

SURVIVAL ANALYSIS OF CONTINUOUS AMBULATORY PERITONEAL DIALYSIS ON PATIENTS WITH END STAGE RENAL DISEASE IN SARDJITO HOSPITAL PERIOD 2007-2011

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ABSTRACT

Objective: This study was aimed to analyze the survival rate on End Stage Renal Disease (ESRD) patients and underwent Continuous Ambulatory Peritoneal Dialysis (CAPD) insertion surgery. **Materials & Methods:** The subjects of this study were 58 people diagnosed as chronic renal failure and underwent CAPD insertion surgery. This type of research is retrospective, using medical record data in Sardjito Hospital, and then we performed patient survival analysis with CAPD procedure performed on end stage renal disease patient. **Results:** In survival test performed on patients who underwent CAPD insertion without considering other factors, the mean survival rate was 40.26 months. Kaplan Meier curve obtained 3 and 5 years survival rate of 62% and 45% respectively. Furthermore, the survival test is done by dividing into two group diabetes mellitus (DM) and non-diabetes mellitus (non-DM). In CAPD-attached patients with DM, has a lower mean survival time compared to non-DM. Mean survival time of CAPD patients with comorbid of DM 36.05 months while non-DM 43.43 months. In this study, the Hazard Ratio was 1.44 (0.69-2.99) DM: Non DM. In the survival test by dividing into two age groups, age group ≥ 55 years and <55 years. The results obtained mean survival time for age group ≥ 55 years 36.02 months and for age group <55 years 43.08 months. **Conclusion:** Patients with kidney failure who underwent CAPD with comorbid DM had lower survival compared with non-DM. The younger the age of the patient that underwent CAPD insertion, the survival rate increase.

Keywords: Continuous Ambulatory Peritoneal Dialysis, diabetes mellitus.

ABSTRAK

Tujuan: Penelitian ini bertujuan untuk menganalisa angka ketahanan hidup pasien End Stage Renal Disease (ESRD) dan menjalani operasi insersi Continuous Ambulatory Peritoneal Dialysis (CAPD). **Bahan & cara:** Subyek penelitian ini adalah 58 pasien yang didiagnosa gagal ginjal akut dan menjalani operasi insersi CAPD. Jenis penelitian ini adalah retrospektif, menggunakan data rekam medis di RSUD Sardjito, kemudian kami melakukan analisa ketahanan hidup pasien dengan prosedur CAPD yang dilakukan pada pasien ESRD. **Hasil:** Pada tes ketahanan hidup yang dilakukan pada pasien yang menjalani insersi CAPD tanpa mempertimbangkan faktor lain, rerata ketahanan hidup pasien adalah 40.26 bulan. Kurva Kaplan Meier menunjukkan angka ketahanan hidup 3 dan 5 tahun sebesar 62% dan 45%. Lebih lanjut, tes ketahanan hidup dilakukan dengan membagi menjadi 2 kelompok diabetes mellitus (DM) dan non diabetes mellitus (non-DM). Pasien DM yang menjalani CAPD memiliki rerata ketahanan hidup lebih rendah dibandingkan dengan non-DM. Rerata waktu ketahanan hidup pasien CAPD dengan comorbid DM 36.05 bulan sementara non-DM 43.43 bulan. Pada penelitian ini, rasio Hazard adalah 1.44 (0.69-2.99) DM: Non DM. pada tes ketahanan hidup dengan membagi menjadi 2 kelompok usia, kelompok usia ≥ 55 tahun dan <55 tahun. Hasil penelitian menunjukkan rerata waktu ketahanan hidup untuk kelompok usia ≥ 55 tahun adalah 36.02 bulan dan untuk kelompok usia <55 tahun adalah 43.08 bulan. **Simpulan:** Pasien gagal ginjal yang menjalani CAPD dengan comorbid DM memiliki ketahanan hidup lebih rendah dibandingkan dengan non-DM. semakin muda usia pasien yang menjalani insersi CAPD, angka ketahanan hidupnya meningkat.

