ABSTRACTS

Third Day

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O501

Iranian Children on Continuous Ambulatory Peritoneal Dialysis, Second Report of Iranian National Registry

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Introduction. Our previous nationwide study in children on continuous ambulatory peritoneal dialysis showed some improvement in survival and reduction of morbidity. This is the second follow up study to evaluate the survival and comorbidity of children under treatment.

Methods. All children, younger than 16 years old, treated by continuous ambulatory peritoneal dialysis in six main pediatric nephrology wards in Iran between 1998 and 2009 were included in this historical cohort study. Patient and technique survival rates were determined. Kaplan-Mayer and cox-regression analysis were used to compare the survival. Cross table was used to calculate the risk ratio. A $P < .05$ was considered significant.

Results. From 2183 cases in the list of registry, 199 patients aged less than 16 years. The mean age was 6.64 ± 5.65 years. 62 (31.2%) had age less than 2 years, 34 (17%) aged between 2 to 5 years, and 103 (51.8%) aged more than 5 years. The etiology of renal failure were vesicoureteral reflux and recurrent urinary tract infection in 39 out of 157 cases (25%), glomerulonephritis and collagen vascular disease in 33 (21%), and undetermined in 29 (18.5%). The mean patient survival was 1.9 years. The mortality rate was 55% before 1997, and 60% between 1998 and 2001, which declined to 42.3% between 2002 and 2005, and 40.3% between 2005 to 2009 ($P < .05$). The most frequently comorbidity were hypertension in 48 (24%) and congestive heart failure in 17 out of 121 (14%). Young age (< 24 months) was the only independent factor that predicted mortality ($P < .05$). The outcome of children was as follows; recovery of renal function in 5 (2.5%), renal transplantation in 13 (15.6%), switch to hemodialysis in 26(13.7%), still on continuous ambulatory peritoneal dialysis in 90 (45.23%), and death in 47 (23.6%). From 26 patients who switched to hemodialysis, the causes were peritonitis in 16 (61.5%), catheter failure in 4 (15.4%), mechanical or hernia in 3 (11.5%), and the peritoneal failure, patient desire, and others including one (3.8%) each.

Conclusions. The survival of Iranian children on peritoneal dialysis has improved. Young age remained the most important factor influencing on survival and mortality.

O502

Using Time Boxing Method for Evaluation of Patient and Technique Survival in PD Patients, Based on Iranian CAPD Registry

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Introduction. In clinical research, there are lot of missing information that can either hinder the confidence and validity of statistical analysis or put it completely out of the box. In Iran, Peritoneal Dialysis (PD) Registry, the number and scattered pattern of unavoidable missing data were disabling for statistical analysis methods, especially in survival analysis. Following implementing variable time-box, the problem of missing observations could be overcome. In this study, we used this technique to assess the effect of overtime variations in laboratory parameters on patients and technique survival.

Methods. During 1st January 1995 to end of 2009 from 36 PD centers, monthly collected data (demographic, clinical, and laboratory) of 2261 patients who stayed on PD for more than three months was accumulated through a questionnaire containing 430 questions under 11 headings, entered in Hakim (a Farsi database), and analyzed using STATA (9.0). A Cox proportional hazards model with time dependent covariate was used to study the effect of different covariates on patient survival.

Results. Cox regression model using time-dependent covariate showed that WBC, phosphorous, albumin, diastolic blood pressure, and creatinine levels (all with the same $P < .0001$), urine volume ($P < .001$), PTH ($P < .002$), systolic blood pressure ($P < .02$), and LDL ($P < .03$) were significantly affecting patient survival. Regarding technique survival, Hb ($P < .0001$), and albumin ($P < .02$) were the only two parameters showed remarkable association.

Conclusions. Time-dependent survival analysis of the covariates could be an appropriate and practical analysis method, dealing with database with a high rate of missing information.

O503

Effect of Referral Time of CAPD Patients to Nephrologist on Survival

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Introduction. We studied 282 patients referred to two Iranian CAPD centers from 1st January 1995 to end of 2006. Data on demographic, clinical, and laboratory characteristics that were monthly collected through questionnaires were entered in Hakim (a Farsi database). The patient's clinical and laboratory parameters included the determination of systolic and diastolic blood pressure, urine volume, serum calcium and phosphate levels, serum albumin, alkaline phosphates enzyme, cholesterol, triglyceride, hemoglobin, ferritin, PTH hormone, fasting blood sugar, weight, 24 hours urine, presence of edema, and npcr at first referrer to nephrologists. In addition, their changes after one year were analyzed. Then patients were categorized in two groups, timely referral (TR) and late referral (LR). TR group was defined as referred patients that visited by nephrologists more than 1 month before initiation of dialysis and serum creatinines were less than 6 mg/dL. LR group was patients that their first visit to nephrologists were less than one month before dialysis and their serum creatinines were more than 6 mg/dL. Patients survival (first, second, and five years) in two groups were determined also factors affecting survival were considered.

