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CAN WE IMPROVE ENDOTHELIAL INJURY TO PREVENT VASCULAR ACCESS THROMBOSIS FOR HEMODIALYSIS?
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Introduction: Vascular access (VA) for hemodialysis is essential for kidney patients because of its associated morbidity and mortality as well as for its impact on quality of life. Thrombosis is the main complication of an arteriovenous fistula (AVF). The main cause is the previous stenosis, which occurs due to the hyperplasia of the neointima of the vessel, that conditions the appearance of thrombosis. The efficacy of different approaches has been studied to reduce the incidence of thrombosis in AVFs and increase their survival. We determine those factors involved in vascular access thrombosis for hemodialysis.

Methods: This is a cross-sectional descriptive study. We include all the AVFs performed in our center during the period between 2000 and 2020. Demographic variables (age, sex), CKD etiology and associated comorbidity factors were collected. We determine the factors involved in thrombosis of AVFs. The statistical analysis was executed with SPSS 25.0. The categorical variables are expressed as percentages and were compared using the Chi2 test. The quantitative variables are expressed as mean +/- standard deviation, and the T-Student or U Mann Whitney were used to compare them. We performed multivariate analysis using logistic regression. We establish statistical significance for a value of p<0.05.

Results: We include 622 AVFs performed in 482 patients. 86.8% were autologous. 66.6% were male, with an average age of 65.4 ± 14 years. The most frequent CKD etiology were diabetic nephropathy (30.2%), unknown etiology (18%), and glomerular etiology (16.6%). 91.2% had high blood pressure (HBP) and 47.9% diabetes mellitus (DM). 48.7% received antplatelet therapy and 15.6% anticoagulation prior to the creation of the AVF. VA thrombosis was documented in 23%. The univariate analysis showed statistical significance for ischemic heart disease (p = 0.05), peripheral vascular disease (p = 0.05), antplatelet therapy (p = 0.038), high phosphorous levels (p = 0.033), high PTH levels (p = 0.024) and C- reactive protein (p = 0.021). When performing the multivariate analysis using logistic regression, antplatelet therapy (p = 0.038), high phosphorous levels (p = 0.033), high PTH levels (p = 0.024) and C- reactive protein (p = 0.021). When performing the multivariate analysis using logistic regression, antplatelet therapy (p = 0.038), high phosphorous levels (p = 0.033), high PTH levels (p = 0.024) and C- reactive protein (p = 0.021).

Conclusions: In our study, antplatelet therapy prior to the creation of the VA decreased the probability of AVF thrombosis by 38% and the statin treatment decreased the probability of AVF thrombosis by 42%.

No conflict of interest

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COMPARISON OF LUNG ULTRASOUND AND BIOIMPEDANCE IN ASSESSMENT OF EXTRACELLULAR VOLUME IN HEMODIALYSIS PATIENTS
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Introduction: The aim of this study was to compare the lung ultrasound (LUS) and bioimpedance analysis (BIA) as methods to assess the hydration status (fluid status) in program hemodialysis (PHD) patients.

Methods: The comparative analysis was performed in 75 patients aged 24 to 82 years (37 women, 38 men) who’re on PHD 3 times a week with a treatment length of more than 3 months. The research didn’t involve patients with cardiac pacemakers and permanent catheters as vascular access. To assess the extrascular lung water (EVLW) we performed LUS using the Siemens Acuson X150 ultrasound system with a CH5-2 curvilinear transducer and the Bodystat Multiscan 5000 multifrequency bioimpedance spectroscopy (BIS) monitor able to measure in the frequency range of 5-100K Hz. Both researches were conducted in patients before and 30 minutes after the hemodialysis (HD) session in the second and third sessions of a week. Ultrasonic measurements were performed by summing LUS comets or B-lines along four anatomical lines (parasternal, mid-clavicular, anterior, middle, and posterior axillary lines) from the II to the V intercostal space on the right and from the II to the IV intercostal space on the left. The quantitative assessment of B-lines (B-lines score, BLS) was performed according to Picano E. et al. [2006], where the absence of EVLW, overhydration (OH) of the 1st degree corresponded to 5-14 BLS, OH of the 2nd degree corresponded to 15-30 BLS, and OH of the 3d degree corresponded to >30 BLS with the absence of EVLW. The statistical analysis was executed with SPSS Statistics 21.0 software for statistical processing of the data. To assess the correlation between BLS and OHY indicators, we used Spearman’s rank correlation coefficient. The statistical significance level was assumed to be 0.05.