Kata kunci: Continuous Ambulatory Peritoneal Dialysis, diabetes mellitus.

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INTRODUCTION

End stage renal disease is a commonly found, according to data from The United States Renal Data System (USRDS) in 2009; the prevalence is about 10-13%. In the United States the number reached 25 million people, in Indonesia estimated at 12.5% or about 18 millions people.¹

The long-term survival rate of patients with end stage renal disease (ESRD) is very low.² In the circumstances of ESRD performed an action to be able to replace the function of the kidney that has been damaged or called renal replacement therapy (RRT). The purpose of RRT is to increase the life expectancy of ESRD patients. There are several types of RRT, namely hemodialysis, peritoneal dialysis, and renal transplant.

Peritoneal dialysis is used almost 12% in the dialysis population in the United States. In developing countries the population of patients with peritoneal dialysis is likely to increase. The survival rate in patients with hemodialysis compared with peritoneal dialysis is almost the same. Exceptions were in elderly diabetic patients who received CAPD therapy in which they had a relative risk of death 1.26 times than those treated with hemodialysis.

CAPD have been done in Sardjito Hospital since 1995. In the last ten years, CAPD has been done in 208 patients. Pre-existing research in Sardjito by Yuda AY in 2005 found that, CAPD provides better quality of life results in ESRD

compared with hemodialysis. In this study, we performed CAPD survival analysis in ESRD patients in Sardjito Hospital.

OBJECTIVE

This study was aimed to analyze the survival rate on End Stage Renal Disease (ESRD) patients and underwent Continuous Ambulatory Peritoneal Dialysis (CAPD) insertion surgery.

MATERIAL & METHOD

This study was conducted retrospectively, using medical record data of patients with diabetes mellitus and non-diabetes mellitus who suffered kidney failure and performed CAPD in Sardjito Hospital during January 2007 to December 2011. Then follow up whether the patient is still alive or the patient has passed away, and the duration from CAPD insertion. The data that were analyzed; the etiology of ESRD, duration of CAPD (in months), age at CAPD action on survival level 5 years after insertion. Further data were analyzed with SPSS 18 using chi square and Kaplan Meier curve.

RESULTS

We found 58 samples in the period January 2007 till December 2011.

Table 1. Characteristics of variables.

