Research Literatures of Dialysis in China

Ma Hongbao [1], Margaret Ma [2], Yang Yan [1]

[1] Brookdale University Hospital and Medical Center, Brooklyn, New York 11212, USA; [2] Cambridge, MA 02138, USA. ma8080@gmail.com

Abstract: In medicine, dialysis is a process for removing waste and excess water from the blood and is used primarily as an artificial replacement for lost kidney function in people with kidney failure. Dialysis may be used for those with an acute disturbance in kidney function or progressive but chronically worsening kidney function—a state known as chronic kidney disease stage 5. The latter form may develop over months or years, but in contrast to acute kidney injury is not usually reversible and dialysis is regarded as a "holding measure" until a kidney transplant can be performed or sometimes as the only supportive measure in those for whom a transplant would be inappropriate. The kidneys have important roles in maintaining health. When healthy, the kidneys maintain the body's internal equilibrium of water and minerals. The acidic metabolism end-products that the body cannot get rid of via respiration are also excreted through the kidneys. The kidneys also function as a part of the endocrine system, producing erythropoietin and calcitriol. Erythropoietin is involved in the production of red blood cells and calcitriol plays a role in bone formation. Dialysis is an imperfect treatment to replace kidney function because it does not correct the compromised endocrine functions of the kidney. Dialysis treatments replace some of these functions through diffusion and ultrafiltration. This article introduces recent research reports as references in the related studies.

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Key words: cancer; life; China; research; literature; cell

Introduction

In medicine, dialysis is a process for removing waste and excess water from the blood and is used primarily as an artificial replacement for lost kidney function in people with kidney failure. Dialysis may be used for those with an acute disturbance in kidney function or progressive but chronically worsening kidney function—a state known as chronic kidney disease stage 5. The latter form may develop over months or years, but in contrast to acute kidney injury is not usually reversible and dialysis is regarded as a "holding measure" until a kidney transplant can be performed or sometimes as the only supportive measure in those for whom a transplant would be inappropriate. The kidneys have important roles in maintaining health. When healthy, the kidneys maintain the body's internal equilibrium of water and minerals. The acidic metabolism end-products that the body cannot get rid of via respiration are also excreted through the kidneys. The kidneys also function as a part of the endocrine system, producing erythropoietin and calcitriol. Erythropoietin is involved in the production of red blood cells and calcitriol plays a role in bone formation. Dialysis is an imperfect treatment to replace kidney function because it does not correct the compromised endocrine functions of the kidney. Dialysis treatments replace some of these functions through diffusion and ultrafiltration.

The following introduces recent reports as references in the related studies.

Bieber, B., J. Qian, et al. "Two-times weekly hemodialysis in China: frequency, associated patient and treatment characteristics and Quality of Life in the China Dialysis Outcomes and Practice Patterns study." Nephrol Dial Transplant. 2014 Sep;29(9):1770-7. doi: 10.1093/ndt/gft472. Epub 2013 Dec 8.

BACKGROUND: Renal replacement therapy is rapidly expanding in China, and two-times weekly dialysis is common, but detailed data on practice patterns are currently limited. Using cross-sectional data from the China Dialysis Outcomes and Practice Patterns Study (DOPPS), we describe the hemodialysis practice in China compared with other DOPPS countries, examining demographic, social and clinical characteristics of patients on two-times weekly dialysis. METHODS: The DOPPS protocol was implemented in 2011 among a cross-section of 1379 patients in 45 facilities in Beijing, Guangzhou and Shanghai. Data from China were compared with a cross section of 11 054 patients from the core DOPPS countries (collected 2009-11). Among China DOPPS patients, logistic and linear regression were used to describe the association of dialysis frequency with patient and treatment characteristics and quality of life. RESULTS: A total of 26% of the patients in China were dialyzing two times weekly, compared with < 5% in other DOPPS regions. Standardized Kt/V was lowest in China (2.01) compared with other regions (2.12-2.27). Female sex, shorter dialysis vintage,

lower socioeconomic status, less health insurance coverage, and lack of diabetes and hypertension were associated with dialyzing two times weekly (versus three times weekly). Patients dialyzing two times per week had longer treatment times and lower standardized Kt/V, but similar quality of life scores. CONCLUSIONS: Two-times weekly dialysis is common in China, particularly among patients, who started dialysis more recently, have a lower comorbidity burden and have financial constraints. Quality of life scores do not differ between the two-times and three-times weekly groups. The effect on clinical outcomes merits further study.