Methods. Data collected through an 18-sheet questionnaire on a monthly basis from 2 CAPD centres (Shafa and Shariati, Tehran, Iran) including demographic information, monthly lab findings, and clinical course. The data entered in Hakim software specifically designed for CAPD registry in Iran. The data used for this study were extracted from the Hakim database and analysed by STATA 9.0 software (StataCorp., College Station, TX, USA). Parametric values were expressed as mean ± SD. Chi-squared and Fisher's exact tests were used for comparison of proportions. T student test was used to compare means. Cox regression analysis was used to assess patient survival rates. P-value less than .05 was assumed significant.

Results. There were 33 TR (48.5) and 35 LR (51.5%) patients. Age distribution, marital and educational status, and also distribution of BMI in TR and LR group were similar ($P > .05$) although there were more male in TR than LR (24 subjects, 72.7% versus 10 subjects, 28.6%; $P < .0001$). In addition, mean weight, presence of edema, mean of urine volume, FBS, and 24-hour UF were not significantly different in two groups ($P > .05$). At the baseline, there were not any significant difference in mean systolic and diastolic blood pressures, serum calcium and phosphate levels, albumin, alkaline phophatase enzyme, cholesterol, triglyceride, hemoglobin, ferritin, PTH hormone, fasting blood sugar between two groups of TR and LR. However, the result of comparisons after one year proved that the level of ferritin was higher, but serum albumin level and npcr were lower in LR group. One, 2, and 5 years patient survival rates were 96%, 76%, and 76% in TR group patients and 87%, 78%, and 78% in LR group, respectively.

Conclusions. In conclusion, according to the definition of time of referral in present study, the main impact of late referral in CKD patients is the lack of control of inflammation. Increasing of ferritin and decreasing of albumin were shown. Then, poor nutrition may cause increase of mortality in the first year of dialysis onset. Changing of other clinical and laboratory parameters were dependent on the quality of them at the beginning of follow up. The measurement of the other inflammatory mediators such as CRP, ESR, and Fetuin can confirm these findings.

O504

Effect of PTH and Calcium-Phosphate Product on Peritoneal Membrane Function

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Introduction. Some factors such as peritonitis can cause decrease ultrafiltration and adequacy of peritoneal dialysis. Serum PTH and calcium-phosphor (Ca-P) product can result in extraosseous calcification such as calcification of peritoneal membrane. The aim of this study is to evaluate of effect of serum PTH and Ca-P product on membrane function in CAPD patients.

Methods. A multicenter, retrospective cohort study was carried out on 1284 patients receiving CAPD at least three months. According to first six months measurement of serum PTH and Ca-P product, patients were calcified into three groups (PTH < 150, PTH between 150 to 300, and PTH $\geq$ 300) and two groups (Ca-P product < 55, Ca-P product $\geq$ 55), respectively. According to classified PTH and Ca-P product, the baseline GFR, total Cr clearance, Kt/v and UF were compared with the last these variables.

Results. The mean age was 51 ± 16 (18 to 92 years). Patients had PTH < 150, 52%; PTH between 150 to 300, 33%; and PTH $\geq$ 300, 14%. Ca-P product < 55 and $\geq$ 55 were in 67% and 12% of patients, respectively. In the end of the study, patients with Ca-P product $\geq$ 55 had more frequency of total Cr clearance < 70 and Kt/v < 2.1 compared with patients with Ca-P product < 55 (57% versus 37%, $P < .0001$) and (65% versus 45%, $P < .001$). There was no difference between Ca-P product groups regarding GFR. There were no differences between PTH groups regarding last Kt/v, total Cr clearance, and GFR.

Conclusions. High serum Ca-P product can decrease Kt/v and total Cr clearance. However, serum PTH has no effects on PD adequacy and GFR.

O505

The Latest Descriptive Report From Iranian CAPD Registry

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O601

Pleural Effusion in Hemodialysis Patients With Chronic Kidney Disease

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Introduction. Although life expectancy of patients with terminal uremia has increased by improved technology of hemodialysis, living in uremic state is associated with a variety of complications. Pleural problems are among them. Uremic patients are susceptible to many causes of transudative and exudative pleural effusions such as cardiac failure, volume overload, infection, and malignancy. In addition, uremia per se can cause pleuritis. Uremic pleuritis has been introduced as a clinicopathologic entity since four decades ago. However, the information about pathogenesis, clinical course, and management of this complication is still inadequate. Existence of case reports of uremic patients with concurrent occurrence of pleuritis and pericarditis leads uremic toxins to be considered as the main culprit in pathogenesis of uremic pleuritis.

