Massive Pericardial Effusion in Hodgkin's Lymphoma

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ABSTRACT

Pericardial effusion is the presence of fluid in the pericardial cavity due to secretion from the visceral pericardium. It may be caused by virus, bacteria, fungi, tuberculosis, post-inflammation conditions, auto-reactive processes, neoplasm, renal failure, aortal dissection, and hyperthyroidism. Clinical symptoms may take the form of difficulty breathing, orthopnea, chest pain, dysphagia, hiccups, dysphonia, nausea, and bloated abdomen. Physical examination may portray paradoxal pulse, tachypnea, tachycardia, hypotension, and peripheral edema. Radiological findings include enlarged heart, and a heart configuration resembling a water jug. Electrogradiography may demonstrate low voltage, and flat T.

We report a case of a 25 year-old male who was admitted with a complaint of difficulty breathing since four days prior to hospitalization. The difficulty breathing was felt since eight months prior to admission. He had undergone aspiration of fluid from the heart, and received anti-tuberculous treatment. There was cough, white sputum, and night sweats. The patient also suffered from malignancy, and was scheduled for chemotherapy.

Keywords: Pericardial effusion, Pericardiocenthesis

INTRODUCTION

Pericardial effusion is the presence of fluid in the pericardial cavity due to secretion from the visceral pericard.[1] The visceral pericardium is a membrane separated by a small amount of fluid, a plasma ultra-filtrate, from a fibrous sack, the parietal pericardium.[2] Under normal conditions, the maximum amount of pericardial fluid is 50 ml.

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Pericardial effusion may be caused by various clinical conditions such as viral, bacterial, or fungal infection, inflammation, following inflammation, auto-reactive processes, and neoplasm.[3] Pericardial effusion usually occurs due to malignancy (55%), renal failure, infection, radiation, aortal dissection, and hyperthyroidism. Clinical symptoms are often unclear, but if fluid accumulates, there could be an increase in intra-pericardial pressure, pressing the heart, causing symptoms and signs of cardiac tamponade, which requires immediate management.[4]

Clinical symptoms may not be seen during early stages. Extensive pericardial effusion may occur due to mechanical compression of surrounding tissue, such as difficulty breathing due to pressure of the chest (85%), cough due to compression of the bronchus and trachea (30%), orthopnea (25%), chest pain (20%), dysphagia (compression of the esophagus), hiccups due to manipulation of the phrenic nerve, dysphonia due to compression of the laryngeal nerve, and sometimes nausea and feeling of fullness of the stomach.

During physical examination, clinical findings may encompass paradoxal pulse (45%), tachypnea (45%), tachycardia (40%), hypotension (25%), and peripheral edema (20%).[1,5]

In cases of extensive pericardial effusion, several symptoms may be found, including distance heart sound, pericardial friction rub, possible loss of the apex impulse, and Ewart sign (dullness during auscultation of the lower tip of the scapula).

Chest x-ray should demonstrate an enlarged heart if the fluid surpasses 250 ml, with a heart configuration resembling a water jug.[1,2,6] Normal findings do not cross out the possibility of pericardial effusion, and a repeat chest x-ray may be necessary to evaluate whether or not there is an enlarged heart. Electrocardiogram does not demonstrate an exact sign, only a reduction in QRS voltage (low voltage), and a flattened T wave. The form of examination that is considered most accurate, rapid, and commonly used is echocardiography,[1,2] which is also an adequately sensitive and specific non-invasive method

