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Analysis Of Chronic Kidney Diseases Patients With CAPD (Continuous Ambulatory Peritoneal Dialysis) And Hemodialysis Reviewed From Kidney Function (Ureum And Kreatinin)

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ABSTRACT (10PT)

Dialysis is a therapy that aims to remove waste and excess fluid from the body. This method replaces the main function of the kidney. Two types of dialysis are known, namely Peritoneal Dialysis and Hemodialysis. Patients with chronic kidney failure are faced with these two treatment options. Both types of dialysis therapy have a risk of complications during the treatment period that can affect the quality of life of patients. The purpose of this study was to determine the differences in dialysis methods of patients with chronic kidney failure with CAPD (continuous ambulatory peritoneal dialysis) and hemodialysis in terms of kidney function (urea and creatinine).
The research design used a cross-sectional comparative analytical research design. The independent variables were the action of hemodialysis and CAPD. The dependent variables were urea and creatinine. The study sample was patients with chronic kidney failure who underwent hemodialysis and CAPD at Saiful Anwar Hospital in Malang with 126 respondents using consecutive sampling technique. Data analyzed by Independent T-test ($\alpha = 0.05$). The research instruments were laboratory urea and creatinine observation sheets.
Respondents who received hemodialysis were 23 patients. The average value of respondents who underwent HD was equal to (12.93 ± 4.53) mg / dL and the average value of urea could be obtained at (144.89 ± 44.73) mg / dL. Respondents who received CAPD actions amounted to 20 patients. The average value of respondents who underwent CAPD was equal to (10.32 ± 4.1) mg / dL and the average value of urea could be obtained at (104.18 ± 48.2) mg / dL. There were no differences in kidney function in patients who received HD and CAPD (creatinine p value = 0.130; urea p value = 0.083).

I. Introduction (*Heading 1*) (bold, 11 pt)

Dialysis is a therapy that aims to remove waste and excess fluid from the body. This method replaces the main function of the kidney. Two types of dialysis are known, namely Peritoneal Dialysis, and Hemodialysis. Patients with chronic kidney failure are faced with these two treatment options. Both types of dialysis therapy have a risk of complications during the treatment period. In patients with chronic kidney failure with CAPD (Continuous Ambulatory Peritoneal Dialysis) has the risk of infection (one of them is peritonitis), if it does not do the principle of hygiene and if it is

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not carried out according to schedule and dosage then the deterioration of kidney function will worsen and have an impact on the heart's performance. While complications that often occur in patients who undergo HD are hemodynamic disorders (Landry and Oliver, 2006). Blood pressure generally decreases by doing ultrafiltration (UF) or withdrawal of fluid during the hemodialysis process. Intradialytic hypotension occurs in 20-30% of patients who undergo regular HD (Tatsuya et al., 2004). Research on patients with regular HD performed in Denpasar, received an incidence of intradialytic hypotension of 19.6% (Agustriadi, 2009).

The number of patients who remain alive with dialysis therapy in the United States continues to increase from year to year. In this country the mortality of patients with dialysis is close to 18% per year. This death is caused by cardiovascular disease and infections. The survival rate in patients using hemodialysis compared with peritoneal dialysis is almost the same, but the complications of the use of both types of methods have not done so much research. The existence of this study is expected to provide an overview of the different dialysis methods between hemodialysis and CAPD to the quality of life in patients.

The purpose of this study was to determine differences in dialysis methods of patients with chronic kidney failure with CAPD (continuous ambulatory peritoneal dialysis) and hemodialysis in terms of kidney function (urea and creatinine).

II. Method

The research design uses a cross-sectional comparative analytical research design. The independent variable is the action of hemodialysis and CAPD. The dependent variable is urea and creatinine. The study sample was patients with chronic kidney failure who underwent hemodialysis and CAPD at Saiful Anwar Hospital in Malang with 43 respondents using consecutive sampling technique. Data analysis using Independent T-test ($\alpha = 0.05$). The research instrument was in the form of urea and creatinine observation sheets. The study was conducted between August 13-16 2018.

III. Results and Discussion

Demographic data of respondents with HD shows the highest sex of respondents, namely men with a number of 57 (54.81%) respondents, the level of education shows almost half, namely the level of senior secondary at 39 (37.5%) respondents. Judging from the marital status shows that most of them are married or still have a partner that is equal to 94 (90.38%) respondents, while seen from their jobs almost half of the respondents do not work that is equal to 41 (39.42%) respondents. From the results it can also be known that the respondents undergo HD, which is almost half of the respondents are in the range of 1-3 years, 40 (38.46%) respondents, the majority of respondents are in the final stage or 5, as many as 63 (6058%) and almost half of respondents having hypertensive comorbidities, which amounted to 34 (32.69%) respondents.

While the demographic data of respondents with CAPD shows that the respondents' sexes are mostly men with a total of 14 (63.64%) respondents, the level of education shows mostly that is the level of senior secondary at 14 (63.64%) respondents. Judging from the marital status, most of them were married or still had partners, which amounted to 16 (72.73%) respondents, while seen from their jobs, half of the respondents did not work, which was 11 (50%) respondents. From the results it can also be known for the length of time the respondents underwent CAPD, that is, almost half of the respondents were in the range of 1-3 years and less than a year, namely 8 (36.36%) respondents, the majority of respondents were at the final stage or 5 namely 14 (63.64%) respondents and almost half of respondents did not have comorbidities which amounted to 9 (40.91%) respondents after that with hypertension of 7 (31.82) respondents.

