Thrombolytic Therapy in Octogenarian Patient with STEMI at Buleleng General Hospital

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Thrombolytic Therapy in Octogenarian Patient with STEMI at Buleleng General Hospital

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Abstract: Coronary heart disease incidence in octogenarian keeps increasing in line with increasing population of elderly. In elderly, there were more non-ST-elevation myocardial infarction (NSTEMI) patients compared to the ST-elevation myocardial infarction (STEMI) ones. In elderly, thrombolytic therapy is thought to have higher bleeding incidence compared to cardiac intervention. Aim of this study was to determine the prevalence of bleeding associated with thrombolytic therapy in octogenarian patients with STEMI during 2018 at Buleleng General Hospital. This is a descriptive retrospective study conducted on octogenarian patients with STEMI who received thrombolytic therapy. Additionally, bleeding incidence that occurred during treatment is also observed. In 2018, 62 octogenarian patients were admitted with acute coronary syndrome (ACS). According to patient medical records, 16 patients were diagnosed with STEMI and six of them received thrombolytic therapy. Bleeding effect was recorded in all patients with details of two patients experienced oral mucosa bleeding and four patients experienced urinary tract bleeding. Out of all octogenarian patients with STEMI who were admitted, bleeding occurred in all patients in which urinary tract bleeding is the most common complication.

1. Introduction

Acute coronary syndrome (ACS) is one of the causes of morbidity and mortality in human with 12.9% percentage of all cases. Acute coronary syndrome is an emergency condition caused by rupture of the plaque that builds up in the coronary arteries and disrupts oxygen delivery to the heart muscle. Octogenarian are individuals aged 80 years or more and are called elderly [1,2]. Data stated that the population of elderly in Indonesia in 2000 reached 7.23% and is predicted to keep increasing up to 11.34% in 2020. According to the prediction of Bureau of Census USA in 1993, by 2045, the number of elderly in Indonesia will increase to 414%. Even though data showed an increase of survivability in acute coronary syndrome patients, this does not apply to elderly population. Data showed coronary heart disease incidence in elderly in Indonesia by 33% and will keep increasing in line with increasing population of elderly [1,3]. Acute coronary syndrome (ACS) is one of the most commonly found cardiovascular diseases. According to the data from the 2013 Basic Health Research (*Riset Kesehatan Dasar; RISKESDAS*), the prevalence of diagnosed coronary heart disease is 0.5%. Meanwhile, according to doctor's diagnosis or symptoms it is 1.5%. This means that coronary heart disease is placed the seventh highest non-communicable disease in Indonesia [4].

Thrombolytic therapy or fibrinolytic is a therapy performed by administering thrombolytic drugs by activating plasminogen to form plasmin, which degrades fibrin, which, in turn, breaks down thrombus. The benefit of thrombolytic agent for myocardial infarction treatment has been known and has become the main therapy in vascular cases, including ACS STEMI, pulmonary embolism and DVT (Deep Vein Thrombosis). Included in this thrombolytic agent group are streptokinase, urokinase, alteplase, tenecteplase, and anistreplase [5]. In most hospitals in Indonesia, the available thrombolytic agent is streptokinase. It is widely used, especially in cardiology cases. The administration of this drug is not without risks, where, in several cases, minor and major bleeding complications are found. Major bleeding is significant loss of blood (e.g. GIT bleeding) or closed space bleeding (intracranial bleeding) and requires termination of thrombolytic therapy and other antithrombotic agents. Minor bleeding is a type of bleeding which only requires minimal invasive treatment (e.g. epistaxis, oral mucosa, urinary tract bleeding, ecchymosis or severe menorrhagia) without terminating thrombolytic therapy and other antithrombotic agents [6,7].

