Crohn's Disease with Comorbidities of Syndrome of Inappropriate Anti Diuretic Hormone (SIADH) caused by Pulmonary Tuberculosis

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ABSTRACT

Crohn's disease is an inflammatory condition of the intestines characterized by lesions that can affect the entire digestive tract from the mouth to the anus. Globally, the prevalence of inflammatory bowel disease has increased over the past 20 years, rising from 3.32 million cases in 1990 to 4.9 million cases in 2019. Previously, the management of Crohn's disease followed the step-up therapy approach; however, this method led to higher recurrence rates. The current approach utilizes top-down therapy, as research data indicate that the remission rate is 57% with top-down therapy compared to 25% with step-up therapy. Syndrome of Inappropriate Antidiuretic Hormone (SIADH) can be caused by pulmonary tuberculosis. A 44-year-old male patient was diagnosed with Crohn's disease based on a colonoscopy examination, which suggested chronic active colitis with mild activity and crypt distortion consistent with Crohn's disease. An esophagogastroduodenoscopy (EGD) revealed chronic gastritis, while a histopathological examination of the colon confirmed findings consistent with Crohn's disease. The diagnosis of pulmonary tuberculosis was established using a rapid molecular test (TCM) with positive results. Hyponatremia with hypoosmolar euvolemia was diagnosed based on serum sodium levels of 128 mmol/L, serum osmolality of 269 mosmol/L, urine osmolality of 288 mosmol/L, and urine sodium of 73 mosmol/L. Treatment included 5-ASA and anti-tuberculosis medications. Crohn's disease increases morbidity rates and is not limited to developing countries. It is caused by immune system dysregulation, which can predispose patients to secondary infections such as tuberculosis. Pulmonary tuberculosis, in turn, can lead to SIADH.

Keywords: *Crohn's disease, pulmonary tuberculosis, SIADH*

ABSTRAK

Penyakit Crohn adalah suatu kondisi peradangan pada usus yang ditandai dengan lesi yang dapat memengaruhi seluruh saluran cerna mulai dari mulut hingga anus. Secara global, prevalensi kejadian penyakit radang usus meningkat sejak 20 tahun terakhir dari 3,32 juta kasus pada tahun 1990 menjadi 4,9 juta kasus pada tahun 2019. Penatalaksanaan penyakit Crohn dahulu menggunakan prinsip step up therapy, tetapi prinsip tersebut meningkatan angka kekambuhan. Prinsip terapi saat ini menggunakan top down therapy karena berdasarkan data hasil penelitian bahwa angka remisi terjadi 57% pada top down therapy dan 25% pada step up therapy.

Syndrome of inappropriate anti diuretic hormone dapat disebabkan oleh tuberkulosis paru. Laki-laki, usia 44 tahun diagnosis penyakit crohn berdasarkan pemeriksaan kolonoskopi dengan kesan sesuai penyakit crohn,, Esofagogastroduodenoskopi dengan kesan gastritis kronik. Pemeriksaan histopatologi kolon dengan kesan sesuai penyakit crohn. Diagnosis tuberkulosis paru menggunakan tes cepat molekular (TCM) dengan hasil positif. Diagnosis Hiponatremia hipoosmolar euvolemik berdasarkan natrium serum 128 mmol/L, osmolaritas serum 269 mosmol/L, osmolaritas urine 288 mosmol/L, natrium urine 73 mosmol/L. Terapi menggunakan 5-ASA, pemberian obat anti tuberkulosis. Penyakit Crohn meningkatkan angka morbiditas dan bukan hanya terjadi di negara berkembang saja. Penyakit crohn diakibatkan karena disregulasi sistem imun yang berpotensi mengakibatkan infeksi sekunder seperti tuberkulosis. Syndrome of inappropriate anti diuretic hormone yang dapat disebabkan oleh tuberkulosis paru.

INTRODUCTION

Crohn's disease is a condition characterized by inflammation of the intestines, marked by lesions that can affect the entire gastrointestinal tract from the mouth to the anus. [1] Globally, the prevalence of IBD has increased over the past 20 years, from 3.32 million cases in 1990 to 4.9 million cases in 2019, with the age range typically between 20 and 40 years old. [1,2]

Endoscopic examinations play a crucial role in the diagnosis and monitoring of IBD therapy. Colonoscopy is performed to assess inflammation, bleeding, ulcers, and stenosis. Biopsy results can be used for histopathological examination to rule out other causes such as TB.[3] Syndrome of inappropriate antidiuretic hormone (SIADH) is a condition characterized by the increased release of antidiuretic hormone (ADH) from the posterior pituitary gland without normal stimuli to release ADH.[4]

Pulmonary tuberculosis is one of the lung infections that can cause hyponatremia. Tuberculosis (TB) is considered a common disease in developing countries such as Indonesia and can manifest with various clinical presentations. TB can cause hyponatremia through several mechanisms such as local invasion of the adrenal glands (adrenal insufficiency), local invasion of the hypothalamus or pituitary gland, tuberculosis meningitis, and inappropriate ADH secretion through the lungs.[5]

CASE ILLUSTRATION

A 44-year-old man came with a complaint that when he's defecating the feces tend to be watery, slimy and mixed with fresh red blood. The case had been occurring 3 days prior before entering the hospital and had been felt for 1 month. Abdominal pain has been progressively increasing after bowel movements for the past 3 days. Abdominal pain has been present for the past month. Decreased appetite has been noted for the past 3 months. There has been a weight loss of approximately 9 kg over the past 3 months. The fever has been experienced for the past 3 weeks, accompanied by wet cough without blood. Shortness of breath has been present for the past 1 week.