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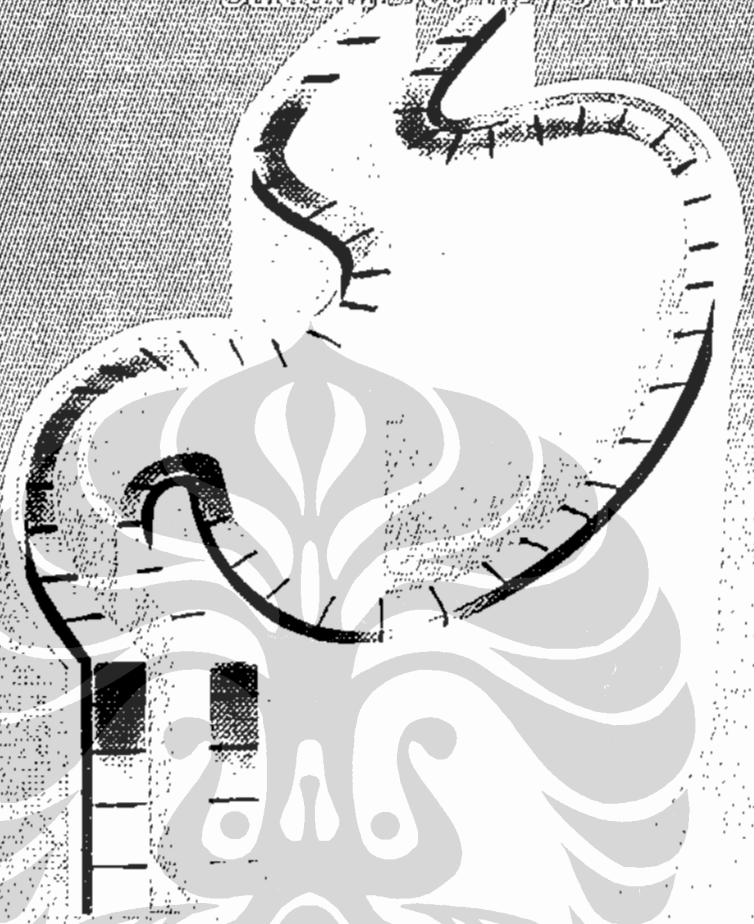

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of examination for the diagnosis of pericardial effusion.

Management of pericardial effusion should take into consideration the presence or absence of haemodynamic disturbances due to increased intra-pericardial pressure and systemic disease or other underlying diseases. Pericardiocentesis should be performed in patients with a complication of cardiac tamponade. The diagnosis of pericardiocentesis by examination of culture and cytology should be conducted to establish a definite diagnosis of malignancy.[7] If there is only very little fluid or a short survival rate, pericardiocentesis should be avoided. Treatment should be focused on the underlying disease.

During malignancy, treatment is controversial. Several literature mentioned systemic chemotherapy, intrapericardial radiotherapy; needle pericardiocentesis; insertion of a percutaneous pericardial catheter; the use of sclerosing agents, chemotherapy, radio-isotope into the pericardial sack with or without drainage, and finally, surgery, by forming a pericardial-pleural window, and rarely, exfoliation of the pericardial layer.[8]

CASE REPORT

Mr. N, 25 years of age, a law student, was admitted to the right wing of the fourth floor of the B in-patient ward of Cipto Mangunkusumo Public Central of Referral General Hospital on October 11th, 2000, with a chief complaint of difficulty breathing since 4 days prior to admission.

Eight months prior to admission, when the patient was in West Irian, he also complained of difficulty breathing, and was escorted to the doctor, who removed 200 cc of fluid from his heart, and then gave him anti-tuberculous drugs that the patient took up to now.

Since 4 months to admission, the patient had complained of difficulty breathing, particularly when inhaling. The patient felt better sitting slumped. He also had a cough and whitish sputum, recurrent fever, and night sweats. The patient was easily fatigued, and he felt more difficulty breathing during activity. He lost 4 kg in 2 months.

One month prior to admission, the same procedure was conducted, where 300 cc of fluid was removed from the heart.

The patient denied any prior history of heart disease. The patient suffered from malaria in elementary school. The patient received anti-tuberculous treatment since February 2000 up to now. He denied any history of intake of alcohol, drugs, traditional herbs or smoking.