D'Amico, G. "Opportunities for a chronic disease outreach program in China." Kidney Int Suppl. 2005 Sep;(98):S46-8.

The comparison of the prevalence of patients on regular dialysis treatment (RDT) in the 3 areas of Greater China (Taiwan, Hong Kong, and Mainland) with that of the United States and Japan shows that, unlike Taiwan, in which RDT has a higher prevalence than in the United States and Japan, in Mainland China such prevalence is enormously lower. To make the situation more in line with that of Taiwan, around 2 million patients would need to be treated in Mainland China, which would be a tremendous financial burden. Prevention is the only way to improve the situation. Preliminary information regarding an epidemiologic study on the population of Zhuhai, a town in Southeast China, planned in collaboration with the Commission for the Global Advancement of Nephrology of the International Society of Nephrology and the 5th Affiliated Hospital of the Sun-Yat-Sen University in Zhuhai, is given here.

Ikels, C. "Kidney failure and transplantation in China." Soc Sci Med. 1997 May;44(9):1271-83.

The incidence of chronic renal failure in China is approximately 120,000 cases per year; the vast majority of these new cases will die within a very short time because of the shortage of funds, dialysis machines, and organs for transplantation. This paper focuses on the reasons behind the organ shortage and the strategies proposed by the Chinese medical profession to increase the supply of transplantable kidneys. The data were gathered on multiple trips to China, Hong Kong and Taiwan between August 1993 and January 1995. During these trips the author spoke formally with nephrologists, urologists, dialysis and transplant nurses, and other individuals active in the field of organ procurement, and informally with others familiar with general hospital practice. The author also draws heavily on articles published in leading Chinese journals. The kidney shortage in China is produced by the same sorts of problems as exist in other countries, but the shortage is aggravated by certain beliefs and practices specific to Chinese populations. Live donation is hampered by traditional beliefs about the function of the kidney, while cadaver donation is hampered by reluctance to cut a body and a host of beliefs about ghosts, labeled "feudal superstitions" by the authorities. Cadaver donation is further restrained by the lack of legal recognition of "brain death". In response to the organ shortage, the Chinese medical community has expanded the range of eligible sources to include those condemned to death as criminals, a practice itself usually condemned by the wider international community. At the same time it has advocated: (1) enhancing corpse donation through propaganda work, administrative work, legal work, and incentives; (2) encouraging live donation; (3) familiarizing the public with the benefits of organ transplantation, and (4) pursuing the development of artificial organs.

Leung, S. S. and A. T. Shiu "Experience of Hong Kong patients awaiting kidney transplantation in mainland China." J Clin Nurs. 2007 Nov;16(11C):341-9.

AIM: This paper describes the experience of Hong Kong Chinese patients awaiting kidney transplantation in mainland China. BACKGROUND: While travelling to mainland China for kidney transplantation is a controversial issue, there is an increasing trend of Hong Kong Chinese patients with chronic kidney disease seeking this treatment choice, which outnumbers that performed in Hong Kong. Although these patients seek pre- and post-transplantation care from Hong Kong public healthcare system, little is known about their experience during the waiting period. METHODS: This experience is examined in an exploratory qualitative study. In-depth interviews were used to collect data from a purposive sample of 12 kidney recipients. RESULTS: Three major findings are identified: (i) transplant waiting patients may travel to mainland China for transplantation in search of normal life, (ii) they need informational support from their continuing healthcare providers in Hong Kong to make the informed decision and (iii) they perceive a variation of attitudes of nurses and doctors in Hong Kong towards transplantation in mainland China. CONCLUSIONS: This study contributes to the literature by researching patients' perspective. The findings highlight the importance and controversy of addressing these patients' informational needs. While the authors have no inclination for or against travelling to mainland China for transplantation, the findings reveal a tenacious clinical dilemma, which deserves debate in international transplant community and further research to inform the debate. Nurse and

doctors in Hong Kong may contribute to the debate by articulating their experience of caring for these patients. RELEVANCE TO CLINICAL PRACTICE: Health information that is readily available for patients scheduled for kidney transplantation in Hong Kong should be made accessible to the whole community of patients with chronic kidney disease. To address the complexity of patients travelling to elsewhere for transplantation and the needs of these patients, provider reticence may be counterproductive.

Li, J., Q. Guo, et al. "Prevalence and risk factors of sleep disturbance in continuous ambulatory peritoneal dialysis patients in Guangzhou, southern China." Int Urol Nephrol. 2012 Jun;44(3):929-36. doi: 10.1007/s11255-011-0060-5. Epub 2011 Sep 30.

