Septic Pulmonary Embolism Following Appendectomy Surgery

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ABSTRAK

Emboli pulmonal septik adalah kondisi yang jarang terjadi. Pada keadaan ini terjadi beberapa infark pulmoner yang diakibatkan oleh emboli bekuan darah yang juga mengandung mikro organisme. Proses terjadinya keadaan ini sering tersembunyi, gambaran klinis tidak spesifik, dan diagnosis biasanya terlambat ditegakkan.

Seorang wanita berusia 43 tahun yang baru mengalami operasi apendisitis akut, datang kembali kerumah sakit pada hari ke-enam setelah operasi dengan keluhan demam, nyeri pada daerah operasi, sesak nafas yang semakin berat dan rasa penuh di dada. Dari pemeriksaan ditemukan peningkatan suhu tubuh, takikardia, nafas cepat, ronki basah pada bagian basal paru kanan, dan nyeri tekan pada abdomen kanan bawah. Dari CT scan torak dan abdomen ditemukan pleuropneumonia dengan efusi minimal pada bagian paru kanan dan inflamasi sepanjang dinding lateral kanan abdomen. Dari CT scan angiografi ditemukan ditemukan emboli intralumen pada segmen lobus medial dari arteri pulmonary kanan. Hasil pemeriksaan laboratorium yang menunjang penegakkan diagnosis ini adalah kadar D-dimer 3442 ng/mL dan hasil kultur pus dari luka operasi ditemukan E coli ESBL (+).

Kata kunci: *emboli pulmonal septik, operasi apendisitis akut, E. coli ESBL (+).*

ABSTRACT

Septic Pulmonary embolism is a rare condition where there were numerous pulmonary infarcts resulting from blood clot emboli that also contains microorganism. This disorder is insidious onset, Its clinical features usually unspecific and the diagnosis usually difficult to establish.

A 43 old woman who underwent an appendicitis surgery, reentered the hospital at the sixth day after surgery presented with fever, pain at the surgical site, progressive severe dyspnea and chest tightness. From the physical examination finding there were tachycardia, tachypneu, wet rough basal rhonki on the right rear and tenderness at right lower region of the abdomen. The thorax-abdomen CT scan result was pleuropneumonial with minimal effusion in the right side. A CT angiography scan of the chest and abdomen showed intralumen emboli in medial lobe segmen of right pulmonary artery, right pleuropneumonia with segmental lession in segmen 10 right lobe and inflammation process along right lateral wall of the abdomen. Laboratory results that also supported diagnosis were D dimer 3442 ng/mL and culture result from surgical site pus showed E. Coli ESBL (+). Base on these findings, this case was established as a septic pulmonary embolism.

Key words: *septic pulmonary embolism, appendicitis surgery, E. coli ESBL (+).*

INTRODUCTION

Pulmonary embolism is an uncommon cardiovascular emergency condition. Pulmonary artery occlusion of blood vessels can lead to life threatening condition and cause of right heart falilure. Reports on the incidence of pulmonary embolism vary, estimated 600.000 cases per year in the USA.[1] While in recent epidemiological studies in France, the incidence reached 6/10.000/ year.[2] There is no definite number of case report in Indonesia and the incidence is difficult to determine considering the non-specific clinical manifestations. The clinician then create several scoring system intended to facilitate early diagnosis of pulmonary embolism. In the scoring system there are some condition that interfere with the stability of patients according to Virchow triad known to increase the risk of pulmonary embolism, such as the condition of hypercoagulability, injury to the vessel wall and blood flow stasis.[1] Surgery has been known as one of the risk pulmonary embolism through the injury inflicted on the wall of blood vessels, while severe sepsis, through increased procoagulant activity facilitate the occurrence of pulmonary embolism. The following is a case reports about a woman who experienced postoperative sepsis incidence of appendectomy with complications of pulmonary embolism. Both pulmonary embolism and sepsis are very life threatening conditions that require accuracy in making diagnosis as early as possible to ensure the success of therapy.

CASE ILUSTRATION

A 43-year old woman was admitted to hospital with a chief complaint of abdominal pain in the lower right quadrant that arises suddenly a few hours before hospital admission. Initially, the pain was felt in the pit of the stomach area but then spreads to the lower right abdomen accompanied by nausea. There were no complaints of fever, vomiting or menstrual disorders. No abnormality of defecation and urination. On physical examination the patient looked ill, blood pressure 110/70 mm Hg, pulse rate 80 beats per minute, respiratory rate 16 minutes, with a body temperature of 36.3^{o}C. The point of pain was at Mc Burney accompanied by abdominal guarding.Blood test showed leukocytosis (14.600/uL). The patient on subsequently was diagnosed with acute appendicitis syndrome. On the same day, the patient underwent appendectomy surgery. After appendectomy, both the patient's condition, surgical wound was bandaged, and allowed patients to outpatient care of the fifth day. Patients were encouraged to control to Surgery Policlinic and get treatment in the form of Cefadroxyl 4 x 500 mg, Mefenamic Acid 3 x 500 mg and Antacids. The results of histopathology of appendix tissue showing a feature of perforation supurativa acute appendicitis.