Results: Data of the fluid status in 75 PHD patients using LUS and by BIS before and after a HD-session coincided in 28 patients, partially coincided in 18 patients before the HD-sessioin and in 23 patients after and didn’t coincide in 6 patients. In 75 patients, a statistically significant correlation was revealed between BLS and OHY before (Rs=0.33, p<0.01) and after (Rs=0.39, p<0.01) the HD-session. A direct and statistically significant correlation between BLS and OHY indicators was revealed in 46 patients, whose results were almost identical before the HD-sessioin (Rs=0.566, p<0.01) and in 51 patients after (Rs=0.682, p<0.01).

Conclusions: BIA remains the gold standard for the assessment of over-, normo- and dehydration in PHD patients. LUS is simple and adequate method for assessing the hydration status in PHD patients and it is comparable to BIA in assessing over- and normohydration. However, the LUS doesn’t allow to diagnose the dehydration.

No conflict of interest

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CLINICAL OUTCOMES OF HEMOPERFUSION USING HA130 CARTRIDGE AMONG MAINTENANCE HEMODIALYSIS PATIENTS IN ST. LUKE’S MEDICAL CENTER-QC AND GAT ANDRES MEMORIAL MEDICAL CENTER: A CROSS-SECTIONAL STUDY
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Introduction: Despite the advancement in blood purification technolgy, the mortality rate of maintenance hemodialysis patients is still high with cardiovascular disease as the leading cause of death. This study aimed to compare the clinical outcomes of patients who underwent hemoperfusion using HA-130 cartridge with hemodialysis to those with hemodialysis alone among maintenance hemodialysis patients in St. Luke’s Medical Center Quezon City dialysis unit and Flora V Valisno De Siojo Dialysis Center of Gat Andres Bonifacio Memorial Medical Center from August 2018 – May 2019.

Methods: This cross-sectional study included 183 patients who underwent hemodialysis (HD) and hemoperfusion (HP) using HA-130 cartridge and 156 patients on hemodialysis alone. Serum phosphorous, albumin, hemoglobin, erythropoietin (EPO) dose, Kt/V, hospitalizations, and mortality were compared from baseline, at the start and end of hemoperfusion when appropriate and between these two groups.
Results: Significant differences in baseline characteristics were: the patients in HD alone group were older (p = 0.002), predominantly had diabetic kidney disease (p = 0.002), and hemoglobin of <9.5 g/dL (p = 0.0001). While most patients in HD + HP group had hypertensive nephrosclerosis (p = 0.003), with hemoglobin 9.5 to 11.5 g/dL (p = 0.001) and BMI <25 (p = 0.038). No statistically significant differences were observed for age, gender, race, or duration on dialysis. An elevated serum phosphorous which was increased in HD + HP group (p = 0.0001). From baseline values, these variables improved after hemoperfusion: EPO dose (mean = 9448 + 3626.4 versus 10092 + 3405.6 units/week, p = 0.050, 95% CI -1864.4 to 0.95); hemoglobin (mean = 10.8 + 1.5 versus 10.5 + 1.7g/dL, p = 0.016, 95% CI 0.1 to 0.7); and albumin (mean = 3.9 + 0.5 versus 3.7 + 0.6 g/dL, p = 0.010, 95% CI 0.03 to 0.2). There was no significant difference with phosphorous (mean = 2.04 + 0.7 versus 2.08 + 0.6 mmol/L, p = 0.520, 95% CI -0.2 to 0.1) at the end of the study, although there was a significant difference in the second and third months of treatment (p = 0.0001). At the end of the study; albumin (p = 0.0001, 95% CI -0.4 to -0.03) and hemoglobin (p = 0.0004, 95% CI -1.0 to -0.3) were significantly higher in HD+HP group. The percentage of patients with hemoglobin <9.5 g/dL was significantly lower (p = 0.0001) in HD+HP group (10.9%) than in HD alone group (34.2%). Although the phosphorous in HD alone group was lower (p = 0.017, 95% CI -0.4 to -0.03) than in HD + HP group, it increased in HD alone group from baseline (mean = 1.84 + 0.70 versus 3.48 + 1.41 mmol/L). There was no significant difference in EPO dose (p = NS) and Kt/V (p = NS) in both groups. Hospitalization rate OR = 4.23 (p = 0.0104, 95% CI 1.93 to 9.27) and mortality rate OR = 4.07 (p = 0.0001, 95% CI 1.30 to 12.75) such that patients in HD alone group were four times more likely to be hospitalized and to die than those in HD+HP group.