The diagnosis of acute coronary syndrome in the elderly is similar to the other age groups. Comprehensive examination is necessary to establish diagnosis. Data showed that, in the elderly, the number of Non-ST-elevation myocardial infarction (NSTEMI) was higher than ST-elevation myocardial infarction (STEMI) and unstable angina (UA). Nonetheless, STEMI diagnosis is still a dilemma when reperfusion therapy with cardiac intervention is not available in healthcare facilities. In octogenarian with STEMI, thrombolytic therapy is expressed to be more inferior with higher bleeding incidence compared to cardiac intervention. Data from GUSTO IIb (Global Use of Strategic to Open Occluded Arteries in Acute Coronary Syndromes) stated that primary PCI is superior to thrombolytic therapy in STEMI patients in all age groups. To date, however, recommendation still suggests thrombolytic therapy as a therapy modality for STEMI, especially in facilities that do not have primary PCI capability [8–10].

Throughout 2018, sixteen octogenarian patients were diagnosed with ACS STEMI in the Emergency Department of Buleleng Regency General Hospital and were treated in the hospital's ICCU. Six patients received thrombolytic therapy during their stay. This study, which was conducted throughout 2018, is expected to become one of the fundamentals to determine the complication of bleeding related to thrombolytic therapy in octogenarian patients with ACS STEMI.

2. Methods

This study is a single center retrospective observational study including all octogenarians who presented with STEMI admitted to the intensive cardiac care unit of Buleleng Regency General Hospital for 12-month period. Detailed data on baseline and procedural thrombolytic were obtained through medical records of octogenarian STEMI patients who received treatment in the intensive cardiac care unit and received thrombolytic therapy and experienced any adverse event related to therapy during January-December 2018. From the data in medical records, we used a simple table and percentaged the data. Following, we used a chart to manage and analyze the data. STEMI was defined as persistent angina for 20 min in conjunction with either: an ST- segment elevation at the J point of 0.25mV in men aged < 40 years or 0. mV in men aged > 40 years or 0.15mV in women in the precordial leads V2 to V3, and 0.1mV in all other leads; or the presence of a new left bundle branch block. Adverse event related to thrombolytic therapy included peri-procedural cardiac arrest, death, cerebrovascular accident (CVA), in-hospital and 30 day mortality, major and minor bleeding. Major bleeding was bleeding that was fatal or overt bleeding with a drop in hemoglobin level of at least 20g/L or requiring transfusion of at least two units packed blood cells, or hemorrhage into a critical anatomical site (e.g. intracranial, retroperitoneal). Minor bleeding was defined as skin hematoma > 25cm^2, spontaneous nosebleed of > 5 minutes duration, macroscopic hematuria, spontaneous rectal bleeding, gingival bleeding for >5 minutes, any bleeding leading to hospitalization. In this study, we observed all the bleeding effects that occurred, including major and minor bleeding.

3. Results

There was a total of 62 patients aged 80 years and above who were diagnosed with ACS and received treatment in the cardiac intensive care unit of Buleleng Regency General Hospital during 2018. The average age of patients was 84.5 years. Male patients were 27 people (43.5%) and female were 35 people (56.5%). Data showed that 16 patients (25.8%) were diagnosed with ACS STEMI and 46 patients (74.2%) were diagnosed with ACS NSTEMI. Six ACS STEMI patients (9.6%) were known to receive thrombolytic therapy with 1.5 million IU of streptokinase.

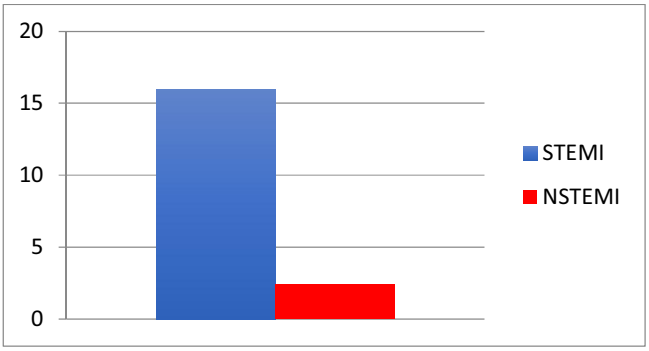

Figure 1. ACS in octogenarian who were hospitalized in ICCU of Buleleng General Hospital in 2018.

Table 1. Total octogenarian patients with STEMI who received thrombolytic therapy.

