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Case Report

Pancreatic tumor with lung tumor: a case report

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ABSTRACT

According to the global cancer observatory (GLOBOCAN), there were 16,485 new cases of pancreatic cancer in Southeast Asia in 2020, with men (9458 cases) having the highest incidence compare to woman (8320 cases). The death rate from 16,485 cases was 16,167 cases (98%). A person's chance of developing pancreatic cancer in addition to other cancers is between 1% to 20%. In this study, we reported a case of pancreatic tumor with lung tumor. A 68 years old woman presented with right quadrant abdominal pain since 1 month ago. The pain occurs randomly, but mostly occur during night. The pain didn't occur after eat fatty food and during exercise. The pain didn't relieve by rest. The patient also experienced nausea and vomit. The vomit consist of food and blood. She complains black colored stools and dark yellow urine. She also lost weight from 62 kg to 47 kg. There was history of gastric bleeding in 4 month ago. She was passive smoker. We then did several tests such as complete blood count, blood chemistry, serology, chest x-ray and abdominal CT-scan. The test showed pancreatic tumor with suggestive primary lung tumor. Patient with multiple primary tumor are an extremely rare type of cancer, which need comprehensive approach to both diagnosis and treatment of these numerous primary tumors.

Keywords: Pancreatic tumor, Lung tumor, Multiple primary tumor

INTRODUCTION

The anomalies of pancreas caused by numerous variables such as hereditary problems, extended alcohol consumption, trauma, certain medicines, electrolytes, elevated lipid levels, hormones and cancer.

According to the global cancer observatory (GLOBOCAN), there were 16,485 new cases of pancreatic cancer in Southeast Asia in 2020, with men (9458 cases) having the highest incidence compare to woman (8320 case). The death rate from 16,485 cases was 16,167 cases (98%).[1]

Smoking, age over 55, diabetes mellitus, obesity, chronic pancreatitis, hepatic cirrosis, helicobacter pylori infection, chemical exposure, particularly in the laundry and metal industries, male gender, African American ethnicity, and inheritance are all risk factors for pancreatic cancer.[2]

With 5781 new cases, pancreatic cancer is the 16th most common cancer in Indonesia (1.5%). Pancreatic cancer has a significant fatality rate. The mortality rate in Indonesia was 98% (5690 cases) out of 5781 cases.[1]

A person's chance of developing pancreatic cancer in addition to other cancers is between 1% to 20%. Gastric, colon, thyroid, and urogenital cancers are typical forms of cancer seen combined in pancreatic cancer. The combination of pancreatic cancer and lung cancer is an extremely rare case.

CASE REPORT

A 68 years old woman presented with right quadrant abdominal pain since 1 month ago. The pain occurs randomly, but mostly occur during night that caused lack of sleep. The pain didn't occur after eat fatty food and during exercise. The pain didn't relieve by rest. The patient

also experienced nausea and vomit. The vomit consist of food and blood. The patient appetite was reduce. Defecated 1 to 2 times a day with normal consistency but black colored stools. The color of urine was dark yellow with normal urine volume and there was no pain during urinate. The patient's body had also become yellow since 2 weeks without itching. The patient also complained of feeling weak and losing weight for past 6 months. Weight decreased from 62 kg to 47 kg.

The patient was hospitalized 4 months ago, according information from the patient, the patient was diagnosed severe anemia caused by bleeding in gastric. The symptoms were black stools and vomiting blood. The patient was then given blood transfusion therapy and medication for gastric bleeding. The patient wasn't undergoing endoscopy procedure because the patient refused to undergo the procedure due to personal reason. The patient said an abdominal ultrasound examination (USG) was performed and the results were normal.

The patient didn't have any chronic disease such as hypertension, cardiac disease, pulmonary disease, kidney disease, and malignancy disease. The patient also never had undergone any surgery. There was no history of taking pain medications, herbs and routine medications.

There wasn't disturbance in daily activities at home. She often ate meat and carbohydrates such as rice rather than vegetables. She rarely engaged in physical activity. The patient didn't smoke and drink alcohol. She was a passive smoker since several members of her family smoked in the house.

She was in compos mentis state without any neurological deficits. Initial vitals revealed blood pressure 101/42 mmHg, heart rate 85 beats/minute, respiratory rate 20 breaths/minute, temperature of 36.5°C, blood pressure and oxygen saturation 100% on room air.

