CASE REPORT
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Palliative management of a patient with gastric outlet obstruction (GOO) due to caput pancreatic cancer during COVID-19 pandemic

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ABSTRACT

Background: Pancreatic cancer is associated with a poor prognosis and high cancer-related deaths in developed and developing countries because most of the patients are symptomatic until the advanced stage. A small percentage of pancreatic cancer could develop gastric outlet obstruction (GOO) when the tumor causes intestinal obstruction. This case report aimed to highlight the palliative management of GOO due to caput pancreatic cancer.

Case presentation: A 48 years-old male was admitted to Dr Soetomo General Academic Hospital in Surabaya during coronavirus disease 2019 (COVID-19) pandemic with complaint of severe heartburn and pain for the last two months with lump around the upper right abdomen. The pain was not related to diet and only slightly relieved by pain relievers and ulcer medication. The patient also complained of nausea and vomiting after eating and drinking with significant weight loss. Unclear borders mass was palpable. The magnetic resonance imaging (MRI) of upper abdomen yielded the mass of head pancreatic that invaded the duodenum, the involvement of the superior mesenteric artery and multiple lymphadenopathies in the paraaortic. Pathology examination confirming the malignant, ductal adenocarcinoma. With other examinations, the patient was diagnosed as GOO due to T4N1M0 head pancreatic cancer. The tumor was unresectable. The patient underwent urgent double bypass biliodigestive laparotomy as part of palliative management. loop gastrojejunostomy, cholecystectomy and choledocujejunostomy Roux en Y was performed. Celiac plexus block was performed to reduce the cancer pain in the patient.

Conclusion: This case highlights that the GOO case's selected management depends on the stage disease and evaluation of multidisciplinary involvement even in the COVID-19 pandemic. Therefore, collaboration between surgeons, medical oncologists, gastroentero-hepatologist, radiologists, and supportive and palliative care specialists is required to reduce mortality.

Keywords: pancreatic cancer, gastric outlet obstruction, pain management, cancer pain, celiac block.
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INTRODUCTION

Pancreatic cancer, or pancreatic duct adenocarcinoma, is associated with a very poor prognosis and ranks the fourth among cancer-related deaths in the United States (US).[1] Despite development of potential treatments, pancreatic cancer is common in the elderly with an overall 5-year survival rate is less than 5% in developed countries.[1] The mortality rate ranged between 1.0 per 1 million people in Middle Africa and South-Central Asia to 6.9 per 1 million in Northern America.[2,3,4] High mortality is related to several factors and one of the most important is a late diagnosis and 90% of all deaths occurred among those with older than 55 years.[5,6] This is because most patients have no symptoms until the disease has progressed to an advanced stage.[3]

Gastric outlet obstruction (GOO) occurs when the tumor growth in the pylorus or duodenum causes intestinal obstruction. This mechanical obstruction causes food and liquid accumulation in the stomach, leading to gastric distension. This will cause GOO patients nausea and vomiting (85%), regurgitation (70%), abdominal pain (65%), and complaints of early satiety.[7] The cause of GOO was mainly pancreatic cancers (51%-73%) in Western countries and gastric cancers (31%-69%) in Asian countries.[7] Other causes of GOO are bile duct cancers, metastatic cancers, duodenal cancers, gallbladder cancers, ampullary cancers, and lymphoma.[7]

Cancer of pancreatic, bile duct, and gastro-duodenal is often diagnosed at an advanced stage, in many cases it cannot receive curative surgical treatment and therefore may require prolonged radio-chemotherapy or palliative care.[8] Therefore, it is very important for clinicians to understand the palliative management of patients with pancreatic cancer in the end stage. Palliative management could reduce complaints and prevent complications in patients with advanced pancreatic cancer.[9] In this case report we highlight the palliative management

of patients with caput pancreatic cancer with the manifestation of GOO, which is expected to increase our knowledge about the palliative management of pancreatic cancer patients in the early of coronavirus disease 2019 (COVID-19) pandemic. COVID-19 has caused disruption of some health services in Indonesia.[10,11]

CASE PRESENTATION

A 48 years-old male, an entrepreneur lives in Bojonegoro, Javanese, was admitted to the Emergency Room of Dr Soetomo General Academic Hospital in Surabaya, Indonesia on July 20, 2020, during the COVID-19 pandemic, with complaint of severe heartburn for the last two months before being admitted to the hospital.