During physical examination, we found the patient to be moderately ill, fully conscious, with a blood pressure of 120/80 mmHg, a pulse rate of 84 times/minute, a temperature of 36.7 °C, and a respiratory rate of 22 times per minute. The patient weighed 56 kg and was 173 cm tall. His conjunctiva were not pale, his sclera demonstrated no signs of jaundice, his ear, nose, and throat demonstrated no signs of inflammation, his tongue wet and clean. His jugular venous pressure was 5+3 cm H2O. There was enlargement of the left supraclavicular lymph node, 3x2, 5x0.5 cm. The right border of the heart was 2 fingers to the lateral of the sternal line, the left border 2 fingers lateral of the left mid-clavicle. The first and second heart sounds did not sound distant, there was no murmur, gallop, or friction rub. The patient's breath sounds were bronchovesicular, with loud rales on the right lung, and wheezing in both lungs. The patient's abdomen was flat, soft, his liver/spleen not palpable, there was no abdominal tenderness, and bowel sounds were normal. The patient's extremities were warm, and there was no edema.

Laboratory findings were as follows: Hemoglobin level 13.9 g/dl, leukocyte count 12,600/ul, platelet count 506,000/ul, Hematocryte 39 vol%. The results of blood gas analysis were as follows: (7, 38/30/74/17, 7/18, 6/-6, 5/94). Electrolyte levels were as follows: sodium 133, potassium 5.5, calcium ion 0.4. Electrocardiography demonstrated sinus rhythm, normal QRS, with a heart rate of 100 times/minute, a normal PR/QRS duration, no ST-T changes, poor R at V1-4, persistent S at V5-6, and no right or left ventricular hypertrophy. Chest x-ray taken in West Irian indicated infiltrate, cardiomegaly with pericardial effusion. Echocardiography at the emergency ward demonstrated no pericardial effusion.

In accordance with the clinical and laboratory findings stated above, the following problems were established: pericardial effusion, pneumonia with bronchospasm, pulmonary tuberculosis under treatment, and lymphadenopathy.

Pericardial effusion was established based on difficulty breathing, and frequent fatigue. In February and September, fluid was removed from the patient's heart in West Irian. During physical examination, the patient was found with increased jugular venous pressure, and cardiomegaly. Chest x-ray demonstrated cardiomegaly with a suspicion towards pericardial effusion. Echocardiography demonstrated pericardial effusion. Pericardial effusion was suspected to be due to specific processes, possibly due to another cause such as lymph node malignancy. The patient was scheduled for pericardiocenthesis.

Pneumonia with bronchospasm was established based on cough, difficulty breathing, fever, rales +/+,

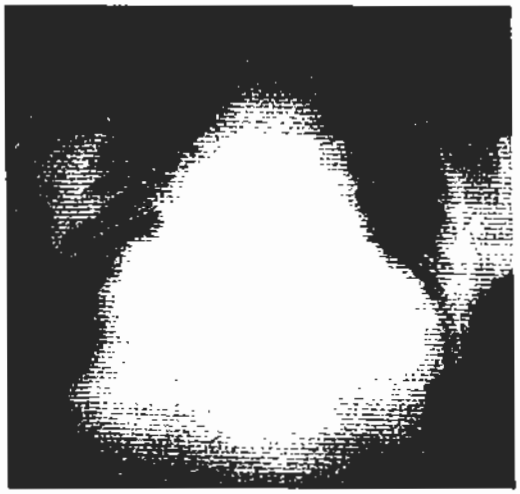

Figure 1a.

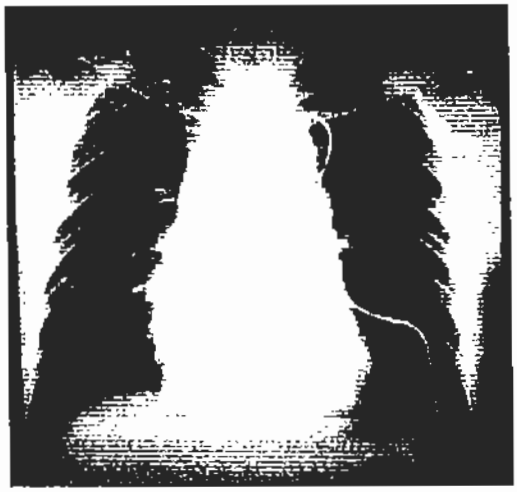

Figure 1b.

wheezing +/+, Leukocyte count 12,600/ul, chest x-ray: infiltrate (+). The patient was scheduled for sputum culture and antibiotic resistance test. The patient was treated with 2 liters of O2 per minute, 1 x 2 grams of Ceftriaxone, 3 x 8mg of bromhexin, and inhalation of phenotherol: NaCl 0.9%: bromhexin every 6 hours.