PURPOSE: Sleep disturbance is significantly associated with overall morbidity, mortality, and quality of life in end-stage renal disease patients. Although it was reported that the prevalence of poor sleep quality was 41-83% in hemodialysis patients, sleep disturbance was not well understood in peritoneal dialysis (PD) patients, especially in Asian PD patients. The present study attempted to assess the prevalence and related risk factors of sleep disturbance among continuous ambulatory peritoneal dialysis (CAPD) patients in Guangzhou, southern China. METHODS: Pittsburgh Sleep Quality Index (PSQI) was used to assess the sleep quality in eligible 212 CAPD patients (53.3% men), average age 49.9 +/- 16.7 years. RESULTS: The average global PSQI score of the CAPD patients was 9.5 +/- 5.2, with 171 (80.4%) poor sleepers (PSQI scores > or = 5). The PSQI score was negatively correlated with serum albumin (r = -0.21, P = 0.003) subjective global assessment (SGA) score (r = -0.27, P = 0.001) and positively correlated with age (r = 0.34, P < 0.001), high-sensitivity C-reactive protein (r = 0.20, P = 0.008), level of calcium x phosphate product (r = 0.19, P = 0.009), cardiovascular disease (r = 0.17, P = 0.019), Charlson comorbidity index score (r = 0.21, P = 0.004), malnutrition-inflammation score (MIS) (r = 0.31, P < 0.001), and duration on CAPD (r = 0.20, P = 0.005). In multiple analysis, old age, high calcium x phosphate product, low SGA score (beta = -0.23, P = 0.042), and high MIS (beta = 0.30, P = 0.007) were independent predictors of sleep disturbance in CAPD patients. CONCLUSION: We clearly demonstrated the novel relationship of malnutrition and calcium x phosphate product with poor sleep quality in CAPD patients, which may be a part of the explanation for the strong links between sleep quality and overall morbidity and mortality.

Liu, X. W., Z. Wang, et al. "Idiopathic phacodonesis in senile cataract patients in Qinghai, China." Int J Ophthalmol. 2011;4(5):508-12. doi: 10.3980/j.issn.2222-3959.2011.05.10. Epub 2011 Oct 18.

AIM: To investigate the frequency of idiopathic phacodonesis (IP) in senile cataract subjects and the short-term clinical outcomes following cataract surgery. METHODS: This institutional case-control study included 1301 consecutive low-income cataract subjects from June to November 2009. Anterior segment were carefully evaluated with dilated pupil under slit-lamp. IP were screened and graded by a criteria set by the authors. Risk factors, surgical outcomes, and operative complications were analyzed. RESULTS: A total of 42 subjects (3.2%) with IP were diagnosed and classified as grade 1 (36 subjects), grade 2 (5 subjects) and grade 3 (1 subject). Harder lenses and intumescent cataracts were observed in the IP group than the control group (P<0.05). Logistics regression test also indicated the main risk factor was the hardness of the lens. The incidence of zonular dialysis during surgery was 23.8% (10 eyes), which was significantly higher than the controls (0.7%, P<0.001). Visual outcomes of the two groups were not statistically or clinically significant. CONCLUSION: Hard nucleus and intumescent cataract are related to IP in senile cataract subjects in Qinghai, China. With more care being taken, grade 1 and some of the grade 2 IP subjects achieved similar surgical outcomes as compared to controls.

Martola, L., P. Barany, et al. "Why do dialysis patients develop a heart of stone and bone of china?" Blood Purif. 2005;23(3):203-10. Epub 2005 Apr 4.

Vascular calcification is a common complication of end-stage renal disease (ESRD). The mechanisms responsible are complex and have so far been considered to be mainly the result of a passive mechanism due to elevated PO(4) levels and high Ca x PO(4) ion product resulting in saturated plasma. However, recent results suggest that also other features, commonly observed in the uremic milieu, such as chronic inflammation, hyperleptinemia and a dysregulation of various mineral-regulating proteins might also contribute to an enhanced calcification process. Moreover, as an inverse relationship between vascular calcification and bone density has been documented in ESRD, it could be speculated that pathologically low bone remodelling (adynamic bone disease) associated with active vitamin D treatment and low parathyroid hormone (PTH) levels may predispose to ectopic calcification of vessels, valves and heart. As patients with vascular calcification have a higher intake of calcium-containing PO(4) binders, novel, non-calcium containing PO(4) binders may diminish the risk of progressive vascular calcification in this patient group. Further studies are needed to

elucidate the respective role of chronic inflammation, hyperleptinemia and PTH-lowering therapies in this fatal complication of ESRD.