The patient complained of stomach pain and felt a lump around the right upper abdomen. The pain was not related to diet and was only slightly relieved by pain relievers and gastric ulcer medications. Nausea and vomiting were complained in particular during eating and drinking and some of the food and drink came out. Body weight decreased by 10 kg in the last two months (from 53 kg to 43 kg). The skin turned yellow for the last two weeks before the hospital admission. The patient also reported whitish and putty-like stools as well as brownish urine-like tea. No melena and haematemesis.

The patient has complained of heartburn since about two years. The patient went to a doctor and was treated with ulcer medications and pain relievers. In April 2020 (3 months before the hospital admission), the patient again complained of abdominal pain and felt a lump in the stomach, nausea, vomiting and decreased appetite; the patient then went to Darmo Hospital Surabaya. The abdominal multislice computerized tomography (MSCT) examination indicated a pancreatic tumor and the patient was hospitalized, then was referred to the Dr. Soetomo General Academic Hospital for further treatment.

Past medical history, the patient had diabetes mellitus since 20 years ago and used insulin injections of aspart 8 units thrice daily subcutaneously and Detemir 10 units once daily subcutaneously. No history of hypertension. The patient is a non-alcoholic drinker and non-smoker.

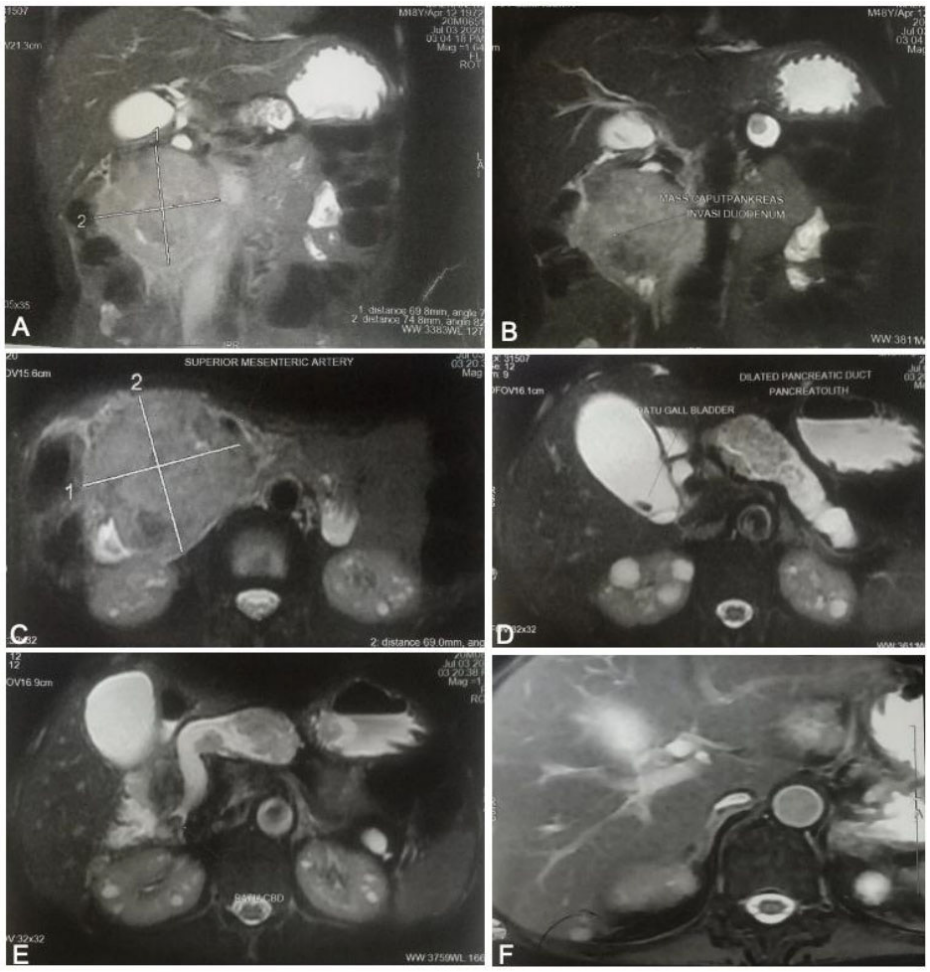

Figure 1. The magnetic resonance imaging (MRI) of the patient. (A) mass on caput pancreas sized 7.5 x 6.9 x 7 cm with superior mesenteric artery encasement. (B) The mass invades the second part of duodenum. (C) The appearance of the superior mesenteric artery encasement. (D) Hydrops of gall bladder with gall bladder stones approximately size 5-9 mm and sludge gall bladder. Pancreatic duct with hypointense mass suspect pancreatolith (E) Distal common bile duct (CBD) stone approximately 9 mm. (F) Suggestive liver hemangioma in segment 7 approximately 8 mm.

The patient never married and lived with his extended family. The patient's family denied the existence of such illness in the family, only the patient's parents had diabetes mellitus.