The problem of pulmonary tuberculosis under treatment was established based of cough, fever, night sweats, and weight loss. The patient received anti-tuberculous treatment since February 2000 (8 months), there was loud rales in the upper right lung. The patient was scheduled for sputum evaluation for acid-fast bacilli, ESR, TB PAP, Mantoux (tuberculin) test, and liver function tests. The patient was treated with 2RHZE 4RH 600 mg/300 mg/1000 mg/1000 mg, 3 x 10 mg tablet of B6 vitamin, 3 x 10 mg of prednisone.

The problem of lymphadenopathy was established based on enlargement of the left supraclavicular lymph node. The condition was thought to be due to a specific process, with a differential diagnosis of malignancy. The patient was scheduled for biopsy.

On the third day of treatment the patient underwent echocardiography, pericardiocenthesis removing 1350 cc of fluid, fluid analysis and acid-fast bacilli and microorganism evaluation as well as culture and antibiotics resistance test of the exudate. No malignant cells were found: After the procedure, the patient felt more comfortable, with less difficulty breathing.

Since the results of 3x sputum evaluation for acid-fast bacilli turned out to be negative, tuberculous PAP (+), Mantoux test (-), and no clinical improvement was found after over 6 months of anti-tuberculous treatment, another possible cause was suspected, in this case malignancy. Thus, the patient was advised to undergo examination for LDH and uric acid, with the following results: LDH 507, uric acid 9.7. The patient received additional treatment with allopurinol, and a low-purine diet, with a suspicion towards a malignant process. Biopsy of the supraclavicular lymph node demonstrated histological findings resembling that of Hodgkin lymphoma, and the patient was advised to undergo immunological smear to establish the diagnosis. Since during echo cardiographic evaluation there was still a great number of fluid, during the subsequent treatment, a pig tail was inserted to remove the fluid in the cavity, as well as cytological evaluation at the subdivision of hematology (cyto-spin) with unclear findings of whether or not there were malignant cells. Immunohistochemical evaluation with CD 15 and CD 30 was in accordance with Hodgkin lymphoma, type nodular sclerosis. The patient underwent preparations for staging, and was scheduled for chemotherapy. The patient's pneumonia improved after 2 weeks of treatment. Anti-tuberculous treatment was terminated after immunohistochemical findings, and prednison treatment was taperred off. The patient was scheduled for COPP hybrid chemotherapy/DBV.

DISCUSSION

At the time of admission, the problem of pericardial effusion could already be established. With prior history of anti-tuberculous treatment and clinical symptoms associated with a specific process, in the beginning, the patient was thought to suffer from pulmonary tuberculosis with extra-pulmonary tuberculosis in the form of lymph node and pericardial tuberculosis. However, evaluation and supporting examinations do not demonstrate the presence of a tuberculous process. On the other hand, histological examination demonstrated a tendency towards