The conjunctiva appeared pale and sclera was icteric. Icterus affected the entire body. There wasn't lymph node enlargement in the facial, coli, supraclavicular, and axillary areas. The physical evaluation of the heart and lungs was normal. On abdominal physical examination, there were palpable multiple nodule in hepatic area with biggest nodule around 2×1 cm. The nodule was firm, fixed in its location and painless. Splenomegaly with spleen size greater than Schuffner 2, painless, and no nodule. There were also Courvoisier sign. The sound of the intestines on auscultation was normal. Pitting edema was seen on both pedis during a lower extremity physical examination.

The patient then undergoes laboratory examination that consist of complete blood count, ALT (alanin aminotransferase), ALT (alanin aminotransferase), blood urea nitrogen (BUN), creatinine, electrolyte, bilirubin and serologic. The result of laboratory test can be seen in Table 1.

Table 1: Result of laboratory test.

Lab tests	Findings
Complete blood count	
Hb	5.3 g/dl
Ht	17.1%
MCV	101.5 fl
MCH	31.5 fl
MCHC	31.0 fl
Erythrocyte	1.680.000/µl
Leucocyte	11.520/µl
Basophil	0.4%
Eosinophil	1.7%
Neutrophil	84.5%
Lymphocyte	5.5%
Monocyte	7.9%
NLR	15.44
Platelet	488.000/µl
Blood chemistry	
Total bilirubin	7.64 mg/dl
Direct bilirubin	6.6 mg/dl
Indirect bilirubin	1.04 mg/dl
Total protein	5.0 g/dl
Albumin	2.2 g/dl
Globulin	2.8 g/dl
AST	39 U/l
ALT	28 U/l
BUN	25 mg/dl
Creatinine	0.5 mg/dl
Serology	
Anti HCV rapid	Negative
HbsAg	Negative

The patient also undergoes chest imaging with PA supine position and abdominal contrast CT-scan.

The result can be seen in Figure 1 and 2.

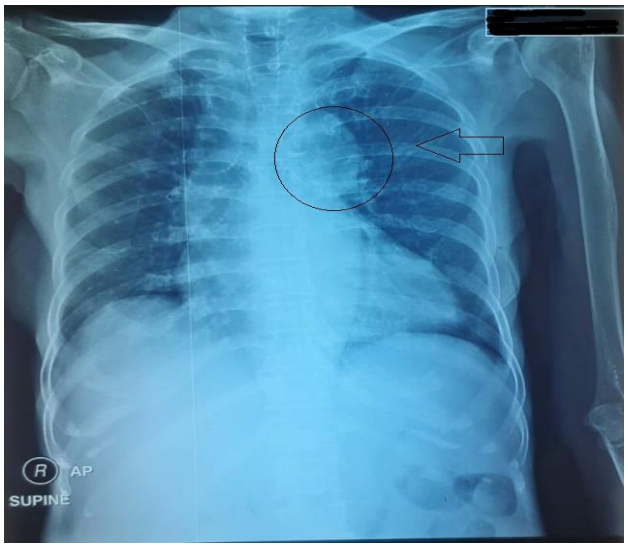

Figure 1: Chest thorax X-ray with AP supine position show solitary nodule in superior left lobule.

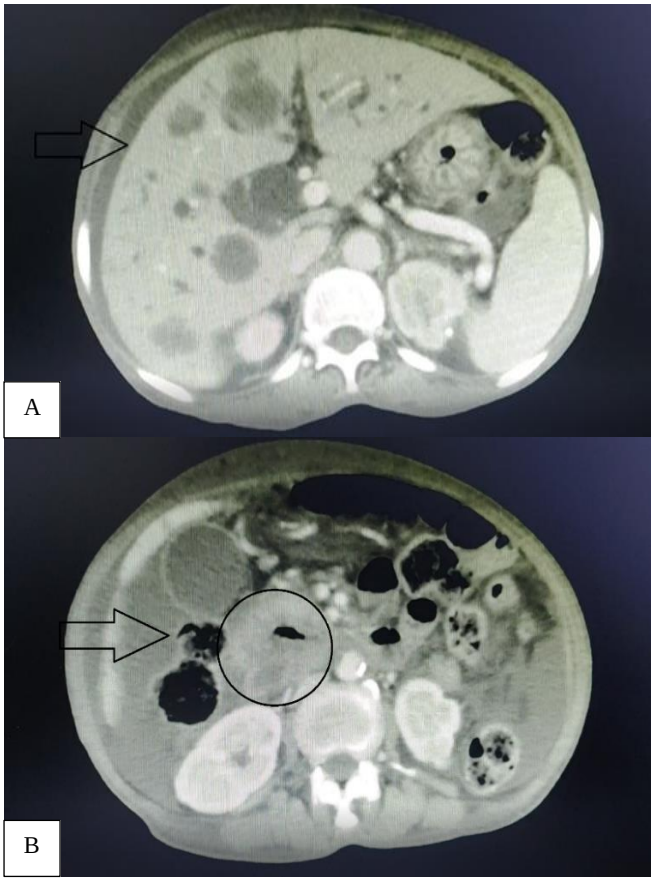

Figure 2 (A and B): Abdominal contrast CT-scan show caput pancreatic tumor and multiple hepatic nodule.