On physical examination, the general condition was weak, compos mentis, GCS E4V5M6. Blood pressure (BP) 130/60 mmHg, pulse (N) 110 x/minute, respiratory rate (RR) 20 x/minute and axillary temperature (T) 36.9°C, visual analog scale (VAS) score of 5, body weight 43 kg, height 160 cm with body mass index (BMI) 16.79 kg/cm^2 (underweight). Head examination revealed sunken eyes, conjunctiva anemic, icterus, and no abnormalities in the neck. On chest examination, there was a symmetrical chest shape, no chest breath movement was left behind. On auscultation of the chest, there was a cord ictus in the intercostal space (ICS) V mid-left clavicle, regular rhythm S1-S2 heart sounds, no murmur or gallop. There was a vesicular lung type of respiration, no rhonchi or wheezing was found. On inspection of the abdomen, there was a flat stomach, no mass visible, and normal bowel sounds auscultation. Palpation of the abdomen found the mass in the right upper abdomen, unclear borders, no muscular defense and tympanic percussion. On examination of the rectal toucher, there was no bleeding, the mucosa was smooth,

the ampulla recti did not collapse, there was no tenderness and no mass was felt. In the extremities were warm, dry and pale roots, the skin turgor returned slowly, there was no edema or palmar erythema.

Laboratory results on the admission obtained hemoglobin (Hb) 6.4 g/dL, hematocrit (Hct) 18.7%, MCV 78.6 fL, MCH 26.9 pg, leukocytes 12,220/µL, platelets (Plt) 314,000/µL, PPT 23.7 seconds and APTT 13.4 seconds. Random blood glucose 317 mg/dL, serum glutamic oxaloacetic transaminase (SGOT) 27 IU/L, serum glutamic-pyruvic transaminase (SGPT) 23 IU/L, albumin 3 g/dL, blood urea nitrogen (BUN) 39 mg/dL, serum creatinine 1.1 mg/dL, direct bilirubin 3.08 mg/dL, total bilirubin 3.61 mg/dL, potassium 4.0 mmol/L, sodium 127 mmol/L, chloride 99 mmol/L, HbsAg non-reactive, anti-HCV non-reactive, anti-HIV non-reactive and RT-PCR for COVID-19 negative.

The electrocardiography (ECG) revealed sinus rhythm tachycardia 105 x/minute, frontal and normal horizontal axis. The results of the AP chest X-ray indicating no visible metastases in the lungs and visualized bones suggested the cast appeared normal.