No	Type of ACS	Total
1	STEMI with Thrombolytic Therapy	6
2	STEMI without Thrombolytic Therapy	10

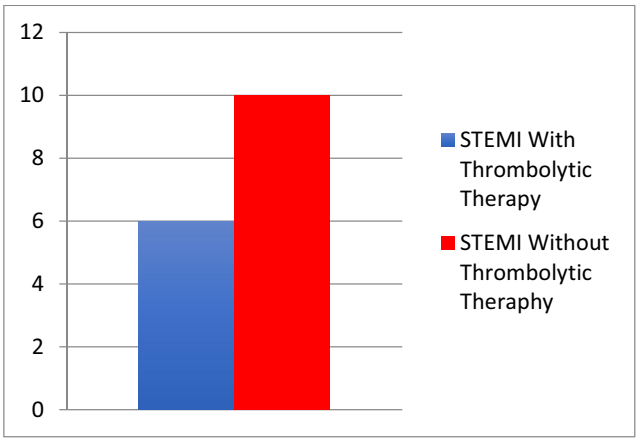

Figure 2. Total Octogenarian Patients with STEMI who received thrombolytic therapy.

According to the results of this study, bleeding effect occurred to all patients receiving thrombolytic therapy. The bleeding type occurred was minor bleeding, including oral mucosal and

urinary tract bleeding. Data showed that, out of six patients that showed bleeding as a side effect, two of them (33%) were known to experience oral mucosal bleeding and four patients (66.7%) experienced urinary tract bleeding.

4. Discussion

Our study demonstrated that octogenarians presenting with STEMI is high in Buleleng Regency population, the treatment was conservative. The outcome of each patient is related to time management in immediate reperfusion. The reperfusion performed on ACS STEMI includes thrombolytic therapy or PPCI. Thrombolytic therapy is often used with 1.5 million IU streptokinase administered in a specific way and with close monitoring. The effectivity is determined by the time of administration and the patient's clinical condition. However, both of these therapies (thrombolytic and Primary Percutaneous Coronary Intervention) have a risk of bleeding complication, both minor and major. On the other hand, morbidity effects due to reinfection and mortality are different [11]. In healthcare facilities with PPCI facilities available, if ACS STEMI is diagnosed, then PPCI is a better modality to be applied. However, most healthcare facilities are not PPCI capable; therefore, thrombolytic therapy is still the treatment of choice in ACS STEMI cases.

In this study, the results showed that, out of six patients who showed bleeding side effect, two patients (33.33%) had oral mucosal bleeding and four patients (66.7%) had urinary tract bleeding. The side effect of bleeding is one of the side effects that may occur in patients with thrombolytic effect. The degree of bleeding ranges from mild to severe and may threaten life. The results of this study showed that the bleeding condition occurred included minor bleeding. There are still only a few studies that have discussed the effect of bleeding complication due to thrombolytic therapy and PPCI. However, several studies have shown that PPCI has lower morbidity effect compared to thrombolytic therapy [12]. Mehta et al. showed complication, morbidity, and repeated infarction in an ACS STEMI elderly group with lower PPCI. This shows that PCI is more superior compared to thrombolytic therapy [13].

The results of this study may become a fundamental in that PPCI use is more recommended in SCA STEMI cases compared to thrombolytic therapy. However, in limited facilities, thrombolytic therapy can be given with close monitoring on possible bleeding effect.

5. Limitation

Our study is not randomized and, therefore, limited by selection bias. In addition, sample size was small and does not reflect real data on management and outcomes of elderly patients who present with STEMI. A randomized trial in this particular group is not viable. Furthermore, we did not evaluate long-term mortality and re-infection rates, which may provide incremental information and a better picture of the utility of invasive management in this group.

6. Conclusion

According to the results of this study on octogenarians with ACS STEMI who received thrombolytic therapy, bleeding complication occurred in all patients. The bleeding was minor with urinary tract bleeding as the most frequently found side effect. Thrombolytic therapy in octogenarians needs to be given with close monitoring on possible bleeding effect.

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