Original Article

Characteristic of Pericardial Effusion Patient based on Age, Gender, Cytological and Clinical Diagnosis at SMF Pathology Anatomy Hasan Sadikin Bandung Hospital in 2009-2013

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Abstract

Background: Pericardial effusion is a common condition in clinical practice. Manifestation of effusion depends on its causes and the underlying diseases as well as influenced by patient's characteristics and geographical location. This study was conducted to determine the characteristic of pericardial effusion patient based on age, gender, cytological and clinical diagnosis.
Method: The study was conducted using descriptive retrospective method. The data collected was medicalrecord ofpericardial effusion patients for 5 years from 1st January 2009 to 31st December 2013. This study was conducted in SMF Pathology Anatomy Dr. HasanSadikin General Hospital Bandung. Fifty four cases were collected as samples through total sampling technique. The variables were age, gender, cytological diagnosis and clinical diagnosis.
Results: Pericardial effusion mostly occurred in 21-30 years old. Pericardial effusion is more common in man than woman. Based on the type of cytology, the most common pericardial effusion was non-specific inflammation. The most common clinical features of patients is tuberculous infection.
Conclusions: Pericardial effusion frequently occurred in 21-30 years old. Based on gender, pericardial effusion is not significantly distributed between male and female. Basesd on cytological diagnosis, pericardial effusion is mostly diagnosed as nonspesific inflammation type. The manjority of clinical feature of pericardial effusion is tuberculosis infection.
Keywords: age, clinical diagnosis, gender, pericardial effusion, type of cytological diagnosis

Latar belakang: Efusi perikardial adalah kondisi yang sering ditemukan di praktik klinis. Manifestasi efusi bergantung pada penyebab dan penyakit penyerta serta dipengaruhi oleh karakteristik dan lokasi geografi pasien. Penelitian ini bertujuan untuk mengetahui gambaran pasien efusi perikardial berdasarkan usia, jenis kelamin, diagnosis sitologi dan klinis.
Metode: Penelitian dilakukan dengan metode deskriptif retrospektif menggunakan data rekam medis pasien efusi perikardial selama 5 tahun, yaitu 1 Januari 2009 sampai dengan 31 Desember 2013. Penelitian dilakukan di SMF Patologi Anatomi RSUP Dr. Hasan Sadikin Bandung. Sebanyak 54 kasus diambil dengan cara total sampling pada penelitian ini. Variabel data yang digunakan adalah usia, jenis kelamin, jenis diagnosis sitologi dan kondisi klinis.
Kata kunci: efusi perikardial, diagnosis klinis, jenis diagnosis sitologi, jenis kelamin, usia

Introduction

Pericardial effusion is a common condition in clinical practice.1Pericardial effusion is frequently found in infectious disease, cancer, collagen disease, pericarditis, acute myocardial infarct, late stage of kidney disease, heart failure, and heart diseases and as complication of medical intervention such as operation and other cardiac intervention.1Annual incidence and prevalence of pericardial effusion is 3% and 9% from 2000 to 2005 in Italy.[2] Tuberculosis infection is the most common cause of pericardial effusion (62,5%), followed by cancer cases (9,5%) in Africa.[3] There is no newest finding related annual incidence and prevalence of pericardial effusion in Indonesia.

The clinical significance of pericardial effusion depends on the etiology.[4] The initial diagnostic of pericardial effusion should be defined in order to do effective treatment to prevent the occurence of cardiac tamponade.[1] Cardiac tamponade is a hemodynamic disturbance state that worsen the prognosis of the underlying disease and decrease patient's life expectancy.[1,5] Other research also showed that pericardial effusion patient that related to malignancy and have abnormal cytology finding have significant reduction of life expectancy.[6]

One of diagnostic tool that can define the etiology of pericardial effusion is cytology examination. Cytological analysis of pericardial effusion has high sensitivity and specificity level about 92-95% and 100% in cancer cases.[7] Result of cytological diagnosis of pericardial effusion is presented differently for different patient's characteristics.[8] Researcher has not found any research about cytological diagnosis of pericardial effusion in Indonesia therefore this study was conducted to determine the characteristics of pericardial effusion patient based on age, gender, cytological and clinical diagnosis, age and genderat SMF Pathology Anatomy HasanSadikin Bandung from 2009 to 2013.