On physical examination, the patient appears moderately ill but alert and oriented with a blood pressure of 125/80 mmHg, pulse rate of 95 beats per minute, respiratory rate of 23 breaths per minute, temperature of 37.3°C, and oxygen saturation of 98% on nasal cannula at 3 liters per minute. His weight is 52 kg with a height of 165 cm, resulting in a body mass index (BMI) of 19.2 kg/m² with a visual analog scale (VAS) score of 4. Auscultation of the chest reveals bronchovesicular breath sounds with fine, loud rales heard bilaterally, especially at the apices of both lungs. Abdominal examination shows a non-distended abdomen with no palpable masses. Rectal examination reveals blood mixed with feces.

Electrolyte examination revealed a sodium level of 128 mmol/L (normal range: 136-145), serum albumin of 2.7 mg/dL (normal range: 3.8-5.0), urea of 15 mg/dL (normal range: 10-50), and random blood glucose of 103 mg/dL (normal range: 50-200). Serum osmolality was measured at 269 defecationmosmol/L, urine osmolality at 288 mosmol/L, and urine sodium at 73 mosmol/L. Chest X-ray showed infiltrates in both lung fields suggestive of active pulmonary tuberculosis. Molecular rapid tuberculosis test was positive. To establish the diagnosis of Crohn's disease, colonoscopy revealed cobblestone appearance consistent with Crohn's disease. Histopathological examination showed findings of mild active chronic colitis with crypt distortion consistent with Crohn's disease. Esophagogastroduodenoscopy revealed chronic gastritis. Fecal acid-fast bacilli (AFB) test was negative. Crohn's Disease Activity Index (CDAI)

scoring yielded a score of 158 indicating mild disease activity. Therapy for the patient includes education, supportive care, pharmacological treatment without surgery. Pharmacological therapy for mild activity Crohn's disease with 5-aminosalicylic acid (5-ASA), specifically mesalazine at 3x500mg orally

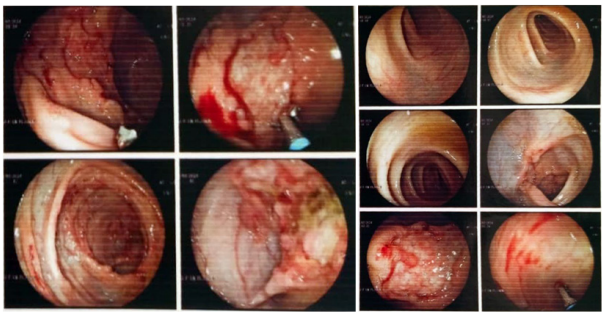

Figure 1. Colonoscopy
Result : Crohn's Disease

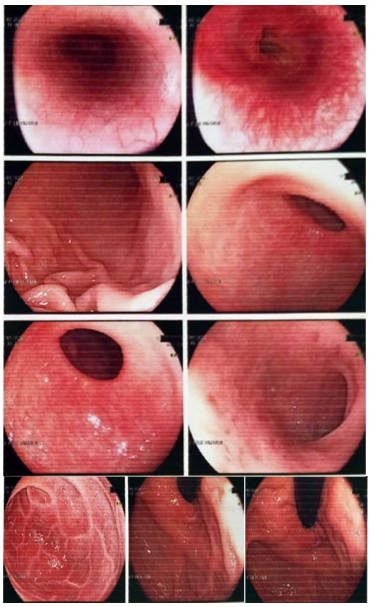

Figure2. Esophagogastroduodenos
Result : Chronic Gastritis

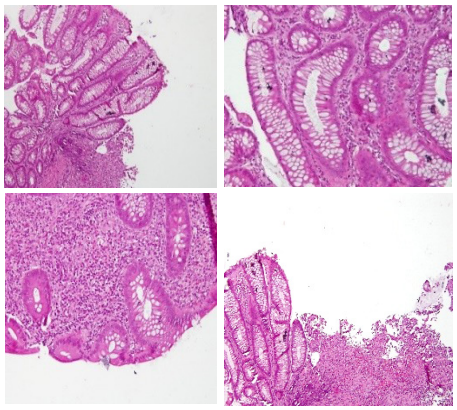

Figure 3. Histopathology Biopsy
Result : Chronic active colitis (mild activity) with crypt distortion is consistent with Crohn's disease

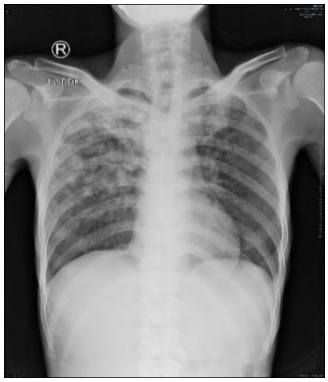

Figure 4. Rontgen thorax
Result : Lung tuberculosis

DISCUSSION

The patient is hospitalized with diagnosis of chronic diarrhea caused by inflammatory bowel disease, specifically Crohn's disease, chronic gastritis, bacteriologically confirmed pulmonary tuberculosis in the intensive phase, euvolemic hypotonic hyponatremia due to Syndrome of Inappropriate Antidiuretic Hormone (SIADH), and hypoalbuminemia due to enteropathy.