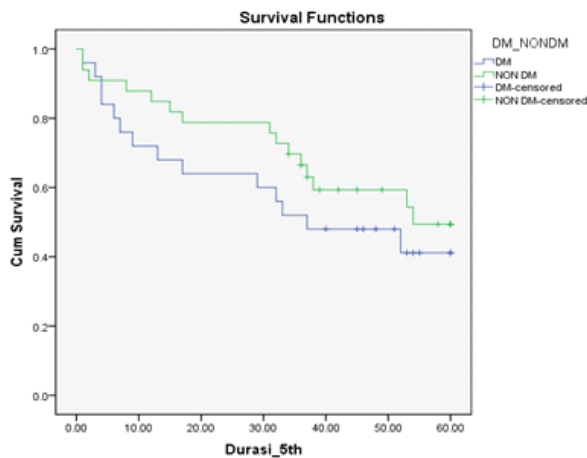
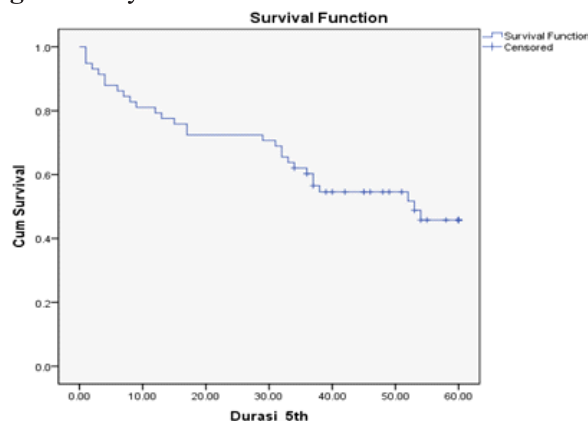
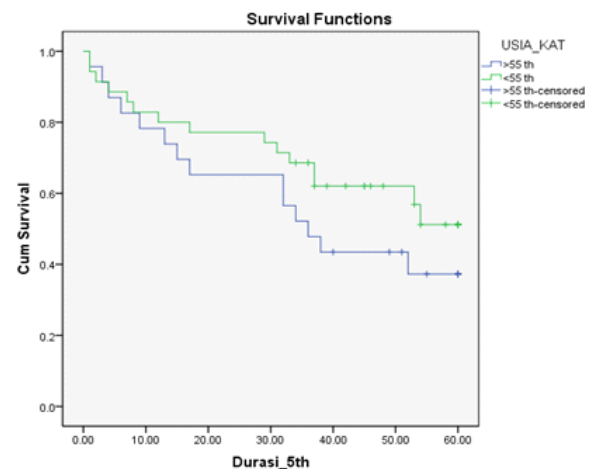
Variable		Total
Sex	Male	38 (65.5%)
	Female	20 (34.5%)
5-year survival (died)	Yes	24 (41.4%)
	No	34 (58.6%)
Etiology of End stage renal disease (ESRD)	Diabetes mellitus	25 (43.1%)
	Hypertension	19 (32.8%)
	GNC	9 (15.5%)
	Kidney cyst	2 (3.4%)
	Kidney stones	1 (1.7%)
	SLE	1 (1.7%)
	Nephrotic syndrome	1 (1.7%)
Age	≥ 55 years old	23 (39.7%)
	< 55 years old	35 (60.3%)

Table 2. Bivariate analysis with Chi-Square.

Variable		5-years survival		p
		Died	Alive	
Sex	Male	17	21	0.474#
	Female	7	13	
Etiology	Diabetes mellitus	12	13	0.373#
	Non Diabetes Mellitus	12	21	
Age	≥ 55 years old	12	11	0.176#
	< 55 years old	12	23	
Age		50.37 ± 18.6	45 ± 14.7	

Table 3. Survival rate of CAPD.

Characteristic	Mean Survival Time	5-years survival rate	Hazard ratio (95% CI)
CAPD insertion	40.268 month	45%	
CAPD with etiology DM	36.05 month	41%	HR = 1.44 (0.69-2.99)
CAPD with etiology Non DM	43.43 month	50%	
CAPD with age ≥ 55 years old	36.02 month	38%	HR = 1.55(0.751-3.22)
CAPD with age < 55 years old	43.08 month	51%	

**Figure 1.** 5-years survival after CAPD insertion.**Figure 2.** Effect of DM and non-DM on 5-years survival after CAPD insertion.**Figure 3.** Effect of age on 5-years survival after CAPD insertion.

DISCUSSION

In this study, we found that patients with ESRD and performed CAPD are more common in male than female with 38 cases (65.5%) and 20 cases (34.5%), respectively. From the above, the data in accordance with other studies said that, the risk factors for ESRD based on sex, male have 2 times greater risk compared with female, it cause of the possibility of female have more concerned with her health and maintain a healthy lifestyle, and female more obedient in the use of drugs and more able to take care of themselves and regulate the use of drugs.

5-years survival rate in patients with ESRD and CAPD was performed based on Chi-square test analysis with $p=0.474$, so it was not significant or no significant difference between male and female. Based on etiology of ESRD and then performed CAPD divided by between DM and non DM, obtained in patients with DM, on survival rate 12 patients have died and 13 people still alive while for non DM 12 have died and 21 cases still alive. The result of Chi-square test showed that $p=0.373$. So that, there was no significant correlation between DM and non-DM patients who had ESRD and CAPD.

While based on age, patients who performed CAPD with age ≥ 55 years, 12 cases have died and 11 cases still alive, meanwhile patients who underwent CAPD with age < 55 years 12 cases have died and 23 cases still alive. From the analytical test, there was no significant result with $p=0.176$, so it can be stated that there is no significant difference between renal failure patients who have CAPD under 55 years old and above 55 years old.