The patient was diagnosed with a pancreatic tumor that had spread to the liver and was suspected of having a primary lung tumor. NaCl 0.9% infusion, omeprazole 2×40 mg injection, ondancetrone 2×40 mg injection, ketorolac injection 3×30 mg injection, and ursodeoxycholic acid 3×250 mg injection were administered to the patient. PRC (Packed red cells) were given to the patient for Hb correction, with a target Hb of >10 g/dl. Clinical presentation improved while hospitalized. She was treated for 7 days with the objective of restoring Hb>10 g/dl and reducing clinical symptoms. She was given four PRCs, and her latest laboratory Hb level was 10.1 g/dl. After her clinical condition improved, she was transferred to a different hospital with more advanced facilities for continued treatment.

DISCUSSION

In the United States, pancreatic cancer is the fourth largest cause of cancer mortality. There are various risk variables to consider such as: smoking (20% of case), mutation in the DNA (10% of case), age ≥55 years old, males gender, African Americans ethnicity, family history, diabetes mellitus, obesity, chronic pancreatitis, hepatic cirrhosis, *Helicobacter pylori* infection, Lynch syndrome, Peutz-Jeghers syndrome, VonHipaul Lindau syndrome, MEN1 (multiple endocrine neoplasia type 1), work exposure to chemicals in the dry cleaning and metalworking industry, heavy alcohol consumption, coffee consumption, physical inactivity, high red meat consumption and consume two or more soft drinks per day.[2]

More than 90% of pancreatic adenocarcinomas are duct cell adenocarcinomas, with cystadenocarcinoma and acinar cell carcinoma being the remaining forms.[2] About 60% of tumors start in the head of the pancreas, 15% in the body, and 5% in the tail, with the other 20% being distributed within the pancreas.[3] In this case, the patient complained of abdominal pain as the size of the tumor grew larger. The tumor then supresses nearest organ are and nerve in the body. Pain is also a result of the metastatic process. Malabsorption, gastrointestinal motility issue, and discomfort induce nausea and vomiting in people with pancreatic cancer. These symptoms cause a loss of appetite.

Patient complained melena. It is cause by esophageal varices where pancreatic cancer will obstruct portal vein. Invasion and erosion of the gastrointestinal lumen are also seen. There was no history of hepatic illness in the patient. She never had hepatitis, hepatic cirrhosis, fatty liver, or any other sign of hepatic illness previously. There was no history of alcohol usage. She stated that she had an abdominal USG four months ago while in the hospital and the results were normal. Therefore, melena without a hepatic problem should be evaluated further. Splenic vein thrombosis most likely the cause of melena in this patient. Splenic vein thrombosis is the most common cause of PSPH. Other uncommon causes of PSPH include liver transplant complications, partial gastrectomy, retroperitoneal fibrosis and tuberculosis, perirenal abscess, and hereditary thrombophilias. Chronic pancreatitis, pancreatic pseudocyst, hypercoagulable state trauma, peptic ulcer disease, retroperitoneal fibrosis, and pancreatic tuberculosis are also linked to splenic vein thrombosis. In splenic vein thrombosis with PSPH, there tends to be a triad on presentation as well, which includes isolated gastric varices, splenomegaly, and normal liver function. However, these features are not always strictly present together.[4] There was splenomegaly on physical examination, and the AST/ALT levels were normal, but we were unable to do an endoscopy operation since the patient refused. Due to history of melena and hematemesis, we believe she had esophageal varices.