Magnetic resonance imaging (MRI) of the upper abdomen followed by magnetic resonance cholangiopancreatography (MRCP) was conducted (Figure 1). The MRI showed: (1) dilation of intrahepatic bile duct (IHBD), common hepatic duct and common bile duct (CBD) to distal, hydrops gall bladder, and dilation of pancreatic duct due to mass of head of pancreas (size 7.5 x 6.9 x 7 cm) that invades the second part of duodenum; (2) superior mesenteric artery encasement; (3) multiple lymphadenopathies in paraaortic approximately 0.8-1.1 cm; (4) hydrops gall bladder with gall bladder stone approximately 5-9 mm and sludge gall bladder; (5) distal CBD stone, size 9 mm; (6) severe dilatation of pancreatic duct with suspect pancreatolith inside; (7) suggestive liver haemangioma in segment 7 with size 8 mm; and (8) multiple bilateral kidney cysts, size 0.5-2 cm (BOSNIAK I).

From the initial assessment, the patient was diagnosed with as GOO due to T4N1M0 head pancreatic cancer with cholecystolithiasis without cholecystitis, choledocholithiasis without cholangitis, unregulated diabetes mellitus, moderate dehydration, hypovolemic isotonic hyponatremia, micrositter hypochromic anaemia and hypoalbuminemia. The patient was treated with nasogastric tube (NGT) for decompression, rehydration, fasting, metoclopramide 10 mg intravenous (IV) every 8 hours (h), ketorolac 3 grams IV every 8 hours, Detemir 10 unit subcutaneously (SC) every 24 hour, transfusion of packed red cells (PRC) 250 mL/day until the target Hb ≥ 10 g/dL is achieved. The patient was planned for urgent double bypass biliodigestive laparotomy and tumour biopsy. The patient was planned to be tested for HbA1c, fasting plasma glucose (FPG), complete blood count (CBC) and reticulocyte, serum iron and total iron-binding capacity (TIBC), and ferritin.

On the second day of treatment, there were still complaints of extreme pain, nausea and vomiting, decreased appetite, no fever and had no defecation difficulty. General condition was weak, GCS E4V5M6, BP 110/60 mmHg, pulse 86 x/minute, temperature 36.2°C, RR 18 x/minute, SpO_2 97%, VAS score 4. Laboratory results: Hb 13.4 g/dL, Hct 38.5%, leucocytes 8290/µL, Plt 215,000/µL, FPG 369 mg/dL, HbA1c 7.1%, BUN 20 mg/dL, creatine 0.90 mg/dL, potassium 3.3 mmol/L, sodium 134 mmol/L and chloride 97 mmol/L. The patient was treated with rehydration with 1000 mL 0.9% NaCl in 2 hours, maintenance with 1000 mL 0.9% NaCl fluid and 500 mL with amino acid mixture, within 24 hours. Rapid regulation of insulin 4 units twice daily, followed by insulin with a syringe pump of 1.5 units per hour, the preoperative blood glucose target was 140-180 mg/dL.

The third day of treatment, urgent double bypass biliodigestive laparotomy and tumour biopsy were performed. On exploration, a gall bladder and omentum adhesion was observed; a mass on the head of the pancreas with a diameter of 15 cm was solid, hard and fixed (T4); enlarged peri-pancreatic lymph nodes (N1); there was an enlarged celiac lymph node (M1), and no nodules liver. Celiac block, loop gastrojejunostomy, cholecystectomy, choledocujejunostomy Roux en Y was performed. The pathology result yielded malignant ductal adenocarcinoma. The patient has been treated with IVFD 0.9% NaCl 1500 mL over 24 hours, Ceftriaxone 1 gram IV every 12 hours, metronidazole 500 mg IV every 8 hours, ketorolac 3 grams IV every 8 hours, ranitidine 50 mg IV every 12 hours, NGT decompression and insulin with a syringe pump of 1.5 units every hour.