Methods. In this study, all patients with end-stage renal failure and pleural effusion who were admitted in the respiratory disease center of Masih Daneshvari hospital between June 2005 and May 2011 were evaluated for the etiology of pleural disease and associated clinical and paraclinical

findings. Statistical tests of chi 2, Fisher exact, ANOVA, post hoc tukey, and Kruskal Walis were used for comparing data of patients with most common etiologies of pleural effusions.

Results. Seventy-six patients, 52 males and 24 females, with a mean age of 53.48 ± 13.08 years were included. Pleural effusions were unilateral in 69.7% and exudative in 74.1% of patients. Parapneumonic effusion (23.7%), uremic pleuritis (23.7%), and cardiac failure (19.7%) were the most common causes of pleural effusion followed by volume overload (6.6%), tuberculosis (6.6%), and malignancy (5.3%). An unknown etiology was suggested for 7.7% of patients. There was no differences in the mean age, sex distribution, and duration of being on hemodialysis treatment in patients with uremic pleuritis, parapneumonic effusion, and cardiac failure. In 83.3% of patients with uremic pleuritis, pleural effusion was unilateral and in 40% of them pleural fluid was bloody. The most common symptoms of patients with uremic pleuritis included dyspnea (100%), cough (55.6%), weight loss (50%), anorexia (44.3%), pleuretic chest pain (33.3%), and fever (16.7%). There was no differences in frequency of symptoms in patients with uremic pleuritis and cardiac failure but the frequency of fever was higher and dyspnea was lower in patients with parapneumonic effusion. Pleural leukocyte count in uremic pleuritis ranged from 30 to 4200 cells/µL. The differences in total number of leukocytes and the percentage of eosinophyls in patients with uremic pleuritis, parapneumonic effusion, and cardiac failure were statistically insignificant but the percentage of lymphocytes and polymorphonuclears were higher in uremic pleuritis and parapneumonic effusion, respectively. Absence of a significant difference in total leukocyte number of inflammatory pleuritis of parapneumonic effusion and uremic pleuritis with cardiac failure may be explained by impaired leukocyte reaction in uremic patients which is responsible mechanism for lower than expected leukocyte numbers in peritonitis of patients on peritoneal dialysis. In our study, there was no difference in the mean ADA of patients with tuberculosis, 26.75 ± 14.68 IU/L, and patients with uremic pleuritis, parapneumonic effusion, and cardiac failure. Decreased mononuclear cells ADA biosynthesis and activity has been reported in hemodialysis patients. However, to our knowledge, decreased diagnostic value of pleural ADA in hemodialysis patients with tuberculosis pleuritis has not yet been reported. We found that the mean serum calcium level of patients with cardiac failure was lower than normal (8.25 ± 0.77 mg/dL) and the difference of serum calcium in patients with uremic pleuritis and cardiac failure was significant. There are articles demonstrating a cause and effect relationship between cardiac failure and hypocalcemia. In 47.1% of our 18 patients with uremic pleuritis continuation of dialysis with or without therapeutic pleural tap led to improvement of pleural effusion. Others need chest tube insertion. Two patients did not improve until after pleural decortications surgery.

Conclusions. In conclusion, parapneumonic effusion, uremic pleuritis, cardiac failure, volume overload, tuberculosis, and malignancy are probably the most common etiologies of pleural effusion in hemodialysis patients with respiratory complaints. Some pleural reactions in uremic patients such as increase in leukocyte count and ADA may be affected by immunosuppression of uremia or the influence of hemodialysis procedure. Uremic pleuritis should be considered in hemodialysis patients with lymphocyte-predominant exudate and fibrinous pleuritis after exclusion of other diseases.

O602

The Effect of Nicotinamide in the Treatment of Hyperphosphatemia in Dialysis Patients

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Introduction. End-Stage Renal Disease (ESRD) is associated with calcium and phosphate metabolism abnormalities that can result in severe bone disease and ectopic calcification of cardiovascular tissues. The phosphate level is more than 5.5 mg/dL in about 50% Of patients on dialysis. Phosphorus-restricted diets are essential for the prevention of these deleterious complications in ESRD patients. Many strategies are present for reduction of serum

phosphorus level in dialysis patients with some adverse effects. The aim of the present study was to evaluate the effect of nicotinamid (vitamin B3) as a phoshphorous channell inhibitor, in the treatment of hyperphosphatemia in dialysis patients.

