THE EFFECT OF INCREASING QUICK OF BLOOD (QB) ON UREUM REDUCTION RATIO (URR) IN CLIENTS THAT ARE CONDUCTING HEMODIALYSIS IN DUSTIRA HOSPITAL CIMAHI

Ismafiaty*, R. Acep Hasan, and Eka Winarsih
Jenderal Achmad Yani University Faculty of Health Science and Technology
Ismafiaty. Email: ismanumi@gmail.com

ABSTRACTS

***Introduction**: WHO states globally more than 500 million people experience chronic kidney disease. About 1.5 million people have to undergo dialysis in their lifetime. Based on the Data and Information Center of the Indonesian Hospital Association, the number of chronic kidney failure patients is estimated to be around 50 people per one million population, 60% of whom are adults and the elderly (IPDI, 2018). This study aims to determine the effect of increasing the quick of blood on the urea reduction ratio in clients undergoing hemodialysis which initially QB 200 ml/min as secondary data to 250 ml/min as primary data.* ***Methodology**: The design of this study used a Quasi Experiment conducted on 19 respondents who underwent hemodialysis. Univariate analysis using median and mean. Bivariate analysis using Wilcoxon.* ***Research findings**: The results showed that post urea with QB 200ml / min had a decrease of 64% whereas QB 250ml / min had a decrease in urea by 71%. The statistical test showed that there was a significant difference in urea before and after hemodialysis with an increase in QB (p = 0.001).* ***Conclusions**: The results of this study will become the hospital standard in determining the quick of blood (QB) so that the length of the hemodialysis process does not exceed the specified time and during the hemodialysis process it will be more effective.*

***Keywords**: Quick Of Blood Hemodialysis, Ureum Reduction Ratio*

1. Introduction

According to the World Health Organization (WHO), globally more than 500 million people experience chronic kidney disease. About 1.5 million people have to undergo dialysis in their lifetime. Based on the Data and Information Center of the Indonesian Hospital Association, the number of chronic kidney failure patients is estimated to be around 50 people per one million population, 60% of whom are adults and the elderly. (IPDI, 2018).

Hemodialysis (HD) is one way to remove metabolic waste products in the form of solutions and water present in the blood through semipermeable membranes or also called dialyzers (Thomas, 2012). The working principle that occurs is fluid transfer in hemodialysis, namely diffusion, osmosis, ultrafiltration, and convection

(Kallenbach, Gutch, Stoner, & Corca, 2015).

The adequacy of the hemodialysis process is measured by the term adequacy of the hemodialysis process, which will measure the percentage of the amount of urea cleared in one hemodialysis procedure. The value of the URR is very important in the flow of the dialysate fluid. In one hemodialysis procedure, the recommended URR is at least 65% (Kallenbach, Gutch, Stoner, & Corca, 2015).

The QB value that is usually given to HD patients ranges from a rate of 200-300 ml/minute. Initial velocity in HD patients is given < 200 mL/min. Next, a speed of 200-300 ml/min will be given so that a QB value that is close to stable is obtained where the patient has no complaints and feels comfortable during the dialysis process (Kallenbach, Gutch, Stoner, & Corca, 2015).

Dustira Hospital Cimahi has one hemodialysis room which has 32 hemodialysis machines. Most of the patients came according to the program or that had been scheduled, totaling 170 people. The current flow rate has only reached an average QB of about 250 ml/min. Previously the QB given was around 200 ml/min, but recently the hemodialysis room was Dustira hospital performs a QB upgrade.

2. Methods

The research design used in this study was quasi-experimental. The population in this study was 170 patients who underwent hemodialysis from January to March 2021. Dustira Hospital Cimahi (Source of medical records in the hemodialysis room at Dustira Hospital). The sample taken was 19 respondents, with inclusion criteria: Stage V CKD Clients, Clients dialysis 2 times/week for 4 hours, Clients undergoing hemodialysis for at least 1 year undergoing HD, Clients who are stable during the hemodialysis process with intervention given QB 250 ml /min as primary data, and interventions at different times were given QB 200ml/min as secondary data, Clients did not experience hypoxia, dizziness, hypotension during the hemodialysis process, Clients last year used QB 200 ml/min, Clients who at this time will be investigated using QB 250 ml/min.