Methods

This study was an observational descriptive study with a cross-sectional approach. This study was approved by Ethical Clearance Committee of Hasan Sadikin Bandung Hospital and all data included will be concealed. Population of this study was medical records of pericardial effusion patient at SMF Pathology Anatomy Hasan Sadikin Bandung. Sample of this study was medical record data of pericardial effusion patient that was undergone cytological examination of pericardial fluid from IstJanuary 2009 to 31st December 2013.Inclusion criteria of this study were complete medical records data including name, age, gender, medical record number of Hasan Sadikin Bandung Hospital, medical record number of SMF Pathology Anatomy, cytological diagnosis, and clinical diagnosis.

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hasil: Usia yang paling banyak ditemukan adalah kelompok usia 21-30 tahun. Efusi perikardial lebih banyak terjadi pada pria dibandingkan dengan wanita. Kasus efusi perikardial paling banyak berdasarkan jenis diagnosis sitologinya adalah jenis peradangan non-spesifik. Kondisi klinis yang paling sering ditemukan adalah infeksi tuberkulosis.
simpulan: Efusi perikardial paling banyak terjadi pada usia 21-30 tahun. Berdasarkan jenis kelamin, tidak terdapat perbedaan distribusi yang mencolok pada kasus efusi perikardial. Berdasarkan diagnosis sitologi, efusi perikardial paling banyak didiagnosis sebagai jenis peradangan non-spesifik. Berdasarkan diagnosis klinis, efusi perikardial paling banyak ditemukan pada kondisi infeksi tuberkulosis.

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Data were calculatedusing *Microsoft Excel* program and presented in the table presentation.

result

Fifty two medical records were included in this study. Scale of measurement that used in this study is numeric scale.

table 1. Frequency of pericardial effusion based on cytological diagnosis

no	cytological diagnosis	n
1.	Specific Inflammation	9
2.	Non- specific Inflammation	33
3.	Malignancy (positive)	7
4.	Reaktive *mesothelial*cell	3
total		**52**

Based on cytological diagnosis, The most common pericardial effusion is non-specific inflammation type. Pericardial effusion is most frequently found in 11-40 years of age (51,9%) with the highest incidence in 21-30 years of age. There is no pericardial effusion case that do not have age identity. Pericardial effusion is more frequent in male than female with ratio between male and female is 1,26:1.

The most common clinical condition of pericardial effusion is tuberculous infection. Clinical conditions related to tuberculous infection are Pulmonary TB, Disseminated TB, Poliserositits TB. Clinical conditions related to cancer are *Malignant Limphoma, Carcinoma mammae, Adenocarcinoma,Non-small cell lung cancer (NSCLC).* Clinical conditions related to heart diseases are *Ventricular Spetal Defect* (VSD), *Transposition of Great Arteries* (TGA), *Post-Streptococcal Disease* (PSD), *Pulmonary Stenosis* (PS).

table 2. characteristic of pericardial effusion patient based on age, gender, and clinical diagnosis

characteristic	cytological diagnosis				total
	a n=9	B n=33	c n=7	d n=3	
gender					
Male	6	19	2	2	29
Female	3	14	5	1	23
clinical diagnosis					
Tuberculous infection	9	23	0	1	33
Cancer	0	1	7	1	9
Heart disease	0	5	0	0	5
Mixedema	0	1	0	0	1
Chronic pericarditis	0	2	0	1	3
Not identified	0	1	0	0	1