The average value of the respondents who underwent HD was equal to (12.93 ± 4.53) mg / dL and the average value of urea could be obtained (144.89 ± 44.73) mg / dL. While the average value of the respondents who underwent CAPD was equal to (10.32 ± 4.1) mg / dL. The average urea value can be obtained at (104.18 ± 48.2) mg / dL.

Table 1. Analysis of the independent sample T-test test for differences in kidney function in HD patients and CAPD

Variable	P value
Kreatinin	0,130
Ureum	0,083

The results of the analysis showed P values of creatinine (0.130) and urea (0.083) above the value of α (0.05) which means accept H0, which means there is no difference in kidney function in patients who get HD and CAPD.

Analyzing the differences in CAPD and Hemodialysis on the physiology of the kidneys (urea and creatinine) of patients during dialysis therapy.

The results of the analysis obtained P value of creatinine (0.130) and urea (0.083) above the value of α (0.05) which was significantly accepted by H0, which means there was no significant difference in kidney function in patients who received HD and CAPD. This is because the two treatments show that the levels of urea and creatinine are increasing and not so far apart. However, clinically the average value of urea and creatinine in CAPD respondents is lower than the respondents who undergo HD. The results showed that the average value of the respondents who underwent CAPD was equal to (10.32 ± 4.1) mg / dL, while the average value of urea could be obtained (104.18 ± 48.2) mg / dL when compared with HD respondents the results showed creature mean values (12.93 ± 4.53) mg / dL, while the mean urea values were obtained (144.89 ± 44.73) mg / dL. The results of this study can be concluded that CAPD action can prevent the increase in urea and creatinine levels better than HD.

Ureum is the largest nitrogen product that is excreted through the kidneys. Ureum comes from the metabolism of food proteins and endogenous proteins in the body. The kidneys function to maintain urea levels within normal limits in the blood. In healthy kidney conditions, the urea will be released from the body continuously through the process of filtration and excretion. This process will help maintain the balance of urea levels in the blood. The balance of urea levels is very necessary to maintain physical conditions in patients with kidney failure. Patients with chronic kidney failure often experience elevated blood urea levels. This increase is caused by impaired kidney function in filtering and removing urea from the blood. Increased urea will cause a variety of symptoms in the multisystem body called uremic syndrome. A collection of symptoms due to an increase in urea will aggravate the physical condition of patients with kidney failure, thereby reducing the quality of life of patients (Yamana, 2009). The level of urea, blood creatinine level is also one of the important indicators for determining kidney excretion function (Black & Hawk, 2009) and affects the quality of life of patients with CRF who undergo hemodialysis therapy (Yamana, 2009).

While Creatinine is the result of muscle cell metabolism which is excreted into the blood after doing activities. Creatinine comes from food and biosynthesis of various organs, especially the liver. A diet source absorbed through the intestine will be synthesized into creatine by the liver. Creatinine is then used for muscle cell metabolism. Muscle cell metabolism will constantly convert creatine to creatinine which diffuses out of muscle cells. Creatinine in the blood will be excreted by the kidneys through urine. Increased creatinine levels in the blood occur when the kidney excretion function has decreased. This is because most creatinine is removed through the kidneys and there is no reabsorption process in the kidneys to restore creatinine. Therefore creatinine is a blood chemical that is important for determining the glomerular filtration rate as an indicator of kidney excretion function (Wyss, 2000).

Excess urea levels cause conditions of acidity in the blood to increase which causes a disruption of the acid base balance in the body. Patients often experience metabolic acidosis under severe uremia. Metabolic acidosis causes various symptoms such as rapid and shallow breathing even to a decrease in consciousness. In addition, increased levels of urea in the blood also cause systemic symptoms in various body systems. Uremia causes multi-system disorders including gastrointestinal, respiratory, nerve, and so on. In the digestive system, uremia causes an increase in

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stomach acid production, resulting in symptoms of nausea, vomiting and anorexia. In the respiratory system, uremia causes complaints of shortness of breath, shallow and fast breathing. This is as part of the body's compensation for maintaining normal pH in the blood by increasing CO2 excretion through the lungs.

Patients who are able to maintain urea levels within normal limits will show better physical health and general health perceptions than patients who fail to maintain normal urea levels. Urea levels can be maintained within normal limits by running a low-protein diet and routine hemodialis therapy. The duration and frequency of hemodialysis adjusted to the excretion needs of patients will maintain urea levels within normal limits. The diffusion and ultrafiltration processes that occur in the dialiser are able to transfer excess urea from the blood into the dialysate solution, so that after undergoing dialysis the patient's urea level can be lowered. The condition of patients with kidney failure who require using lifelong dialysis therapy requires the respondent to comply with all lifestyles that are in accordance with the conditions of kidney failure so that the quality of life increases.

IV. Conclusion

There were no differences in kidney function in patients who received HD and CAPD statistically but clinically different, namely urea and creatinine in CAPD respondents lower than HD respondents.

Acknowledgment *(HEADING 5)*

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