The patient's weight dropped from 62 kg to 47 kg. In cancer patients, weight loss is a regular occurrence. Weight loss affects approximately 85% of patients. Anorexia, malabsorption, and/or cachexia are all causes of weight loss. Cachexia is a syndrome characterized by involuntary weight loss, a decrease in muscle mass, and systemic inflammation with or without adipose tissue loss. Weight loss can be used to gain access to predictive information. About 30% of patients who present with cachexia will die. On the other side, due to loss of muscle mass and weight loss, there is a risk of infection, a lengthier inpatient stay, and treatment.[5] Icteric develops as

a result of a disruption in the third hepatic phase. In phase one (pre-hepatic), the body produces bilirubin in the spleen as a result of heme metabolism. About 80% of heme comes from red blood cell metabolism, with the remaining 20% coming from erythropoiesis and myoglobin catabolism. The heme is then converted to biliverdin, which is then converted to indirect bilirubin and transported from plasma to the liver by albumin. The indirect bilirubin will be transported to the endoplasmic reticulum in phase two (hepatic).

The glucuronosyltransferase enzyme then converts indirect bilirubin to direct bilirubin by conjugating it with glucose. It'll be kept in the gallbladder. Direct bilirubin will travel through cystic duct and common bile duct to ampulla of Vater in phase 3 (post-hepatic). Direct bilirubin will then pass-through intestine and colon from ampulla of Vater. Direct bilirubin metabolized by colon bacterial to become urobilinogen. Around 80% will be excreted in the feces as stercobilin, and 10% will be excreted in the urine as urobilinogen. The rest will be converted to indirect bilirubin and circulated in the enterohepatic system. Direct bilirubin can reach the bloodstream, be filtrated by the kidneys, and excreted in the urine if there is hepatocellular dysfunction or biliary obstruction. This series of event call as bilirubinemia.[6] Icteric presentation in this case was caused by common bile duct obstruction due to pancreatic tumor or post hepatic obstruction, as explained above. Another sign of this type of icterus is an increase in direct bilirubin (6.6 mg/dl) after hepatic blockage. This obstruction causes a rise in urobilinogen in the urine, resulting in dark colour Uribe.

Low Hb levels (5.3 g/dl) can cause fatigue in this patient. The patient's conjunctiva was discovered to be pale during a physical examination. The exact cause of fatigue in anemia is unknown, but it could be related to problems in energy metabolism.[7]

Splenomegaly is caused by a variety of factors, including: [8] Splenomegaly is an increase in spleen size due to many diseases such as liver disease (cirrhosis and hepatitis); infection (bacterial endocarditis, infectious mononucleosis, HIV, malaria, tuberculosis, histiocytosis, abscess); cytopenias (Immune thrombocytopenic purpura, autoimmune hemolytic anemia, immune-mediated neutropenia, Felty syndrome); congestion in the spleen (venous thrombosis, portal hypertension, congestive heart failure); hematologic disease (lymphomas, leukemias, myeloproliferative disorders, pediatric sickle cell disease, hemolytic anemias, thalassemia); venous thrombosis (portal or hepatic vein thrombosis); connective tissue diseases (systemic lupus erythematosus, rheumatoid arthritis, Adult-onset Still's disease, and some familial autoinflammatory syndromes); infiltrative disorders (sarcoidosis, amyloidosis, glycogen storage diseases); gocal lesions (hemangiomas, abscess, cysts, metastasis).

Splenomegaly due to neoplasm cell infiltration was the etiology in this case. Pitting edema on both lower extremities was found during physical examination. Pitting edema is defined as a depression in the area where pressure is applied. Edema form by fluid collection in the interstitial space due to capillary filtration capacity exceeding lymph drainage capability. Albumin is an protein in body that regulates oncotic pressure. If albumin level drop, it can cause oncotic pressure to drop and capillary pressure to rise. This event will lead to pitting edema as result. Several diseases such as kidney disease (nephrotic syndrome), food deprivation, certain medications such as calcium channel blockers, and liver illness will cause hypoalbumin. Hypoalbuminemia can also be caused by other rare conditions such as mxyedema and lymphedema. Cancer can also cause rapid and progressive cell multiplication. As a result of the quick shift in albumin status, pitting edema develops.[9-11] Pitting edema occurs in this case as a result of malignancy and food deprivation. There is no liver or renal illness, and no medicine is taken on a regular basis. Courvisier sign that found in this case indicates gall bladder distension. This sign indicates there's obstruction in common bile duct caused by pancreatic tumor. This obstruction will increase intraductal pressure and lead to gall bladder distension. [12]

Chest imaging reveals a tumor in the superior sinistra pulmonary lobe, which is suspected to be a primary tumor or a pancreatic metastatic process. We then did several analytic that conclude the lung tumor is a primary tumour based on comprehensive approach. The patient was passive smoker. Therefore, she has risk to develop primary pulmonary cancer. According to a study conducted by Sun and his colleagues, there is a link between passive smoking and the development of lung cancer over time. They conducted this study by gathering data from 56.772 participants who already met the criteria for inclusion. They split the people into four groups (never, in childhood only, in adulthood only, in both periods). Following that, 692 persons were diagnosed with lung cancer, which was divided into two groups: small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). About 50% risk to develop primary pulmonary cancer in passive smoker since adulthood and passive smoker since both period.[13]