Explanation :
A= Specific Inflammation C= Malignancy (positive)
B= Non-specific inflammation D= Reactive *mesothelial* cells

discussion

Etiology of pericardial effusion can be diagnosed by several examination such as electrocardigraphy, radiography,echocardiography and also chemical, cytological and bacteriological analysis of fluid. However, 20-40% of cases have not yet been identified although the examination had been done.[5, 9-11]Etiology of pericardial effusion can be influenced by characteristic of patient as well as geographical location of patient.[8, 12]

In this study, Pericardial effusion is most frequently found in 11-40 years of age (51,9%) with the highest incidence in 21-30 years of age. In this study, mean of pericardial patient's age is 31,62 years old. This is not relevant to the study that conducted by D.P.Petcu and colleagues in Africa which showed that mean of pericardial patient's age is 60,5 years old.[8] Besides that, result of study that conducted by Patipat Kitchongcharoenying and colleagues in Thailand showed that pericardial effusion is most frequently found in 52-62 years of age.[13]These differences can be explained by the difference of incidence and prevalence of underlying diseases between Indonesia, Africa, and Thailand. That would be explained by pericardial effusion in Indonesia which is predominated by infectious dieases.

In this study, there is no significant differences of gender distribution. Ratio between male and female is 1,2 :1.This result is different with study conducted by D.P.Petcu and colleagues showed ratio between male

and female is 2,5 : 1.[8] The non-significant differences can be explained by high incidence of pericardial effusion in certain gender with certain underlying diseases. In this study, pericardial effusion with cancer as clincial condition is more frequent in female than male with ratio 4:1. Meanwhile, according to William Clifford (2005), metastasized cancer to the pericardium in male is frequently caused by lung cancer and breast cancer for female.[14] This finding was also supported by Heather and colleagues, type of malignant effusion is most frequently caused by lung and breast cancer.[6] The causal factor of pericardial effusion in cancer cases is the high probabilty of the cancer to metastasize from the origin site of tumor such as lung and breast to pericardium.[15] Indonesia has higher incidence and prevalence of breast cancer than lung cancer. This could explain why female is higher that male in cancer cases of pericardial effusion.[16]

In this study, non-specific inflammation is the most frequent type followed by positive malignancy. Another study by D.P.Petcu and colleagues (Rumania, 2008) showed malignancy (11 of 27 cases) is the frequent type followed by non-specific inflammation (7 of 27 cases). This different can be explained by the difference of incidence and prevalence of underlying disease of pericardial effusion Indonesia and Rumania.

In this study, based on clinical diagnosis, the most common clinical condition of pericardial effusion is tuberculousinfection. High incidence, prevalence, and mortality cases of TB sould be the important factor to find the etiology because tuberculosis pericardial effusioncan not be identified distinctively to the non-tuberculoous cause.

Positive malignancy finding in cytological diagnosis can help to diagnose cancer in some conditions. Whereas, negative malignancy finding in cytological diagnosiscan not eliminate the probability of cancer.[17-19] Pericardial effusion that occured in cancer patients who had undergone the cancer treatment is uncertainly caused by cancer. In this study, positive malignancy is the most frequent type among cancer cases. Meanwhile, another study by Roberrt E. Zipf and colleagues (Durham, 1972) showed 13 of 47 cases with positive malignancy and 34 of 47 cases with negative malignancy among cancer cases. Thus, cytological diagnosis of pericardial effusion for cancer is quite valuable but will be more valuable with additional test or other supported examination.

In conclusion**,** pericardial effusion is most frequently occurred in 21-30 years of age. Based on gender, pericardial effusion is not significantly distributed between male and female. Basesd on cytological diagnosis, pericardial effusion is mostly diagnosed as non-spesific inflammation type. The majority of clinical feature of pericardial effusion is tuberculosis infection.

The main limitation of our study was incomplete medical record data andfew numberof the data. The suggestion from this study is suggestion to all clinicians in Hasan Sadikin Bandung Hospital to fill the medical record data completely. The other suggestion is conducting another descriptive study which involved the extension of the time and place of study

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