The fifth day of treatment (i.e., 2 days of post-surgery), the pain reduced, no fever, nausea, vomiting, and shortness of breath. General condition was weak, GCS E4V5M6, BP 125/67 mmHg, pulse 61x/minute, temperature 36.2°C, RR 18 x/min, SpO_2 97% (free air) and VAS score 2. Abdomen: flat, wound post-surgery did not leak, NGT produced 50 mL greenish liquid, good bowel sounds, there was no munscular defense and tympani. Laboratory results: Hb 9.2 g/dL, leucocytes 11,600 /µL, Plt 159,000/µL, fasting glucose 251 mg/dL, BUN 66 mg/dL, creatine 1.1 mg/dL, albumin 2.7 g/dL, potassium 2.9 mmol/L, sodium 142 mmol/L and chloride 98 mmol/L. The patient was treated with fasting, continuous daily infusion of a 24% carbohydrate solution containing fructose, dextrose and xylitol in a ratio of 2:1:1 in a basic electrolyte solution with osmolarity 1600 mOsm/L and amino acid fluid mixture given. Ceftriaxone 1 g IV every 12 hours, metronidazole 500 mg IV every 8 hours, tranexamic acid 500 mg IV every 8 hours, vitamin K 10 mg IV every 8 hours, detemir 18 units SC every 24 hours.

The eighth day of treatment (i.e., the fifth post-surgery), the pain from the surgery was reduced, no abdominal pain, no nausea and vomiting, could defecate and pass gas. General condition is weak, GCS E4 V5 M6, BP 122/73 mmHg, pulse 63 x/ minute, temperature 36.2°C, RR 18 x/minute, SpO_2 98% (free air), VAS score 1. Flat abdomen, none blood seepage, absent NGT production, normal bowel sounds, no defense in abdominal palpation and tympani. Diabetes diet 50 ml gradually increased every 6 hours, ceftriaxone 1 gram IV every 12 hours, metronidazole 500 mg oral every 8 hours, omeprazole 40 mg IV every 12 hours, metamizole sodium 1 gram IV every 3 hours, vitamin K_1 10 mg IV every 8 hours, Detemir 18 units SC every 24 hour and aspart insulin 6 units SC every 8 hours 15 minutes before the enteral nutrition intakes.

DISCUSSION

Our patient complained of severe pain in the last 2 months with a lump around the upper right abdomen. Abdominal MRI indicated dilation of IHBD, common hepatic duct and CBD to distal, hydrops gall bladder, and dilation of pancreatic duct due to mass of head of pancreas that invades the second part of duodenum and pathology yielded malignant ductal adenocarcinoma. The results of the history, physical examination and examinations revealed that the patient was diagnosed with GOO due to head pancreas cancer. Most cancer patients have no symptoms at an early stage; the symptoms depend on the tumor's location and stage of the disease, including pancreatic cancer.[12] There are some alarm symptoms of pancreas cancer including weight loss, stomach pain, nausea and vomiting, dyspepsia, changes in bowel habits, bloating, jaundice and others.[13] Some less common symptoms of pancreas cancer include thrombosis, panniculitis, liver dysfunction, GOO and others.[14] In our patient, some of the alarm symptoms were reported including rapid weight loss, pain, nausea, vomiting and jaundice.

Evaluation of pancreatic cancer patients should focus on diagnosis and determining the disease stage, resectability assessment, and symptomatic palliative therapy. The staging of pancreatic cancer is based on American Joint Committee on Cancer staging.[14] The MRI of upper abdomen, followed by MRCP showed a mass of head pancreatic, invades the second pars duodenum, including the involvement of the superior mesenteric artery, multiple lymphadenopathies in the paraaortic and therefore the patients with T4N1M0 and the tumor was unresectable.

The patient was weak, had nausea and vomiting especially, sunken eyes, low skin turgor and rapid body weight loss. These symptoms correspond to the manifestations of GOO, which can occur in 10-25% of patients with pancreatic cancer.[15] The main symptoms of GOO in this patient were nausea and vomiting about 30 minutes to one hour after eating. Physical examination shows signs of dehydration and a splashing sound (succussion splash) as a sign of fluid and air retention. In GOO cases, increased of urea and creatinine and electrolyte disturbances can be found.[16,17] GOO can cause significant morbidity including drastic weight loss, malnutrition, dehydration, and electrolyte disturbances and therefore could severely reduce the quality of life (QoL) and causes life-threatening.[18] GOO develops if a primary tumor causes extrinsic compression of the duodenum like in our patient. Non-bilious nausea and vomiting are symptoms of advanced cardinal obstruction. The goals of palliative therapy are to ensure that the patients could maintain oral food intake; reduce nausea, vomiting and pain; therefore improve QoL.[18]

