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MANAGEMENT OF MAUGNANT PERICARIMAL EFFUSION WITH TETRACYCLINE INDUCED PERICARDIODESIS

Pages with reference to book, From 20 To 22

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Clinically evident cardiac involvement due to malignancy is uncommonly encountered. In autopsy series, however, involvement of the heart has been observed in 5.1% of the patients with advanced cancer. Pericardium is most frequently involved. Pericardial involvement usually presents as pericardial effusion. Depending upon the rapidity of the process, pericardial effusion may remain asymptomatic on one hand or present with life-threatening cardiac tamponade on the other. Patients presenting with cardiac tamponade require immediate pericardiocentesis which affords rapid relief of symptoms. Long term management of these cases, however, is difficult and controversial. We recently had two patients presenting with symptomatic pericardial effusion who after pericardiocentesis underwent tetracycline induced pericardiodesis. On follow-up neither has recurrence of the pericardial effusion.

CASE REPORTS

Case 1

A 42 years old male was admitted with acute onset of dyspnea. He had history of cough with whitish expectoration and occasional hemoptysis. Chest x-ray, done 6 weeks ago, showed a large right hilar mass. A transbronchial biopsy performed elsewhere showed poorly differentiated carcinoma. He had twenty pack year history of smoking. On examination he was afebrile with respiratory rate of 39/min and pulse rate of 150 /min. He had marked clubbing, distended neck veins, distant heart sounds and decreased chest wall expansion with bilateral wheezing. Haemogram showed neutrophilic leucocytosis. Electrolytes and renal functions were normal. ECG had no abnormality. X-ray chest showed globular cardiomegaly and a right hilar mass. Echocardiogram confirmed the clinical suspicion of a large pericardial effusion. On pericardiocentesis, 1.5 L of bloody fluid was removed and drainage tube was left in the pericardial space. Cytologic analysis of the fluid confirmed malignancy, most likely large cell carcinoma. Once catheter drainage decreased, 1.5 g of tetracycline was instilled into the pericardial cavity. Catheter was clamped for 4 hours. After unclamping, fluid was drained and catheter was pulled out next day. Patient tolerated the procedure well and was discharged after two days. Follow-up in the oncology clinic revealed a rapid increase in the size of the hilar mass. He was treated with chemotherapy but did not respond and died after six weeks of follow-up. During this time period, he had no clinical or radiologic recurrence of the pericardial effusion.

Case 2

A 45 years old female was brought to the emergency room in shock. She had a history of vomiting and haematemesis for the past 2 days and chest pain for the last 6 months. X-ray chest showed a round opacity in the right mid zone and she was being treated with anti-TB drugs. On examination, extremities were cold and clammy, respiratory rate was 40/min, pulse was rapid and feeble and BP was unrecordable. Her neck veins were distended and heart sounds were muffled. Investigations revealed leucocytosis, high anion-gap, metabolic acidosis, slightly raised creatinine and normal liver profile. ECG had low voltage. X-ray chest showed massive cardiomegaly with a right mid-zone opacity. Echocardiogram confirmed the presence of pericardial effusion. Immediate pericardiocentesis was

performed with removal of 500 ml of bloody fluid followed by creation of a pericardial window and a drainage tube was left in the pericardial cavity. Fluid was cytologically positive for large cell carcinoma. Pericardial biopsy confirmed metastatic large cell cancer with strong positivity for estrogen receptors. Pericardiodesis was performed with 1.5 g of tetracycline followed by removal of the catheter. Although her breast examination was normal, due to estrogen receptor positivity, she was started on Tamoxifen. Presently she has been followed for the last 8 weeks in the oncology clinic without any recurrence of the pericardial effusion. Lung opacity remains unchanged. Patient is fully functional.

DISCUSSION

Involvement of the heart with cancer occurs in 5.1 % of all patients with advanced cancer at the time of autopsy. In approximately two-thirds of these cases, it remains undiagnosed during life. Pericardium is most commonly involved, solely so in 45% of the cases¹. It usually manifests as pericardial effusion. Malignant pericardial effusion is due to carcinomas of lung or breast in 75% of the cases, rest maybe due to leukemias, lymphomas, melanoma, sarcoma and G.I. tumours. Thirty five percent of patients with lung cancer² and 25% of those with breast cancer³ may have pericardial involvement at autopsy. Symptomatic pericardial effusion however occurs uncommonly and is usually a pre-terminal event. Malignant pericardial effusion develops due to the obstruction of lymphatic and venous drainage by the tumour cells. Development of symptoms depends upon the rate of accumulation of fluid, volume of fluid and function of the underlying heart. A slowly developing symptomatic pericardial effusion may mimic congestive cardiac failure due to other causes. Rapidly developing effusion may present with acute dyspnea, chest pain, hypotension, jugular venous distension, distant heart sounds, pericardial rub and cardiomegaly. Congestive hepatomegaly, ascites and leg edema may also be present. Presence of pulsusparadoxus is highly suggestive of cardiac tamponade. Chest x-ray is very helpful in making the diagnosis and ECG may show low voltage, tachycardia and arrhythmias. However, echocardiography remains the most valuable tool for the demonstration and quantitation of the pericardial effusion. It is simple, sensitive, non-invasive and can be performed at the bed side. Immediate management of symptomatic pericardial effusion is by echocardiographically guided pericardiocentesis. It has a high yield, complication rate is low and provides rapid symptomatic relief. Fluid is mostly exudative, bloody and cytologically positive in majority of the cases. Pericardiocentesis with indwelling catheter drainage is frequently effective in controlling pericardial effusions for short time periods⁴, but relapses occur after pericardiocentesis alone and surgical procedures may become necessary³. Radiotherapy was once used very frequently for the long term management of these cases⁵ but is now mostly reserved for cases of refractory pericardial effusions in patients with lymphomas. Surgical procedures for the management of malignant pericardial effusion include the creation of draining pericardial window⁶ or pericardiectomy⁷. These procedures are very effective, and also provide the histologic diagnosis but have higher complication rate including secondary infection (40%) and atelectasis with pleural effusion (35%). These procedures are usually reserved for the patients who are refractory to other measures. Instillation of sclerosing agents into the pericardial space to decrease the relapse of pericardial effusion has been reported in many studies. Although other agents (bleomycin, thiopeta, quinacrine, nitrogen mustard, vinbiastine etc)^{8,9} have also been used, tetracycline appears to be most effective and least toxic^{10,11}. Tetracycline instillation has been reported to be effective in preventing a recurrence of pericardial effusion for a mean of 120 days in 75% of the patients. Our patients, after initial drainage, underwent pericardiodesis with 1.5g of tetracycline. The procedure was very well tolerated and no complications were observed. One patient has died after six weeks, other is alive at 8 weeks, both without recurrence of pericardial effusion. We conclude that the induction of pericardial sclerosis by

instillation of tetracycline into the pericardial space maybe a safe and effective method for controlling malignant pericardial effusions.

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