The diagnosis was established based on history taking, physical examination, and supporting tests. Serum electrolyte examination revealed sodium levels of 128 (136-145), urea 15 (10-50), creatinine 0.6 (0.8-1.3), and random blood sugar of 103 mg/dl (50-200). The calculation of serum osmolarity was 269 mosmol/L. Serum albumin levels were 2.7 (3.8-5.0), and an elevated erythrocyte sedimentation rate (ESR) of 50 mm/hour (0-10) was found. Urine osmolarity examination revealed 288 mosmol/L. Molecular testing was positive, with negative fecal BTA. Chest X-ray findings were consistent with active pulmonary tuberculosis. Colonoscopy revealed cobblestone appearance suggestive of Crohn's disease, and esophagogastroduodenoscopy showed chronic gastritis. Crohn's disease activity was scored using the Crohn's Disease Activity Index (CDAI) with a score of 158 categorized as mild. Crohn's disease therapy involved mesalazine 3x500mg orally. CDAI scores in the moderate and severe categories may require steroid therapy, either orally or intravenously.[6,7]

Risk factors in patients include smoking, low fiber, and high-fat diet. According to Lee et al., 2015, numerous observational studies have attempted to identify dietary patterns contributing to the risk of IBD. These studies indicate an increased risk of IBD among individuals who consume more meat and fats—particularly polyunsaturated fatty acids

and omega-6 fatty acids—and a lower risk among those with diets high in fiber, fruits, and vegetables. Findings from the European Investigation into Cancer and Nutrition (EPIC) Study and the Nurses' Health Study are particularly notable due to their prospective design. The EPIC study associated greater consumption of linoleic acid (an n-6 polyunsaturated fatty acid [PUFA] present in high concentrations in red meat, cooking oils, and margarine) with a higher incidence of ulcerative colitis.[8,9,10,11]

Chronic diarrhea lasts for more than 30 days. Initially, the patient was suspected of having IBD and intestinal tuberculosis. This differential diagnosis was made because the patient exhibited symptoms of pulmonary TB and had bloody diarrhea. Therefore, the patient underwent sputum TCM examination, fecal BTA examination, and colonoscopy to rule out intestinal tuberculosis.

Crohn's disease and ulcerative colitis share similar characteristics, but they differ in terms of the location and nature of inflammation. The distinction between these two diseases lies in the fact that in Crohn's disease, inflammation can affect any part of the gastrointestinal tract, while ulcerative colitis is characterized by localized inflammation in the colon. Chronic diarrhea, a history of bloody bowel movements, and abdominal pain in the lower left and right quadrants are dominant symptoms in Crohn's disease and were also found in this patient.[12,13]

The patient also exhibits hypoalbuminemia. Hypoalbuminemia in Crohn's disease is caused by protein loss enteropathy. The diagnosis of protein loss enteropathy is established after excluding liver and kidney disorders and malnutrition. Intestinal leakage occurs due to mucosal injury, increased lymphatic pressure, lymphatic channel dilation, and this condition is found in most cases of Crohn's disease.[14]

In some cases with positive pulmonary TB, extrapulmonary TB can be found in about 20%, with 5-10% being intestinal TB, with the most common occurrence in the ileum, ileocecal region, colon, and jejunum, and very rarely involving the rectum and anal canal. The findings on colonoscopy between intestinal TB and Crohn's disease have similarities, where cobblestone appearance resembles granulomatous features, thus biopsy examination is conducted to determine the diagnosis.[15]

Establishing the diagnosis of euvolemic hypotonic hyponatremia caused by SIADH is based on the values of serum sodium, serum osmolality, urine osmolality, and urine sodium that support SIADH. Pulmonary tuberculosis plays a significant role in the occurrence of SIADH.[4,5] The patient showed a good clinical response to 5-ASA therapy, leading to a reduction in diarrhea and abdominal cramping.

CONCLUSION

Crohn's disease shares similarities with intestinal tuberculosis, thus requiring endoscopic examination and histopathological biopsy for differentiation.

Management in this case is based on the assessment of the Crohn's Disease Activity Index (CDAI). With a CDAI score of 158 indicating mild severity, single-agent therapy with 5-ASA is administered. Colonoscopy may be repeated after 3 months of therapy, in case of clinical relapse or inadequate response to treatment.

Euvolemic hypotonic hyponatremia in this case is attributed to SIADH. SIADH can be caused by pulmonary tuberculosis. Top down therapy is more effective from step up therapy. Crohn's disease can make the bodies immune system weak and vulnerable to infection.

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