After 6 days appendectomy surgery, The patients presented with pain in the surgical site, progressive severe dispnea, chest tightness, and fever. The physical examination findings were notable for tachycardia, tachypnea, and a temperature of 37.8°C and there was pus coming from the surgical site. Arterial blood gas measurements performed while the patient was breathing room air were as follows: pH, 7.45; $PaCO_2$, 34.6 mmHg; PaO_2, 62.5 mm Hg; and arterial oxygen saturation, 92.5%. D Dimer was 3441.9 ng/ml, leukositosis 14,400/ mm^3, and CRP >120. On chest radiograph there was pleuropneumonia with minimal efussion in right side. All of the clinical and supporting diagnosis findings tends towards the possibility of pulmonary emboli syndrome. A CT angiography scan of the chest and abdomen showed intralumen emboli in medial lobe segmen of right pulmonary artery, right pleuropneumonia with segmental lession in segmen 10 right lobe and inflammation process along right lateral wall of the abdomen. The pus culture showed *E. Coli* ESBL (+) sensitive to carbapenem. The Patient was given enoxaparin 40 mg sc twice daily and meropenem 1 gr three times daily. After eight days of treatment, patient was free from symptoms, no pus at the surgical site, CRP level was 6 mg/L, procalcitonin level was <0.05 µg/L, the blood culture sterile, and patient discharged from hospital.

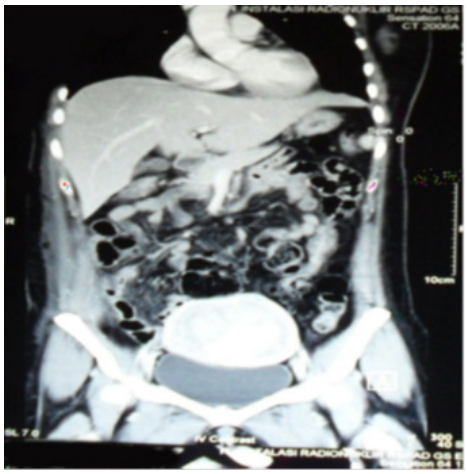

Figure 1. Inflammation process along right lateral wall of the abdomen

Figure 2. CT Angiografi showing intralumen emboli in medial lobe segment of right pulmonary artery

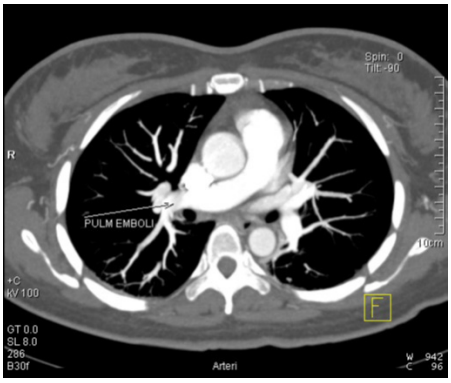

Figure 3. CT Angiografi showing intralumen emboli in medial lobe segment of right pulmonary artery

DISCUSSION

Infection is a term to call the existence of germs that enter the human body. In infectious diseases tissue injury inflammatory reaction. Acute inflammation can be limited to the lesion alone or can spread and cause systemic signs

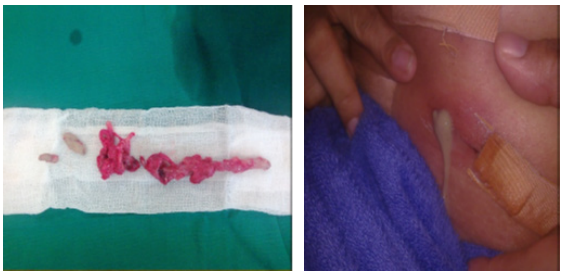

Figure 4. Pus on the incision site of appendectomy preceding pulmonary embolism

and symptoms. Clinical Manifestations of systemic inflammation is referred to as systemic inflammation syndrome (SIRS) and Sepsis as SIRS plus a known site of infections (as evidence by a positive culture of organisms from the venue).[3,4]

Pulmonary embolism is defined as an obstruction to the pulmonary artery or one of its branches by a variety of materials such as thrombus, tumor, air, fat which formed in the body. Pulmonary embolism can be divided as an acute or chronic pulmonary embolism. Patients with acute pulmonary embolisms will usually develop symptoms shortly after the obstruction of the pulmonary blood vessels. While patients with chronic pulmonary embolism may experience slowly progressive symptoms in recent years due to pulmonary hypertension. In these patients there has been an acute pulmonary embolism who supported the clinical symptoms, laboratory (D Dimer), radiology examination (CT Scan Angiography), Well score result with score of 7 classified in the intermediate probability and revised Geneva score system, patients classified intermediate probability with score of 6.[5-9]

Severe sepsis can occur as a result of infection at any body site, including the lungs, abdomen, skin or soft tissue. Sepsis mediators damage the endothelial lining, leading to increased capillary leakage. As a result of sepsis inflammatory cytokines, tissue factor, the first step in the extrinsic pathway of coagulation, is also expressed on the surfaces of the endothelium and of monocytes. Tissue factor leads to the production of thrombin, which itself is a proinflammatory substance. Proinflammatory cytokines also disrupt the body's naturally occurring modulators of coagulation and inflammation, activated protein C (APC) and

antithrombin. This homeostasis imbalance leading to thrombi or microthrombi generation. This case showed that infection in surgical site at the abdomen, can leads to sepsis and its complication, pulmonary embolism. That is, infection control and prophylactic treatment of pulmonary embolism is important.[10]

CONCLUSION

Septic pulmonary embolism is life-threatening emergency situation. Incidence of sepsis has a high prevalence of the risk of death and complications are also high. This case was post operative sepsis, base on wells score and revised geneva score is the intermediate predisposing factors of pulmonary embolism. Successful treatment of sepsis is dependent on establishing an early diagnosis, appropriate empiric antimicrobial therapy and optimization of supportive therapy to improve efficacy and prevent mortality. Pulmonary embolism is a complication that can occur in sepsis. Accurate diagnosis and early treatment, and clinical risk assessment of patients is essential to uphold the diagnosis of pulmonary embolism. Early diagnosis and early empiric therapy are two conditions determine the success of treatment of this life – threatening.

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