Meng, L. and B. Fu "Practical use of sevelamer in chronic kidney disease patients on dialysis in People's Republic of China." Ther Clin Risk Manag. 2015 Apr 30;11:705-12. doi: 10.2147/TCRM.S64657. eCollection 2015.

Hyperphosphatemia is a common complication of dialysis patients. Only 38.5% of Chinese dialysis patients met the Kidney Disease Outcomes Quality Initiative defined targets for serum phosphate. Sevelamer is a high molecular weight cationic hydrogel polymer that prevents absorption of dietary phosphate by binding it in the gastrointestinal tract. In Chinese trials, it was confirmed that sevelamer had better efficacy than calcium carbonate in terms of reducing the serum level of phosphorus and calcium-phosphate product. Sevelamer can also reduce the levels of lipid parameters and improve the micro-inflammatory state. When sevelamer was combined with other treatments, it elicited superior effects on calcium phosphorus metabolism, secondary hyperparathyroidism, and renal osteodystrophy. Combination treatment of sevelamer and traditional Chinese medicine has the unique advantage. However, sevelamer is associated with a high incidence of gastrointestinal adverse effects in Chinese patients. Although more effective, the practical use of sevelamer is not very common because it is expensive and not paid by medical insurance. This article provides a comprehensive review of the practical use of sevelamer in chronic kidney disease patients on dialysis in People's Republic of China.

Montpas, N., A. Desormeaux, et al. "[Anaphylactoid reactions associated with contaminated heparin from China]." Ann Pharm Fr. 2011 Sep;69(5):258-64. doi: 10.1016/j.pharma.2011.06.007. Epub 2011 Aug 2.

In January 2008, fatal anaphylactoid reaction (AR) was found to be associated with oversulfated chondroitin sulphate (OSCS) contaminated heparin. Although attributed to bradykinin released during contact system activation by OSCS, no final evidence until now exists for a bradykinin release during incubation of contaminated heparin with human plasma. The first objective of our study was to measure and to characterize the kinetic profile of bradykinin release in human plasma incubated with OSCS and contaminated heparin. As these AR occurred mainly in the first minutes of the dialysis session, we examine the different factors likely to influence the kinin-forming capacity of OSCS: dilution of plasma, presence of an angiotensin converting enzyme inhibitor, capacity of the patient to metabolise kinins.

Nikolaev, V. G. and V. A. Samsonov "Analysis of medical use of carbon adsorbents in China and additional possibilities in this field achieved in Ukraine." Artif Cells Nanomed Biotechnol. 2014 Feb;42(1):1-5. doi: 10.3109/21691401.2013.856017. Epub 2013 Nov 14.

The review is devoted to analysis of the use of carbon sorbents for medicinal purposes in China and description of some innovative technologies in this field in Ukraine. The review underlines the presence of common roots of sorption therapy development in these two countries determined by pioneer works of Prof. T.M.S. Chang, created to the concept of artificial cells. High level of works of Chinese scientists on sorption purification of blood and combined extracorporeal methods has been mentioned. At the same time, by author's opinion, two other methods of sorption therapy, namely enterosorption and sorption therapy of wounds and burns, has not been properly developed in China. In the review, there are also described the essential results of Ukrainian scientists in the field of blood purification from protein-bound toxins and other harmful compounds what is important for treatment of many serious human pathologies, and also the important data on the use of oral sorbents and dressings from activated carbon materials, which could be considered as a useful addition to achievements of Chinese scientists in the field of the development and use of sorbents for medicinal purposes.

Sun, J., R. Yu, et al. "Hepatitis C infection and related factors in hemodialysis patients in china: systematic review and meta-analysis." Ren Fail. 2009;31(7):610-20.

BACKGROUND AND AIMS: To provide a comprehensive and reliable tabulation of available data on the epidemiological characteristics and risk factors for hepatitis C virus (HCV) infection in maintenance hemodialysis (HD) patients in China, and to help inform prevention programs and guide future research. METHODS: A systematic review was constructed based on the computerized literature database by two reviewers independently. Ninety-five percent confidence intervals (CI) of infection rates were calculated using the approximate normal distribution model. Odds ratios and 95% CI were calculated by fixed or random effects models. RESULTS: Forty-three studies met our inclusion criteria. The pooled prevalence of HCV infection among HD patients in China was 41.1% (95% CI 39.5-42.6%). No significant difference was found in HCV infection rates between male and female HD

patients (OR = 0.75, 95% CI 0.52-1.07, p = 0.11). HD patients with blood transfusion were 5.65 times more likely to be infected with HCV than HD patients without blood transfusion. A longer duration of HD was associated with increased HCV prevalence. Co-infection with hepatitis B virus did not increase the probability of HCV infection among HD patients (OR = 1.19, 95% CI 0.34-3.20, p = 0.73). CONCLUSIONS: Viral hepatitis is still one of the main complications in HD patients, with hepatitis C being the most common one. The key to reducing the incidence of viral hepatitis in HD patients is to control contagion and reduce the frequency of blood transfusion and cross-infection.