If a bilateral nodule is discovered on a chest X-ray and the patient has a history of malignancy other than pulmonary cancer. This discovery can be categorized as a metastatic process. However, if a solitary nodule is discovered in a patient with a history of malignancy other than pulmonary cancer. This discovery may indicate the presence of a primary tumor, which necessitates additional investigation.[14] Solitary nodule define as single nodule, circumscript, opaque and diameter size reach ≥3 cm. These findings are regarded as cancerous. The risk of malignancy increases as the size of the nodule increases. As the size of the nodule grows larger, the chance of malignancy increases. Around 80% of nodules with a diameter of 20 mm are malignant, while 1% of nodules with a diameter of 2 mm to 5 mm are malignant. It can be examined clinically or quantitatively to determine the probability of a malignant or benign nodule, which is categorized into

three categories: extremely low (5 percent), low/moderate (5-65%), and high (>65%). This can be determined using a Mayo clinic score that includes smoking history, extrathoracic cancer history 5 years before the nodule was discovered, nodule diameter, shape, and location.[15] A solitary nodule was discovered on the chest X-ray in this patient, and the Mayo clinic scoring revealed that the nodule in this case had a 95.2 percent risk of cancer.

In 20 years, a person's chances of developing multiple primary tumors range from 2% to 17%. This type of multiple primary tumor is quite uncommon. If the tumors are in two separate locations and have different histology and morphology, a person can be diagnosed with multiple primary tumors. It's critical to distinguish between a multifocal or multicentric tumor and a metastatic process. Individual (genetic, hormone, malignancy history); lifestyle (alcohol, tobacco); and environment (geography, high risk radiation area, Epstein-Barr virus, job related to asbestos) are all risk factors for numerous primary tumors.[16]

Pancreatic tumor staging is divided into 4 stages as follows: stage 1: tumor is found in the pancreas and has not spread to other locations; stage 2: tumor infiltrates gallbladder and surrounding structures, but does not infiltrate lymph nodes; stage 3: tumor infiltrating lymph nodes; stage 4A: there is metastases to surrounding organs such as the stomach, liver, diaphragm, and adrenals; and stage 4B: tumor infiltrates more distant organs.[2]

Tumors that have invaded the superior mesenteric artery, liver, peritoneal metastases, distant lymph nodes, and metastases to organs other than the pancreas are not resectable.[2] Surgical resection is the preferred treatment, however only 20% of pancreatic cancer cases are treated surgically at the time of diagnosis.[2] This is because only 5%-30% of tumors can be resected The Whipple technique is the therapy of choice if the adenocarcinoma is located in the head of the pancreas. Caudal excision of the pancreas is the treatment of choice if the tumor is found in the corpus or caudal. The Whipple technique, even in the hands of a trained surgeon, has a death rate of up to 4%, and exploratory laparotomy has a morbidity rate of up to 25%. The tumor cannot be removed if it has infiltrated the hepatic artery, but if it has entered the superior mesenteric vein, the resection can be done with vascular reconstruction.[3] Because the tumor was stage 4A, this patient was unable to undergo tumor resection. From the results of the above discussion, the authors concluded that this patient had a primary pancreatic tumor with metastases to the liver. Tumors found in the lung can be suspected as a primary tumor or the result of metastases from pancreatic tumors. We had limitations in establishing a further diagnosis in the form of a biopsy and contrast CT-scan thorax. We were unable to perform a pancreatic tumor biopsy because the operator was concerned about the patient's age and the chance that the biopsy would reveal a malignancy, based on a contrast abdominal CT scan that revealed liver metastases. Another limitation of diagnosis was that the patient refused further examination for a CT scan of the thorax with contrast and biopsy after being informed of the procedure's goal and treatment recommendations.

CONCLUSION

Patients with multiple primary tumors are an extremely rare type of cancer that necessitates a holistic and comprehensive approach to both diagnosis and treatment of these numerous primary tumors. Patients with alarm symptoms such as weight loss, recurrent abdominal pain, nausea, and vomiting in the elderly require screening examinations in addition to diagnosis and treatment. This is to aid in the importance of early cancer detection, so that disease treatment can be carried out at an early stage and has a high rate of better life expectancy.

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