Therapy for pancreatic cancer could vary based on the stage of the disease from surgery to chemotherapy, radiation therapy, or palliative care. The selected option depends on the stage of pancreatic cancer and the judgment of a multidisciplinary approach that includes surgeon, medical oncologist, Gastroenterol-hepatologist, radiologist, and supportive and palliative care specialist.[13,19] Resectable and a borderline resectable tumors have 5-year survival of 10-25% with surgery remaining the only treatment that offers curative potential.[20] For patients with unresectable pancreatic cancer, palliative management plays a major role in increasing the quantity and QoL of the patient. According to World Health Organization (WHO), palliative management is the total active treatment of patients with diseases who do not respond to curative therapy. Control of pain and other symptoms, psychological, social and spiritual problems is essential, with the main objective of achieving the best quality of life (QoL) for the patient and his family.[21,22] Palliative management in patients with pancreatic cancer includes reducing symptoms of biliary obstruction, reducing symptoms of duodenal or gastric outlet obstruction and reducing cancer pain.[9]

Some approaches of palliative management for GOO in patients with pancreatic cancer could be surgery and or palliation endoscopy. Gastrojejunostomy is the gold standard for the management of GOO. This procedure however could cause delayed gastric emptying and 30%-50% of patients still have persistent nausea, vomiting and eating difficulty. Palliation endoscopy can be performed in GOO cases with a success rate is more than 90% and the complications such as perforation, gastrointestinal bleeding, and aspiration pneumonia have been reported between 2% to 12%.[9] In our patient, urgent double bypass biliodigestive laparotomy was performed. Celiac block, loop gastrojejunostomy, cholecystectomy, choledocujejunostomy Roux en Y was performed. The patient showed good progress post-surgery.

The gold standard therapy for GOO is gastrojejunostomy. One study, the SUSTENT trial, compared gastrojejunostomy with stenting. Endoscopic stent insertion was found to have the advantage that patients could immediately start the oral diet. Still, after 30 and 60 days of follow-up, the group that underwent gastrojejunostomy had a better oral intake.[15] Gastrojejunostomy is indicated for patients with a life expectancy of more than 4 months and has a good performance status.[9]

Almost all patients with advanced pancreatic cancer also have complaints of pain. Its management must be a top priority and must be managed aggressively by following pain treatment guidelines.[23] Celiac plexus nerve blocks can be achieved during bypass surgical procedures. These measures help control pain in patients with unresectable diseases.[24,25] The main complaint in our patient was also cancer pain which is getting worse over time. The pain was not related to diet and was only slightly relieved by pain relievers and ulcer medication. The patient was treated with celiac block at the time of the double bypass laparotomy, reducing the pain intensity.

CONCLUSION

At the early of COVID-19 pandemic, a 48-year-old male patient with ductal adenocarcinoma of the caput pancreas T4N1M0 was reported causing significant GOO, a rare but potentially life-threatening complication. The patient had progressive abdominal pain, nausea, vomiting, and abdominal distention requiring immediate decompression. GOO should be included in the differential diagnosis when a patient with advanced

pancreatic cancer presents with upper gastrointestinal obstructive symptoms. Patients with advanced pancreatic cancer usually suffer from many symptoms that interfere with function and worsen QoL. The optimal treatment plan for GOO due to pancreatic cancer requires a multidisciplinary palliative approach even during the pandemic with involvement of division of gastroenterology, surgery, oncology, and palliative care.

PATIENT CONSENT

The patient signed informed consent prior to the study and agreed that the case would be published in an academic journal without revealing the patient's identity.

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DISCLOSURE OF CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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AUTHOR CONTRIBUTION

FR contributed to the study conceptual, data acquisition, clinical data assessment, follow-up of the patient and during manuscript preparation. BW contributed to the study conceptual, data validation and during manuscript revision.

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