Wang, C., J. Sun, et al. "Hepatitis B virus infection and related factors in hemodialysis patients in China - systematic review and meta-analysis." Ren Fail. 2010;32(10):1255-64. doi: 10.3109/0886022X.2010.517354.

AIMS: To provide a comprehensive and reliable tabulation of available data on the epidemiological characteristics and risk factors for hepatitis B virus (HBV) infection in maintenance hemodialysis (HD) patients in China and help to inform prevention programs and guide future research. METHODS: A systematic review was constructed based on the computerized literature database. Confidence intervals (95% CI) of infection rates were calculated using the approximate normal distribution model. Odds ratios (OR) and 95% CI were calculated by fixed or random effects models. Hepatitis B surface antigen positivity (HBsAg (+)) was set as the sign of HBV infection. RESULTS: Fifty studies met our inclusion criteria. The pooled prevalence of HBV infection among HD patients in China was 11.9%. Blood transfusion was correlated with an increase in HBV infection (p = 0.05). HD patients with a long-term history were more likely to be infected than those with a short-term history. The levels of alanine aminotransferase were higher in the HBsAg (+) patients (p < 0.001). Large doses of HBV vaccine (80 mug/dose) increased the seroconversion rate. The response rate of intradermal injection of HBV vaccine was higher than that of intramuscular injection. CONCLUSION: Hepatitis B is still one of the main complications in HD patients in China, and the frequency of blood transfusion and duration of HD were the risk factors. Large doses and intradermal injection of HBV vaccine were recommended to prevent HBV infection in HD patients. The findings of this meta-analysis have implications for optimal prevention and treatment of Hepatitis B in HD patients.

Wu, B., M. Wang, et al. "Survival rates in patients with diabetes on peritoneal dialysis in China." Ren Fail. 2013;35(2):231-4. doi: 10.3109/0886022X.2012.747132. Epub 2013 Feb 4.

OBJECTIVE: To compare overall survival and technical survival in diabetic mellitus (DM) and non-DM (N-DM) Chinese patients undergoing peritoneal dialysis (PD), and to discuss the factors involved. METHODS: Clinical data were analyzed for all adult patients (age >18 years) with chronic renal failure who had commenced PD between 2006 and 2010 in a single Chinese center. RESULTS: Compared to the N-DM group, the DM group was older (64.5 +/- 11.9 years vs. 59.2 +/- 15.2 years, p = 0.023), with a higher body mass index (BMI) (25.2 +/- 3.5 kg/m(2) vs. 23.2 +/- 3.5 kg/m(2), p = 0.001), a higher estimated glomerular filtration rate (eGFR) (10.4 +/- 4.7 mL/min/1.73 m(2) vs. 6.9 +/- 2.9 mL/min/1.73 m(2), p = 0.000), and lower intact parathyroid levels (81.35 pg/mL vs. 186.3 pg/mL, p = 0.003). During the average 23.8-month follow-up period, the 1-, 2-, and 3-year survival rates of the DM group were 95.8%, 69.2%, and 60%, respectively. The 1-, 2-, and 3-year survival rates of the N-DM group were 87.2%, 76.5%, and 66.7%, respectively. There was no significant difference in survival between the groups. The 1-, 2-, and 3-year technical survival rates of the DM group were 93.8%, 69.2% and 60%, respectively. The 1-, 2-, and 3-year technical survival rates of the N-DM group were 84.6%, 72.5% and 63.3%, respectively. There was no significant difference in technical survival between the groups. Within the DM group, the only factor predictive for both overall survival (p = 0.015) and technical survival (p = 0.009) was the initial BMI, and both survival outcomes in DM patients with a BMI greater than 24 were higher than those observed with a BMI less than 24. CONCLUSIONS: In the first 3 years of PD, DM and N-DM patients have similar survival rates. Chinese DM patients with a higher BMI undergoing PD appear to have higher survival rates than those with a lower BMI.