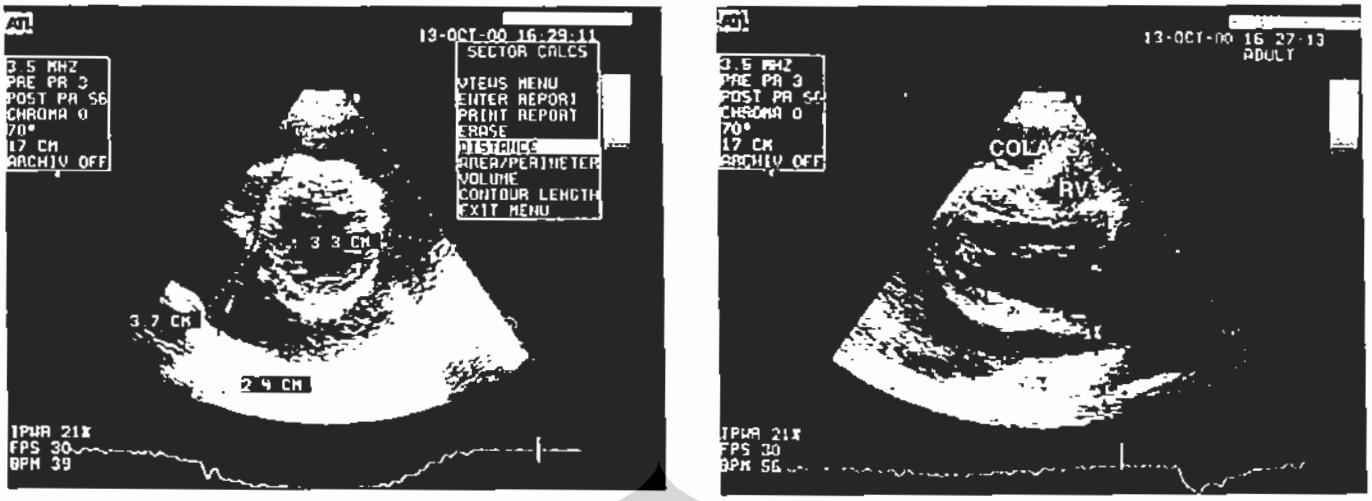

Figure 2a.

malignancy, in this case Hodgkin lymphoma, proven by immunohistochemical examination. This condition is in accordance with literature that demonstrate a high prevalence rate for pericardial effusion due to malignancy, 30% in pulmonary malignancy, 23% in breast cancer, 17% in lymphoma, and 9% in leukemia.[9] The possibility of malignancy as the cause of pericardial effusion should be suspected if treatment for specific process does not induce the expected response to treatment within a certain time frame. In this case, the patient had received anti-tuberculous treatment for almost 9 months, without demonstrating any clinical improvement.

There is a possibility of pneumonia as a complication of malignancy, usually due to a reduced immune response as a result of nutritional disturbances. This patient's condition was clinically under control. The results of microbiological sputum culture should aid towards the establishment of the diagnosis.

In lymphadenopathy patients suspected with pulmonary tuberculosis, we should first eliminate the possibility of malignancy, or in other words, we should first establish that the lymph node enlargement is due to a specific process, particularly in patients whom not responed to antituberculosis treatment. Thus, biopsy is needed for histopathological evaluation, which in this patient revealed suspicion towards malignancy.

Uric acid evaluation demonstrated an increase, possibly due to tumor lysis syndrome, even though the possibility of it being due to anti-tuberculous treatment still cannot be eliminated. Pirazinamide inhibits uric acid excretion, thus uric acid levels may be increased.[10] Administration of 100 mg of Allupurinol for 1½ months turned out to be inadequate to reduce uric acid levels. Thus, an increased dose was needed.

The principle of treatment was supportive. Even though the results of the cytological evaluation of the supraclavicular node did not demonstrate Reed-Steinberg cells, the possibility of Hodgkin lymphoma still could not be eliminated. Immunohistochemical evaluation demonstrated atypical datia cells with a positive reaction towards CD 15 and CD 30, which was in accordance with the nodular sclerosis type of Hodgkin lymphoma.[11]

Cytological evaluation of pericardial fluid did not reveal malignant cells, even after the examination was repeated several times. Literature state that the sensitivity and specificity of cytological evaluation of pericardial fluid is 92% and 100%.[12] Whether this finding is related to the technique of evaluation or the amount of fluid being examined is still unclear.

The standard treatment scheduled for this patient is hybrid COPP DBV: chlormetin, vincristine, procarbazine, prednisone, doxorubicine, bleomycine, and vinblastine.

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