The univariate analysis used before hemodialysis resulted in the abnormal distribution of urea data so that the data obtained using the median and after hemodialysis, the urea results were distributed normal data so that the data obtained used the mean. Bivariate analysis used in this study using Wilcoxon analysis with the results of value 0.001 (α <0.05) in getting Ho rejected, there is a significant effect between hemodialysis with QB 200 ml/minute and QB 250 ml/minute on the URR value.

3. Results

This section will describe matters relating to the data processing as well as discussion of the results of research on the effect of increasing quick of blood on urea reduction rate in clients undergoing hemodialysis at Dustira Cimahi Hospital for the period 2020. The number of respondents who were studied and processed 19 people.

a. Analysis Univariat

Table 1 URR picture with QB 200 ml/minute

Urea	N	Mean	Std. Deviasi
Pre HD	19	197,21	64,086
Post HD	19	71,47	27,257

Table 1 describes the mean urea before hemodialysis using QB 200 ml/minute is 197.21 mg/dl and the average after hemodialysis is 71.47 mg/dl.

Table 2 URR picture with QB 250 ml/minute

Urea	N	Mean	Std. Deviasi
Pre HD	19	146,58	37,451
Post HD	19	41,63	15,475

Table 2 describes the mean urea before hemodialysis using QB 250 ml/minute is 146,58 mg/dl and the average after hemodialysis is 41,63 mg/dl.

b. Analysis Bivariat

Table 3 Effect of increasing QB on URR

Intervention	N	Mean	%	Mean Difference	Std. Deviasi	Sig	P.value
QB 200	19	71,47	64%	29,842	27,257	0,068	0,001
QB 250	19	41,63	71%	29,842	15,475		0,001

The results of the parametric test values where the results of table 3 can be concluded that patients using QB 200 ml/minute had a decrease in the urea of 64%, while patients using QB 250 ml/minute had a decrease in the urea of 71%. The p.value of 0.001 indicates the effect of increasing QB on the adequacy of clients undergoing hemodialysis.

4. Discussion

The results of the parametric test values where the results of table 3.3 can be concluded that patients using QB 200 ml/minute had a decrease in the urea of 64%, while patients using QB 250 ml/minute had a decrease in the urea of 71%. The p.value of 0.001 indicates the effect of increasing QB on the adequacy of clients undergoing hemodialysis.

The adequacy of the hemodialysis process is measured by the term adequacy of the hemodialysis process, which will measure the percentage of the amount of urea cleared in one hemodialysis procedure. To measure URR is the simplest and easiest way to measure the adequacy of hemodialysis measures. The value of the URR is very important in the flow of dialysate fluid, QB (Quick Of Blood). In one hemodialysis procedure, the recommended URR is at least 65% (Kallenbach, Gutch, Stoner, & Corca, 2015).

The results of research conducted on regular hemodialysis patients in the hemodialysis room of Nganjuk Hospital with QB 200 ml/min with independent sample t-test obtained p-value = 0.0001 with

= 0.05, so Ho is rejected Ha is accepted, there is a quick of blood to urea reduction ratio in CKD patients undergoing regular hemodialysis in the hemodialysis room at Nganjuk Hospital. The Pernefri dialysis consensus (2019) states that existing strong vascular access can drain blood at a minimum rate of 200 ml/min.

Hemodialysis measures can achieve maximum results if all hemodialysis adequacy parameters can be achieved. One of the adequacy parameters for hemodialysis is the urea reduction ratio (RRU). The RRU recommended by (National Kidney Foundation Disease Outcomes Quality Initiative / NKF DOQI, 2016) and the Indonesian Nephrology Association / PERNEFRI (2018) is a minimum of 62%. According to K/DOQI, vascular access can drain blood at speeds between 300-500 mL/minute. The Pernefri Dialysis Consensus (2019) stated that adequate vascular access can drain blood at a minimum rate of 200-300 mL/minute.

It can be concluded that urea with Qb 250ml/min will reach a decrease in urea levels faster than QB 200 ml/min and achieve maximum results compared to Qb 200ml/min.

5. Conclusions

The results of 19 samples initially using QB 200 ml/min increased to 250 ml/min had a significant decrease in urea (0.001) from QB 200ml/min which only reached 64% to 71% with an increase in QB 250ml/min.

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