Xu, R., M. Zhuo, et al. "Experiences with assisted peritoneal dialysis in China." Perit Dial Int. 2012 Jan-Feb;32(1):94-101. doi: 10.3747/pdi.2010.00213. Epub 2011 May 31.

OBJECTIVE: About half the patients on peritoneal dialysis (PD) in China need to be assisted by family members or home assistants. We explored whether these patients have a higher risk for peritonitis and death compared with self-care PD patients. METHODS: We prospectively followed 313 incident PD patients until death or censoring. This cohort was divided into assisted and self-care PD groups according to the independence of bag exchange. Data on baseline demographics, Charlson comorbidity index, biochemistry, and residual renal function were recorded during the first 3 - 6 months.

The outcome variables were first episode of peritonitis and all-cause mortality. RESULTS: Of the 313 patients in this cohort study, 122 needed assistance in performing bag exchanges (86 from a family member, 36 from a home assistant); the remaining 191 patients did not need assistance. During a follow-up period averaging 44.5 months, 122 patients developed a first episode of peritonitis, and 135 patients died. Compared with patients having a family assistant, those with a home assistant had similar peritonitis-free and survival times, but a higher risk of mortality after adjustments for variables such as age, sex, Charlson comorbidity score, hemoglobin, serum albumin, and residual renal function. Furthermore, compared with self-care patients, assisted patients overall had a similar peritonitis-free time, but a higher risk of mortality, even after adjusting for covariates. CONCLUSIONS: Based on our single-center experience in China, we conclude that assisted PD is a good option for patients with poor self-care ability. This result provides evidence for recruiting patients who need assistance to PD programs in China.

Yang, J. Y. and Y. Yao "[Analysis of 1268 patients with chronic renal failure in childhood: a report from 91 hospitals in China from 1990 to 2002]." Zhonghua Er Ke Za Zhi. 2004 Oct;42(10):724-30.

OBJECTIVE: Chronic renal failure (CRF) of childhood is not rare. The prognosis of CRF is very poor because of severe systemic complications. A nation-wide survey was conducted and data of hospitalized children (younger than 14 years old) with CRF during the period of 1990 to 2002 were analyzed. The aim was to investigate the epidemiology, natural history, clinical-pathological characteristics, treatment and outcome of the hospitalized children with CRF. METHODS: Questionnaires concerning children with CRF were designed and distributed to the doctors of 91 hospitals in China. The criterion of CRF was creatinine clearance (CCr) < 50 ml/(min x 1.73 m(2)). The data were collected and analyzed. RESULTS: From January 1, 1990 to December 31, 2002, 1658 hospitalized children were diagnosed as CRF. The average annual cases of childhood CRF accounted for 1.31% (ranged from 0.72% to 1.75%) of the hospitalized cases with urologic-kidney diseases. In a comparison between 1990 - 1996 and 1997 - 2002, there were significant increases in the average annual number of cases of childhood CRF and the case ratio of CRF to urologic-kidney diseases (82 +/- 27 vs. 181 +/- 45 and 0.98 +/- 0.21 vs. 1.56 +/- 0.17, respectively, P < 0.001). Complete records were available for 1268 patients. The male to female ratio was 1.49:1. The mean age at the disease onset was 8.18 years. The mean duration of pre-diagnosis of CRF was 2.53 years. In this study, the main primary renal diseases causing CRF were chronic glomerulonephritis and nephrotic syndrome (52.7%). One-fourth of all cases had congenital and hereditary renal diseases, and the majority were renal hypoplasia and dysplasia. The main manifestations of CRF were anemia, gastrointestinal disorders, edema, hypertension and growth retardation. The mean serum creatinine and BUN were 594.7 micromol/L and 39.1 mmol/L, respectively. The cases with renal function >or= grade IV accounted for 80% of all cases. By renal ultrasound scanning, one-third of CRF children were found to have renal atrophy and a part of patients had cystic disorder. Most of the cases received conservative treatment. Dialysis therapy (including 66.5% of hemodialysis and 33.5% of peritoneal) was given to 15.8% of the patients. Twenty-nine cases received renal transplantation. The rate of graft survival was 93.1%. Follow-up was carried out for to 230 cases, the mean duration of follow-up was 2.36 years. One hundred and sixty-seven patients died during hospitalization over the 13-year review period. The main causes of death were cardiac failure and infections in addition to uremia. CONCLUSION: The incidence of CRF in children showed an increasing trend year after year. The main age of onset of the disease was school-age. The main primary renal diseases causing CRF were acquired renal diseases. Conservative treatment was the main therapy of CRF, but renal replacement therapy was initiated in some of the cases. The obvious difference between follow-up cases and lost cases warrants the need to establish a management system of childhood CRF.

