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Clinical Trial Summary

Intrapericardial Instillation of Bleomycin in the Management of Malignant Pericardial Effusion

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INTRODUCTION

MALIGNANT PERICARDIAL EFFUSIONS have been found at *post mortem* to occur in up to 21% of patients dying of cancer [1]. Lung cancer and breast cancer are the most common primary tumors associated with a malignant pericardial effusion [2]. Although the majority of the patients are asymptomatic, the progressive accumulation of pericardial effusion can lead to a severe hemodynamic deterioration. In recent years treatment has been focused mainly on the intracavitary administration of sclerosing agents as was reviewed by Shepherd *et al.* [3]. In this report five patients are described with a symptomatic malignant pericardial effusion treated with intracavitary instillation of bleomycin.

CASE REPORTS

In all cases under echocardiographic guidance, an indwelling catheter was inserted in the pericardial space followed by complete drainage of the pericardial fluid. Bleomycin 20–30 mg dissolved in 30 ml normal saline was instilled and the catheter clamped for 4 h, after which the pericardium was again allowed to drain via the catheter. The catheter was not removed until the pericardial drainage was <25 ml during 12 h, thus ensuring that the pericardial space was dry. This last finding had to be confirmed by a repeated echocardiography. In most instances the catheter could be removed after 24 h. Indomethacin was given prophylactically to all patients to prevent bleomycin-induced fever. In only one patient with a large pericardial effusion was a repeated instillation given 24 h after the first adminstration of bleomycin. During follow-up, physical examination and chest X-rays were routinely performed and occasionally an echocardiogram. Patient characteristics and results are summarized in Table 1.

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Until now four of the five patients have died of progression of the primary tumor without a relapse of the pericardial effusion. *Post mortem* examination was done in three of the four patients and in all these cases no fluid was found in the pericardium.

DISCUSSION

In the management of symptomatic malignant pericardial effusion the intracavitary administration of various sclerosing agents is considered to be the treatment modality of choice. The creation of a pericardial–pleural window or a pericardiectomy should be reserved for those patients with a treatment failure.

Tetracycline is the most commonly used drug in the treatment of malignant pericardial effusion with a response rate of 68–91% [3, 4]. One of the main disadvantages of tetracycline instillation is that it may cause severe retrosternal pain. In some instances antineoplastic drugs such as cisplatin and VM26 have been used in the management of malignant pericardial effusions [5, 6]. The disadvantage of these agents is that systemic toxicity may occur.

Bleomycin has proven to be an equally effective agent as tetracycline in the management of pleural effusions [7]. Although bleomycin theoretically may have a local cytotoxic effect, it probably causes an inflammatory reaction, thus producing a chemical pericardesis. Furthermore, bleomycin is not myelosuppressive, has a low incidence of side-effects and seems not to cause loculation. To our knowledge, only five cases have been reported in the literature about the use of bleomycin for malignant pericardial effusions by three different groups [8–10]. In all these reports the information given was insufficient to evaluate the use of bleomycin in the management of malignant pericardial effusion. In spite of the limited number of patients treated, bleomycin seems to be an effective and non-toxic drug in the management of malignant pericardial effusions, which warrants a more widespread use.

Table 1. *Patient characteristics and results*

	Patient				
	1	2	3	4	5
Age and sex	72,F	54,F	23,F	49,M	57,M
Primary tumor	Lung	Breast	Lung	Esophagus	Lung
Total fluid removed (ml)	450	1000	700	700	1830
Pericardial cytology	+	+	+	+	+
Total bleomycin dose (mg)	20	20	30	30	30
No. of instillations	1	1	1	1	2
Side-effects	None	None	None	None	None
Systemic treatment	No	No	Yes	No	Yes
Recurrence of effusion	No	No	No	No	No
Survival (months)	3	5	1	3+	29
Autopsy	Yes	Yes	Yes	—	No

REFERENCES

1. Theologides A. Neoplastic cardiac tamponade. *Sem Oncol* 1978, **5**, 181–192.
2. Wilding G, Green HL, Longo DL, Urba WJ. Tumors of the heart and pericardium. *Cancer Treat Rev* 1988, **15**, 165–181.
3. Shepherd FA, Ginsberg JS, Evans WK, Scott JG, Oleksiuk F. Tetracycline sclerosis in the management of malignant pericardial effusion. *J Clin Oncol* 1985, **3**, 1678–1682.
4. Davis S, Rambotti P, Grignani F. Intrapericardial tetracycline sclerosis in the treatment of malignant pericardial effusion: an analysis of 33 cases. *J Clin Oncol* 1984, **2**, 631–636.
5. Ostrowski MJ, Halsall GM. Intracavitary bleomycin in the management of malignant effusions: a multicenter study. *Cancer Treat Rep* 1982, **66**, 1903–1907.
6. Figoli F, Zanette ML, Tirelli U *et al.* Pharmacokinetics of VM26 given intrapericardially or intravenously in patients with malignant pericardial effusion. *Cancer Chemother Pharmacol* 1987, **20**, 239–242.
7. Markman M, Howell SB. Intrapericardial instillation of cisplatin in a patient with a large malignant effusion. *Cancer Drug Deliv* 1985, **2**, 49–52.
8. Wei JY, Taylor GJ, Anchuff SC. Recurrent cardiac tamponade and large pericardial effusions: management with an indwelling pericardial catheter. *Am J Cardiol* 1978, **42**, 281–282.
9. Maher ER, Buckman R. Intrapericardial instillation of bleomycin in malignant pericardial effusion. *Am Heart J* 1986, **111**, 613–614.
10. Woll PJ, Knight RK, Rubens RD. Pericardial effusion complicating breast cancer. *J R Soc Med* 1987, **80**, 490–491.