# ETIOLOGICAL SURVEY IN 112 PATIENTS WITH PERICARDIAL DISEASE: A RETROSPECTIVE STUDY

Hossein Ahmadi,* MD, Manouchehr Rahbar,** MD, Hamid Mirkhani,* MD, and Mansoor Jamali,** MD

*Abstract–This work is a retrospective study of 112 patients who had undergone pericardiectomy in Imam-Khomeini Hospital, in 1983-1994. The patients were categorized into groups A and B. There were 48 patients in group A whose etiology was known before operation, such as uremia, infection, and malignancy. Group B consisted of 64 patients. The cause of pericardial disease could not be ascertained in group B and therefore, constrictive pericarditis prompted us to perform pericardiectomy. Pathologic findings of pericarditis were attributed to tuberculosis only in 6 (9.4%) of the cases in group B. Acta Medica Iranica 33(3&4): 100-102; 1995.*

*Key words: constrictive pericarditis*

## INTRODUCTION

Pericardium as an anatomical entity has been mentioned and described since the time of Hippocrates. Controversies, however, exist regarding management of the disease. In this study the emphasis was to etiologically demarcate pericarditis specially the chronic constrictive pericarditis (CP) (1) which is the tragic end to a chronic inflammation. The process culminates in fibrosis and in thickened pericardium surrounding the heart. This process results in limiting of diastolic ventricular filling and cardiac output (2,3). In the majority of patients, the cause of constrictive pericarditis is unknown. Previously, tuberculosis was known to be the leading cause (4), but almost any infectious process may initiate dense pericardial scarring (5,6,7). A definitive surgical approach is imperative in managing cases of CP.

## MATERIALS AND METHODS

Between 1983 and 1994 a total of 112 patients (60 male and 52 female), underwent pericardiectomy. The age range was 7 to 69 years. The patients were categorized into groups A and B. Group A consisted of 48 patients with established etiology before the scheduled operation . Group B comprising 64 patients with CP in whom the etiology could not be confirmed before operation.

Postoperatively, the pericardium specimen were studied by a pathologist. Among the group B patients only 9.4% had granulomatous reaction in the pericardium and 6% had necrotizing granulomatous reaction. All the patients in this group had received antituberculosis treatment for two weeks prior to operation and only patients with granulomatous reaction of the pericardium had to complete the full treatment of tuberculosis postoperatively.

Management of two patients with purulent bacterial pericarditis was systemic antibiotic therapy and tube drainage of the pericardium by irrigation with 0.5 % betadine solution (5,6,7). Two patients with uremic effusive constrictive pericarditis were operated on; a pericardiectomy was performed and resection of the pericardium was carried out. In case of pericardial malignancy involvement, TNM staging to surgery was done.

## RESULTS

Pericardiectomy in purulent pericarditis and uremic effusive constrictive pericarditis had excellent short and long term results (8). In malignant lesions of the pericardium, the mortality rate was 10% and overall survival, less than 2 years.

In group B, mortality rate was 8% and 1 to 10 years follow-up revealed excellent long-term results among survivors. Twenty percent of patients in this group who had symptoms of severe CP lasting 3-4 years or longer, had post-operative complications of greater intensity and a mortality rate that ranged from 20 % - 25 %. Post-operatively, these patients did show little improvement as far as symptoms or grading of functional class were concerned. Those who had clinical history of CP for 1-2

*Assistant Professor, **Associate Professor, Department of Cardio-thoracic Surgery, Imam-Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran.

years had optimal improvement in their functional class and a low mortality rate. The patients who had clinical history of less than 12 months duration, had the best-results and the least complications without hospital mortality. Pericardiectomy in patients with 6-12 months of CP clinical history was easier as far as surgery was concerned (9).

## DISCUSSION

Purulent bacterial pericarditis usually results in constrictive pericarditis quickly once the pericardium is free of bacteria by drainage (10) and irrigation. It is wise to schedule the patient for pericardiectomy, since the operation is technically easier at this stage and has less complication (7).

Tamponade caused by uremic pericardial effusion should not be evacuated with needle aspiration, because fragility and a bleeding tendency can make it hazardous and lead to death due to intrapericardial bleeding (11). As these patients are critically ill, partial pericardiectomy may not be possible, but pleuropericardial window would be a better option. Follow-up of the patients with a history of chest irradiation is necessary because it may result in constrictive pericarditis (12). If constriction and effusion of the pericardium are due to inoperable tumors, and there are hemodynamic disturbances, pleuro-pericardial window or sometimes partial pericardiectomy are helpful. Invasion of operable tumors of the pericardium can be resectable en-block. Chronic constrictive pericarditis without treatment results in degenerative changes (13,14,15,16) and irreversible damage of the myocardium necessitates operation within one year.

There are several diseases that can cause a granulomatous reaction with or without necrosis (Table 1). It is not wise to treat all the patients in this category with antituberculosis drugs (3,15,16,17,18). This malpractice is common in this country because tuberculosis is endemic.

**Table 1.** Granulomatous disease of pericardium.

| Granulomatous without necrosis | Granuloma with noncaseous necrosis | Granuloma with caseous necrosis |
|---|---|---|
| Brucellosis | A typical TB fungal Infection | Tuberculosis |
| Rheumatismal nodule | Lipoid necrosis | Histoplasmosis |
| Toxoplasmosis | Wegener's disease | Pasteurella tularensis |
| Whipple' disease | Loefler's disease | |
| Sarcoidosis | Rheumatiod arthritis | |

## CONCLUSION

In patients with suppurative pericarditis, it is wise to do pericardiectomy once their suppuration is eliminated by drainage and irrigation, making the surgical technique much more possible and the outcome much better. In patients with tamponade, due to uremic pericardial effusion, needle aspiration is risky, however partial pericardiectomy or establishment of a pleuropericardial window is the management of choice.

In group B, among 48 patients with CP, only 9.4% of them had granulomatous reaction with or without necrosis in the pericardium. Since we could not rule out other causes of granulomatous reaction we continued the complete course of antituberculous treatment in these patients.

## REFERENCES

1. Killian DM, Furiasse JG, Scanlon P. Constrictive pericaritis after cardiac surgery. Am Heart J **118:** 563-565; 1989.

2. Lorell BH, Grossman W. Profiles in constrictive pericarditis and cardiac tamponade. Cardiac catheterization and angiography. 3rd Edition. New York: Lea & Febiger; 1986: 164-198.

3. Callahan JA, Sweard JB, Tajid AJ. Cardiac tamponade: pericardiocentesis directed by 2D echo. Mayo Clinic Proc **60:** 344-346; 1985.

4. Perzypadki DWA. Two cases of tuberculosis pericarditis, diagnosis difficulties. Pneumol Alergol **618:** 291-294; 1993.

5. Sato TT, Ashbauch A. Diagnosis and management of pericardial abscessin trauma patients. Am J Surg **165** (5): 984-991; 1991.

6. Chung HW, Chin KT. Acute purulent pericarditis, clinical experience with primary pericardiectomy plus continuous pericardium lacage. China **30:** 140-145; 1992.

7. Adebo OA. Purulent pericarditis in children (letter to editor). J Thorac Cardiovasc Surg **88:** 312-315; 1984.

8. Mills SA, Julian S. Subxyphoid pericardial window for pericardial effusive disease. J Cardiovasc Surg **30:** 368-370; 1989.

9. Nataf P, Cacoub P, Doreni R, Jault F. Results of subtotal pericardiectomy for constrictive pericarditis. Eur J Cardio-thoracic Surg 7 (5): 252-255; 1993.

10. Kean D, Jackson G. Managing reccurrent malignant pericardial effusion. BMJ **26:** 305-307; 1992.

11. Susini G, Pepim S. Percutaneous pericardiocentesis versus subxyphoid pericardiectomy in cardiac tamponade. J Cardio-vasc Anesth 7 (2): 178-183; 1993.

12. Brsuca A, Orzan R, Figliomeni MC. Cardiopathy due to therapeutic irradiation of thorax, the diagnostic criteria. Cardiologia **38** (3): 163-172; 1993.

13. Vandevanter SH, Frame SK, Pederson RC. Surgical

treatment of precarditis in the dialysis patient. Am J Surg **144:** 800-803; 1983.

14. Devaleria PA, Baumgariner AS, Cameron G. Current indication, risks and outcome after pericardiectomy. Ann Thorac Surg **52:** 219-222; 1991.

15. Herlein FW, Sterimann WA, Roth M. Constrictive pericarditis surgery with or without heart lung machine. Arch Chireongressed (supp) 488-493; 1992.

16. Astudillor R, Ivert T. Late results after pericardiectomy for constrictive pericarditis via left thoracotomy. Scand J Thorac Cardiovasc Surg **23:** 115-118; 1989.

17. Kirklin JW, Barratt-Boyes BG. Pericardial diseases. 2nd edition. New York: Churchill-Livingstone; 1993: 1695-2005.

18. Kenneth L, Ain B. Pericardial diseases. Glnn's thoracic and cardiovascular surgery. 5th edition. U.S.A.: Prince-Hall; 1991: 1977-1978.