Yang, X., H. P. Mao, et al. "Successfully managing a rapidly growing peritoneal dialysis program in Southern China." Chin Med J (Engl). 2011 Sep;124(17):2696-700.

BACKGROUND: The maximal use of the limited resource to improve peritoneal dialysis (PD) penetration and clinical outcomes is a challenge for all PD centers. In this study, we reported the experience and outcomes in successfully managing a rapidly growing PD center in Southern China. METHODS: A standard PD program with a team consisted of 6 nephrologists (3 doctors were in charge of catheter insertion and in-patients care, the other 3 doctors focused on PD patients' follow-up and education) and 11 nurses in a PD center at Sun Yat-sen University was established for PD patients follow-up in 2005. A prospective and observational study was conducted in all patients undergoing continuous ambulatory PD (CAPD) at our center from January 1, 2006 to December 31, 2009. RESULTS: The yearly number of prevalent CAPD patients was 297, 409, 547 and 695 in 2006, 2007, 2008 and 2009, respectively. The PD catheter insertion was performed by the nephrologists

with open surgical procedure and 94% of catheters were patent at one year. In 841 incident CAPD patients, the survival rates at the end of 1, 2, 3 and 4 years were 94%, 87%, 83% and 76%, respectively, while cumulative technique survival rates (death-censored) were 98%, 95%, 91% and 90%, respectively. Peritonitis rate was 1/68.5 patient months. CONCLUSIONS: Better patient and technical survival rates as well as lower peritonitis episode have been achieved in our rapidly growing PD center. A standardized PD program, well-trained team members of PD doctors and nurses, and continuous quality improvement of PD are important elements in managing a successful PD program.

Yao, Q., W. Zhang, et al. "Dialysis status in China: a report from the Shanghai Dialysis Registry (2000-2005)." Ethn Dis. 2009 Spring;19(1 Suppl 1):S1-23-6.

INTRODUCTION: As economic development continues in China, it is important to evaluate recent changes in dialysis status. However, China lacks a national dialysis registry. This elevates the need to use local registry systems like the Shanghai Dialysis Registry to gain an overview of dialysis status in developed cities in China. METHODS: Data were collected from the Shanghai Dialysis Registry from the beginning of 2000 to the end of 2005. All dialysis centers (n = 58) in Shanghai are included in the registry system. RESULTS: Point prevalence of dialysis on December 31, 2005, was 5496, compared with 4842 in 2000. In 2005, 3746 patients began dialysis, yielding a treatment rate of 275.4 patients per million population. The percentage of peritoneal dialysis patients was 18% in 2005, compared with 14% in 2000. The main cause for end-stage renal disease was chronic glomerulonephritis. However, the incidence of diabetic nephropathy increased from 9.9% in 2000 to 17.2% in 2005 and counts as the second major cause of end-stage renal disease. The death rate of patients on dialysis decreased from 9.2% in 2000 to 7.5% in 2005. Cerebrovascular disease was still the leading cause of death and decreased significantly from 2.4% in 2000 to 1.5% in 2005. Dialysis adequacy, hepatitis infection control, and anemia treatment improved. CONCLUSIONS: The Shanghai dialysis population grew continuously during the period covered by this study (2000 to 2005). Clinical outcomes improved because of prompt treatment for co-morbidities.

Ye, C., Z. Mao, et al. "A retrospective study of palindrome symmetrical-tip catheters for chronic hemodialysis access in China." Ren Fail. 2015 Jul;37(6):941-6. doi: 10.3109/0886022X.2015.1040338. Epub 2015 May 6.

Hemodialysis catheters remain necessary for long-term vascular access in patients for whom arteriovenous access may be problematic or impossible. Developments in catheter design have improved long-term catheter functionality, and reduced the rate of infection and complications associated with their use. This retrospective study of 284 cases of chronic catheterization in 271 patients treated between 2009 and 2011 using Tal Palindrome symmetrical-tip (N = 118) or Quinton Permcath step-tip (N = 166) hemodialysis catheters evaluates the efficacy and the safety of symmetrical-tip dialysis catheters for chronic hemodialysis, compared with a step-tip catheter. Measurements of catheter performance included mean catheter dwell time, incidence of low blood flow, and rates of infection and catheter-related blood stream infection (CRBSI). The symmetrical-tip catheter had a significantly longer mean dwell time compared with the step-tip catheter; 329.4 +/- 38.1 versus 273.1 +/- 25.4 d ($p < 0.05$). In addition, the rate of occurrence of low blood flow per 1000 catheter days was lower for the symmetrical-tip compared with the step-tip catheter; 1.13 versus 6.86 ($p < 0.01$). The symmetrical-tip catheter was also associated with a lower incidence of complications; the rates of infection (0.28 vs. 0.78; $p < 0.01$) and CRBSI (0.15 vs. 0.44; $p < 0.01$) were lower compared with those for step-tip catheters, and catheter removal occurred less often for the symmetrical-tip catheter (8% vs. 16%; $p < 0.05$).s

