; 95% = 1.27 – 3.22) (Sanjaya et al., 2023). This is in line with the results of other studies that found that patients who have a diagnosis of STEMI have a risk of intrahospital death 2 times greater than NSTEMI (OR = 1.82; 95% CI = 1.71 – 1.94) (Mcnamara et al., 2016).

f. Killip Score
Killip is one of the parameters to see the risk level of IMA patients based on the patient's heart failure condition during admission to the hospital (Zafari A, 2019). Killip has 4 levels, namely score 1 describes no signs of heart failure, score 2, the presence of rales/crackles in the lung sound/gallop sound in the heart and an increase in jugular venous pressure, score 3 indicates signs of acute pulmonary edema, and score 4 describes the patient has experienced cardiogenic shock/hypotension with a low pulse rate (Zafari A, 2019).

g. FEVKi (Left Ventricular Ejection Fraction)
FEVKi patients have a significant association with the incidence of intrahospital mortality with the form of association, patients with FEVKi < 40% have a risk of intrahospital death 2 times greater than patients with FEVKi > 50% (OR = 1.98; 95%CI = 1.16 – 3.40) (Gawinski et al., 2023). The results of other analyses found that there was a difference in the average FEVKi of patients who experienced intrahospital death (44%) with no (55%) (p value <0.001) (Ran et al., 2021).

Based on KMK RI No.HK.01.07/MENKES/675/2019, it is stated that initial/initial therapy is therapy given to patients with a possible working diagnosis of SKA or definitive SKA based on angina complaints in the emergency room before there are ECG and/or heart mark examination results (before the diagnosis of STEMI/NSTEMI is established). The KMK regulation explains that the initial therapy in question is morphine, oxygen, nitrate, aspirin clopidogrel/ticagrelor (abbreviated as MONACO/MONATICA), which does not have to be given all or together (Ministry of Health, 2021). The following description of the four initial therapies is explained in the KMK as follows:

1. Oxygen
Oxygen supplements should be given immediately to those with arterial O2 saturation <95% or who experience respiratory distress. And can be given to all patients within the first 6 hours without considering arterial O2 saturation.
2. Aspirin
Aspirin 160-320 mg is given immediately to all patients with unknown intolerance to aspirin and ADP (adenosine diphosphate) receptor blockers, one of the following options can be selected:
    a. Ticagrelor: initial dose 180 mg orally followed by maintenance dose 2 x 90 mg/day except in STEMI patients who are planned for reperfusion using fibrinolytic agents.

   b. Clopidogrel: initial dose 300 mg orally followed by a maintenance dose of 75 mg/day (in patients planned for reperfusion therapy using fibrinolytic agents, the recommended ADP receptor inhibitor is clopidogrel)
3. Nitrate
   Sublingual nitrate tablets/sprays for patients with ongoing chest pain upon arrival at the emergency room. If chest pain does not go away with one administration, it can be repeated every five minutes to a maximum of three administrations. Intravenous nitrates were given to unresponsive patients with three-dose therapy of sublingual nitrates. Nitrates should not be given to patients with hypotension (systolic blood pressure<90 mmHg), heart rate <50x/min, or right ventricular infarction and patients taking sildenafil within 24 hours.
4. Morphine
   Morphine sulfate 1-5 mg intravenously, repeatable every 10-30 minutes, for patients who are unresponsive to three-dose therapy Sublingual nitrate.
5. Statins
   High-dose statins must be given or continued immediately after hospital admission if there is no indication of contra or history of intolerance, regardless of initial cholesterol values.

IMA patients, in addition to requiring reperfusion therapy in the form of action, also require anticoagulant drug therapy with the following criteria (Ministry of Health, 2021):

1. Patients receiving fibrinolysis reperfusion therapy should be given anticoagulant therapy for a minimum of 48 hours and, preferably during hospitalization, up to a maximum of 8 days.
2. STEMI patients who do not receive reperfusion therapy may be given anticoagulant therapy (non-fractionated non-Heparin regimen) during hospitalization, up to a maximum of 8 days of administration.
3. Other strategies used include Low Molecular Weight Heparin (LMWH), namely enoxaparin or fondaparinux, with the same dosage regimen as patients receiving fibrinolysis therapy.
4. For patients undergoing Primary IKP after receiving anticoagulants, the following are dosage recommendations:
   a. If fractionated unfractionated heparin has been given, additional unfractionated heparin boluses are given as needed to support the procedure, in consideration that GP IIb/IIIA has been given.
   b. If enoxaparin has been given, the last subcutaneous dose is given within 8 hours, no additional dose is needed, if the last subcutaneous dose is between 8-12 hours, then intravenous enoxaparin 0.3 mg / kg is added.
   c. If fondaparinux has been given, additional anticoagulants with anti-IIa activity are given in consideration of having been given GP IIb/IIIa.

Due to the risk of catheter thrombosis, fondaparinux is not recommended to be used as a single anticoagulant supporting IKP, other anticoagulants with anti-IIa activity should be added.

CONCLUSION

Predictors of acute coronary syndrome (ACS) patients include pathophysiology, clinical symptoms, and risk factors. ACS pathology includes thickening of lipid plaques in the coronary arteries which can later rupture and then block blood flow to the heart, causing ischemia and myocardial infarction. ACS consists of Unstable angina Pectoris (UAP) and IMA. IMA itself is divided into STEMI and non-STEMI. Some of the prognostic factors that influence ACS patient outcomes involve the degree of cardiac muscle necrosis, history of disease, and response to therapy. A good prognosis is seen in patients who get quick treatment, have a good left ventricular ejection fraction, and are taking medications such as aspirin, beta-blockers, and

ACE inhibitors. Risk factors for intrahospital death in IMA patients involve age, sex, body mass index, smoking status, history of diabetes mellitus, hypertension, heart failure, dyslipidemia, family history of CAD sufferers, incidence of acute renal failure, history of stroke, history of percutaneous coronary intervention (IKP), history of coronary artery bypass grafting (CABG), cardiac arrest events, systolic blood pressure, pulse rate, incidence of acute heart failure, ECG (ST Elevation), Killip Score, and Left Ventricular Ejection Fraction (FEVKi) results. Initial therapy in ACS patients includes the administration of oxygen, aspirin, nitrates, and morphine (MONACO), as well as statins. In patients requiring reperfusion therapy, anticoagulants such as heparin, enoxaparin, or fondaparinux may be given along with drug therapy and other interventions.

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