Methods. In a clinical trial, 60 patients who were on chronic hemodialysis and had serum phosphate level more than 5.5 mg/dL were selected meeting inclusion criteria. These patients were divided into 2 groups randomly, patients who received nicotinamid 500 mg/d as tablet for two months versus control group. Serum levels of calcium, phosphorus, alkalin phosphatase, iPTH were measured before and after 2 months administration of nicotinamid in both groups. Statistical analysis was performed using SPSS version 16 and *P* value < .5 was considered significant.

Results. No significant differences regarding the age, sex, and duration of dialysis were shown between 2 groups. Serum level of iPTH was reduced not significantly in nicotinamid treated group (*P* = .6) and serum level of phosphorous was reduced significantly in treated patients (*P* = .0001). Serum level of HDL was also reduced significantly in treated patients (*P* = .005).

Conclusions. In conclusion, it seems that Nicotinamide may be using as an alternative for controlling hyperphosphatemia and hyperparathyroidism in hemodialysis patients with lesser side effects.

O603

Descriptive Analysis of Iranian Hemodialysis Registry

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Introduction. The rising incidence and prevalence of chronic kidney disease is a worldwide public health problem. Having a national renal registry system for hemodialysis patients gives an overview of dialysis status of the country. In this report, we have provided the information of the practice of hemodialysis, and its population characteristics in Iran, collected through an online hemodialysis registry system.

Methods. Demographic, clinical, and laboratory data including Kt/v, urea, creatinine, P, Ca, K, Na, PTH, alkaline phosphatase, Hb, Ferritin, ALT,

AST, and albumin of about 4520 patients from 428 hemodialysis centers over the country was assessed.

Results. Out of of 18160 dialysis patients, 60% (n = 10346) were male. The meane age of patients was 67.86 ± 16.7 years (67.42 ± 16.9 years for men and 68.42 ± 16.4 years for women). Two major causes of ESRD in our patients were DM (37.3%) and HTN (23.9%). In more than 4520 patients that the baseline data was provided, 42.3% of patients the Hb level was less than 10 mg/dL. 31.3% patients had hematocrit levels less than 30 mg/dl, and 20.5% had Ferritin levels less than 100 mg/dL. Only 20.3% of patients had serum calcium levels greater than 9.6 mg/dL. 45% and 15% of patients had cholesterol and TG levels higher than 300 mg/dL, respectively. Serum levels of PTH in 22.6% of patients were above 300 mg/dL, and 70.4% of patients presented with serum uric acid levels greater than 7 mg/dL. Serum albumin levels lower than 3.5 mg/dL was detected in 70% of patients. High ($K \geq 5$ mg/dL) and low levels of potassium ($K \leq 3.5$ mg/dL) in 47.2% and 2.3% of patients was observed, respectively. A pre-dialysis level of creatinine in 60% of patients reported to be between 5 to 10 mg/dL, and in 31% was above 10 mg/dL. Serum bicarbonate less than 12 was presented in 29.2%. Serum ALT and AST higher than 30 mg/dL was presented in 11% of patients. Majority of patients (75.7%) had three dialysis sessions per week and Kt/v less than 1.2 was seen in 33.8% of patients.

Conclusions. By desirable controlling of variables, we could improve the hemodialysis outcome. Having an overview of these characteristic provided by national registry can assist us in this matter.

O604

Adequacy of Dialysis and Nutritional Status in Hemodialysis Patients

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Introduction. Hemodialysis is the predominant technique for treating ESRD patients. Hemodialysis has proven effect on mortality and morbidity of hemodialysis patients, so evaluation of adequacy

of hemodialysis is very important. The purpose of this study was to assess Kt/v and TAC urea as methods of adequacy of hemodialysis and to define the relationship between Kt/v and TAC urea with nutritional index such as PCR, albumin, and BMI. **Methods.** Thirty-seven end-stage renal disease patients on hemodialysis were enrolled to the study in Imam Khomeini hospital in Tehran.
Results. The mean age of patients was 50.14 ± 16.3 years and mean duration of hemodialysis was 95.21 ± 83.88 months. The mean Kt/v, mean TAC urea, and mean normalized PCR were 1.21 ± 0.24, 42.50 ± 10 mg/dL, and 1.01 ± 0.2 g/kg/d; respectively. The correlation between variables was established by the co-efficient of pearson. PCR correlated with Kt/v ($P < .0001$) and TAC urea ($P < .0001$). Kt/v did not correlate with TAC urea.
Conclusions. In this study, albumin correlated with TAC urea ($P = .005$) and PCR ($P = .003$). Albumin did not correlate with Kt/v. BMI did not correlate with PCR, Kt/v, TAC urea, and albumin.

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