Early Stent Thrombosis after Percutaneous Coronary Intervention (PCI): a case report

Andreas Willianto, Martin Hendrata
Siloam Hospitals Kebon Jeruk, Jakarta, Indonesia

ABSTRACT
Stent thrombosis is a rare complication but have around 15-45% case fatality rate. Early stent thrombosis in first 24 hours after PCI still accounts for 6-25% from all stent thrombosis cases. This article will discuss a 60 year-old male brought to emergency with chest pain, shortness of breath, and diaphoresis. The chest pain was started 1.5 hours prior to admission felt as a heavy sensation in the chest. The patient has a history of diabetes, hypertension, and dyslipidemia. One week prior to admission, 2 drug eluting stent (DES) on proximal left anterior descending (LAD) and distal left circumflex (LCx) were placed. Clopidogrel and aspirin were consumed routinely as an antiplatelet. The patient diagnosed with early stent thrombosis and cardiogenic shock. Coronary artery bypass graft surgery with 4 grafts was successfully done the day after, intra-aortic balloon pump and temporary pacemaker were reserved until 2 days post-surgery. Clopidogrel was shifted to ticagrelor post-surgery and combined with aspirin. No event of subsequent acute coronary syndrome was observed.

Keywords: Early stent thrombosis, percutaneous coronary intervention, thrombolysis

INTRODUCTION
Bleeding and thrombosis have always been a dilemma in treatment of patient with acute coronary syndrome. Although incidence of stent thrombosis decline to 40-70% after Drug Eluting Stent (DES) were used rather than Bare Metal Stent (BMS), the occurrence rate is still 1-2% for all PCI cases. Stent thrombosis is a rare complication, but have a high case fatality rate of around 15-45%. Acute stent thrombosis in the first 24 hours after PCI still accounts for 6-25% from all stent thrombosis cases. The rate of stent thrombosis increased in patients with diabetes mellitus, bifurcation stent, and in patient who do not comply with antplatelet therapy.

CASE
A 60 years-old male was brought to emergency room with chest pain, shortness of breath, and diaphoresis. The chest pain was started 1.5 hours prior to admission and described as a heavy sensation. The patient has a history of diabetes, hypertension, and dyslipidemia. One week prior to admission, medical checkup was done in another hospital. Coronary angiography showed stenosis on proximal left anterior descending (LAD) and distal left circumflex (LCx), thus 2 DES stents were placed. Clopidogrel and aspirin were given as an antiplatelet and consumed routinely.

Upon examination, the patient was alert and cooperative. The blood pressure was 94/71 mmHg, pulse rate 63 beats per minute, and oxygen saturation was 100% on 2 liters oxygen per minute via nasal cannula. Electrocardiography showed anterior ST elevation and cardiac enzymes were elevated. Echocardiography showed akinetic of the anteroseptal wall and left ventricular ejection fraction of 30%. Coronary angiography showed stent thrombosis in both stents. Balloon angioplasty was done but the...
result was not optimal. Hemodynamic was further impaired, blood pressure was slowly decreased. The patient then diagnosed with early stent thrombosis and cardiogenic shock.

Epitifibatide were given post-procedure, dobutamine and norepinephrine were given to maintain blood pressure but the response was not significant. Intra-aortic balloon pump was inserted while waiting for coronary artery bypass graft surgery. After the procedure, the electrocardiography evolved to right bundle branch block and first degree AV block. The next day, complete heart block was developed hence temporary pacemaker placement was done through left femoral vein.

Coronary artery bypass graft surgery with 4 grafts was successfully done the day after, intra-aortic balloon pump and temporary pacemaker were reserved until 2 days post-surgery. Clopidogrel was shifted to ticagrelor post-surgery and combined with aspirin. ECG showed sinus rhythm with frequent ventricular extra systole and non-sustained ventricular tachycardia. Implantable Cardioverter Defibrillator (ICD) implantation was advised to reduce the risk of sudden cardiac death. The patient then discharged after 7 days post-surgery and Cardiac Resynchronization Therapy – Defibrillator (CRTD) implantation was done 2 months later with no complication.

DISCUSSION
Stent thrombosis is a rare complication, but have a high case fatality rate of around 15-45%. Early stent thrombosis in the first 24 hours after PCI still accounts for 6-25% from all stent thrombosis cases. Many strategies for prevention of early stent thrombosis has been developed. Integer-based risk score may be used to identify patients who might benefit most from more aggressive antplatelet therapy after stent implantation.

Recently, multiple risk factors associated with stent thrombosis were reported. Patients with STEMI, multi-vessel coronary artery disease, low left ventricular ejection fraction (EF), small stent diameter, long segmental stenosis and younger age have the higher risk of early stent thrombosis. This case is an example of myocardial infarction with multi-vessel disease who received PCI on multi-vessel stenosis. In these cases, the physician should be alert to new onset or aggravation of chest pain or sudden abnormal findings of vital signs.

The most important aspect for the diagnosis and treatment is clinical suspicion of early stent thrombosis. Currently the diagnostic and treatment strategies are not well defined. Emergent repeat PCI (thrombus aspiration, balloon dilatation) is commonly employed, and glycoprotein IIb/IIIa inhibitor is also used as ‘rescue’ therapy. Glycoprotein IIb/IIIa inhibitor inhibited platelet aggregation, thrombus formation, and furthermore, induced lysis of fresh thrombus. Furthermore, development of biodegradable stents might also be a way to decrease the incidence of late and very late stent thrombosis.

In this case, thrombus aspiration and balloon dilatation were employed but the result was suboptimal. Clopidogrel was changed to ticagrelor and epitifibatide was used. Coronary artery bypass surgery is opted to revascularize the blocked coronary artery. The myocardial infarction was severe enough to cause electrical activity disturbances; complete heart block was resolved after surgery but frequent ventricular extrasystole and a couple of non-sustained ventricular tachycardia episodes still occur. CRTD was opted to optimize cardiac function and to prevent malignant arrhythmia that can cause sudden cardiac death.

REFERENCES: