Patient Characteristics and Predictors of Mortality Associated with Pericardial Decompression Syndrome

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Patient Characteristics and Predictors of Mortality Associated With Pericardial Decompression Syndrome

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Abstract

Pericardial decompression syndrome (PDS) is a rare and potentially fatal complication of apparently successful pericardiocentesis, characterized by paradoxical hemodynamic deterioration, ventricular dysrythmia and pulmonary edema. We sought to elucidate clinical factors associated with mortality in patients with PDS.

Methods

A systematic review of all cases of PDS reported in PubMed was performed since the first reported case in 1983. All cases with abstracts available in English language were collected and reviewed. A case of PDS from Thomas Jefferson University Hospital (TJUH) was added to a total of 34 cases. We collected baseline clinical variables, echocardiographic and hemodynamic variables, method of drainage (needle versus surgical drainage), amount of fluid drained, and clinical outcomes. T-test and Fisher’s exact test were used for analysis of continuous and categorical variables, respectively.

Results

A total 34 cases (male 22, female 12) were identified. Needle pericardiocentesis was performed in 18 patients, while surgical drainage was performed in 16 patients. Overall mortality was seen only after surgical drainage and the association was statistically significant (p<0.001). Thirty cases reported the amount of effusion drained, the mean amount was 902 ± 404 mL. The minimum drained effusion was 150 mL. The onset of PDS after the procedure varied widely, ranging from immediately to 48 hours. Cardiogenic pulmonary edema without shock, left ventricular diastolic collapse in parasternal long axis view, mean pulmonary artery pressures with preserved cardiac output, and right ventricular hypokinesia were present in all cases.

Conclusion

PDS is a rare complication of pericardiocentesis with a high mortality rate. Associated with mortality in PDS.

Etiology of Pericardial Effusion

- Portal hypertension
- Coagulopathy
- Cardiac tamponade
- Pulmonary edema
- Valvular dysfunction
- Malignancy

Association with mortality in PDS by route of drainage

- Surgical Drainage (21%)
- Needle Drainage (7%)
- Overall (28%)

Limitations

- This is a retrospective series of reported cases and has inherent biases related to such studies.
- The sample size is small secondary to low incidence of PDS.
- There is possible publication bias as milder cases may not have been reported, and hence the reported cases may not represent the overall patient population.
- The reported cases of PDS in our series may be a heterogeneous group of disorders due to lack of standard definition and diagnostic criteria for PDS.
- Decision for needle pericardiocentesis versus surgical drainage was unknown.

Conclusions

- PDS is a rare complication of pericardiocentesis with a high mortality rate.
- Surgical drainage was the only predictor of mortality associated with PDS (p<0.001).

Disclosure Statement

All the authors have read and approved the content of this paper. None of the authors have potential conflicts of interest or a relationship with industry to disclose.