In this study, we also found that, 24 patients (41.4%) have died < 5 years and 34 patients (58.6%) have died ≥ 5 years. Mean survival time 40.268 months and 3-years survival rate 62%. The results of this study are almost identical to other research such as Abraham G et al, in 2010 with the results of 59 patients (28.2%) have died < 3 years and 150 patients (71.7%) have died ≥ 3 years. According to Abraham et al (2010), 3-years survival rate of patients' insertion CAPD was 76.6%.³ Vonesh EF et al (2006) conducted a meta-analysis study and found that the 3-years survival rate in patients insertion CAPD was 48%.⁴ The following comparison of research conducted at Sardjito Hospital with some existing research.

The common etiology of ESRD is diabetes mellitus. In this study we found that 25 patients (43.1%) with diabetes and the other is cause of other factors. Survival rate patients with diabetes mellitus who experienced renal failure and undergoing CAPD is lower when compared with patients with non-DM with ESRD, This is due to the high

Study Variable	Sardjito Hospital 2007-2011 (n=58)	Vonesh EF et al, 2006. ⁴	Abraham G et al, 2010 (n=209). ³	Chung SH et al, 2010 (n=213). ⁵	Yeates Karen et al, 2012 (n=3879). ⁶
Survival	24 cases (41.4%) have passed away < 5 years 34 cases (58.6%) have passed away ≥ 5 years	-	59 cases (28.2%) have passed away < 3 years 150 cases (71.7%) have passed away ≥ 3 years	-	-
Overall survival time	- Mean survival time 40.268 month - Median survival time 53 month 5-years survival rate 45% 3 years survival rate 62%	3-years survival rate 48%	3-years survival rate 76.6%	-	5-years survival rate 40%
Survival time according to etiology (DM / Non DM)	HR = 1.44 (0.69-2.99)	-	-	1.08 (0.80-1.49)	-
Survival Time according to age ≥ 55 years old / < 55 years old	HR = 1.55 (0.751-3.22)	-	-	-	-

possibility of vascular disease caused by diabetes mellitus. In addition, protein energy wasting (PEW) in diabetes mellitus also increases the mortality of CAPD patients.

In this study we use of survival test by dividing into two groups. The group with renal failure with comorbid DM and group of renal failure with non-DM comorbid then tested using Kaplan Meier obtained the results of renal failure patients who performed CAPD with comorbid DM had a low mean survival time of 36.05 months (41%) compared to that Non DM with value 43.43 months (50%). When compared with the results of previous research by Chung SH et al, obtained Hazard Ratio DM and Non DM 1.08 (0.80-1.49),⁵ while in this study Hazard Ratio DM and Non DM 1.44 (0.69-2.99). This is in accordance with research conducted at Sardjito Hospital.

Patients with renal failure with CAPD were divided into two groups by age <55 years and above > 55 years, then tested using Kaplan Meier and obtained result for age above 55 years obtained mean survival rate 36.02 months (38%) and for age below 55 years obtained result 43.08 months (51%). In another study, Heaf et al in 2002, dividing the age group of CAPD patients into two, age ≥ 55 years and <55 years of age with the results of patients with CAPD age <55 years having a better survival rate.⁷ In this study we found similar results with Hazard Ratio of 1.55 (0.751-3.22). According to Stanley M in 2010, the use of CAPD in old age and long term will increase mortality.⁸

When we compare with ESRD patients who underwent therapy and did not undergo therapy the results were better in the group who underwent therapy. The average survival rate of ESRD patients who did not undergo therapy was 6-23.4 months

while in CAPD the mean survival time was 40.26 months.

CONCLUSION

Patients with renal failure who underwent CAPD insertion with DM as co-morbid have lower survival than non-DM. The younger the age of the patients who underwent CAPD insertion, the survival rate increase.

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