Conclusions: Patients who underwent hemodialysis and hemoperfusion using HA-130 cartridge had a lower risk of hospitalization and mortality than those on hemodialysis alone. There were significant improvements in hemoglobin, erythropoietin dose, albumin, and phosphorous values from baseline in HD + HP patients.

No conflict of interest.

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PREDICTORS OF ERYTHROPOIETIN HIPORESPONSIVENESS IN PREVALENT PATIENTS ON HEMODIALYSIS: A CROSS-SECTIONAL STUDY

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Introduction: Anemia resistant to erythropoietin stimulating agents (ESAs) is a risk factor for mortality in hemodialysis (HD). Determining the causes of hyporesponsiveness may help overcome the resistance. The aim of this study was to investigate the risk factors of erythropoietin (EPO) hyporesponsiveness in a prevalent population of patients on HD.

Methods: This is a cross-sectional study of 59 prevalent HD patients attending our HD unit between 01 January 2019 and 31 March 2019. To evaluate the dose–response effect of EPO therapy, we used the erythropoietin resistance index (ERI), calculated as the average weekly weight-adjusted dose of EPO (U/Kg per week) divided by the average hemoglobin level (g/dL) over a 3-month period. Patients were classified in two groups according to ERI: ERI ≤ and ERI > 10. We compared clinical, analytical and demographic data among groups. Logist regression analysis was performed to identify the predictors of EPO hyporesponsiveness. Statistical analysis was executed using SPSS (Version 23 for Mac OSX).

Results: The mean age of 59 prevalent HD patients was 76.02 ± 12.48 years, 37 (62.7%) were male and 23 (39%) were diabetic. Mean ERI for the entire group was 10.5 ± 8.51. Twenty-four patients (40.7%) had hyporesponsiveness to EPO (ERI > 10). There was no age, gender, cause of chronic kidney disease, HD vintage or EPO hyporesponsiveness group (p > 0.0004). Predialysis fluid overload, defined as dehydration/extracellular water > 15%, measured by bioimpedance, was also superior in this group (p = 0.048). Hyporesponsive patients had lower body weight (p = 0.002), body mass index (BMI) ([p] = 0.012) and serum albumin (p = 0.003). C-reactive protein (CRP) was significantly higher (p = 0.027) in this group. Transferrin saturation index (TSi) (p = 0.002) and serum iron (p = 0.001), but not serum ferritin, were inversely related with ERI. In a logistic regression analysis, BMI ([O]R 0.86 CI: 0.76-0.99), TSI ([O]R 0.94 CI: 0.89-0.99) and the use of central venous catheter ([O]R 7.59 CI: 1.60-36.03) were predictors of hyporesponsiveness to EPO therapy.

Conclusions: Lower BMI and lower TSI were predictors of resistance to EPO therapy in our study. Use of central venous catheter was also associated with a 7.59-fold increase risk of hyporesponsiveness, possibly by acting as a source of chronic inflammation. In our population malnutrition, inflammation and iron status were the main factors contributing to EPO hyporesponsiveness. ERI is easy to calculate and appear to be useful in the evaluation of the patient’s clinical status.

No conflict of interest.