Yi, C., Q. Guo, et al. "Clinical Outcomes of Remote Peritoneal Dialysis Patients: A Retrospective Cohort Study from a Single Center in China." Blood Purif. 2015 Dec 16;41(1-3):100-107.

BACKGROUND/AIMS: To investigate clinical outcomes of remote peritoneal dialysis (PD) patients in Southern China. METHODS: In this retrospective cohort study, incident remote PD patients managed with a comprehensive follow-up program in our PD center were included and clinical outcomes were estimated. RESULTS: One thousand and five remote PD patients with mean age 46.1 +/- 14.6 years, of which 38.1% were women, were followed-up for a median of 35.7 months. Patient survival rates were 95.4, 84.7 and 71.8% and death-censored technique survival rates were 98.6, 92.3 and 83.4% at 1, 3 and 5 years, respectively. Peritonitis rate was 0.16 episodes per patient-year. Advanced age, diabetes mellitus, shorter peritonitis-free survival time, poor compliance for regular visiting nephrologists and lower hemoglobin predicted all-cause mortality of remote PD patients. CONCLUSION: The remote PD patients in Southern China managed with comprehensive follow-up program had favorable clinical outcomes, which indicated that home-based PD therapy could be an appropriate treatment option for remote end-stage

kidney disease patients.

Yu, X. and X. Yang "Peritoneal dialysis in China: meeting the challenge of chronic kidney failure." Am J Kidney Dis. 2015 Jan;65(1):147-51. doi: 10.1053/j.ajkd.2014.08.023. Epub 2014 Nov 5.

Due to limited medical and economic resources, particularly in the countryside and remote areas, the proportion of individuals with end-stage kidney disease who are treated with dialysis in China is only about 20%. For the rest, renal replacement therapy currently is not available. Peritoneal dialysis (PD) has been developed and used for more than 30 years in China to treat patients with end-stage kidney disease. Several national PD centers of first-rate scale and quality have sprung up, but the development of PD varies widely among geographic regions across China. The Chinese government has dedicated itself to continually increasing the coverage and level of medical service for patients with end-stage kidney disease. Under the guidance of the government and because of promotion by kidney care professionals, presently there are more than 40,000 prevalent PD patients in China, representing approximately 20% of the total dialysis population. Recently, a National Dialysis Unit Training Program for countywide hospitals has been initiated. Through the efforts of programs like this, we believe that awareness of PD and advances in the underlying technology will benefit more patients with end-stage kidney disease in China.

Zhang, A. H., L. T. Cheng, et al. "Comparison of quality of life and causes of hospitalization between hemodialysis and peritoneal dialysis patients in China." Health Qual Life Outcomes. 2007 Aug 2;5:49.

BACKGROUND: Hemodialysis (HD) and peritoneal dialysis (PD) are important renal replacement treatment in end stage renal disease (ESRD), but the comparison of quality of life (QOL) and causes of hospitalisation between the two modalities in China is lacking. In the present study, we compared the two modalities in a multi-center study. SUBJECTS AND METHODS: Six hundred and fifty four HD and 408 PD patients were investigated from 10 hospitals in China from Sept, 2004 to Jan, 2005. Among the HD patients, there were 360 males and 294 females with a mean age of 57.22 +/- 12.49 years (18-88 y). Among PD patients, there were 165 males and 243 females, with a mean age of 61.59 +/- 12.65 years (22-89 y). Health related 36 items short form questionnaires (SF-36) were used to assess the quality of life. Hospitalisation data were collected and analyzed. RESULTS: SF-36 domains of Body Pain (BP), General Health (GH), Role-Emotional (RE), Social Functioning (SF), Vitality (VT) and Mental Health (MH) were all significantly higher in the PD patients as compared to the HD patients although there was no significant difference in Physical Functioning (PF) and Role-Physical (RP) between the two groups. The two most common causes of hospitalisation in HD patients were cardiovascular disease (39.8%) and pulmonary infection (21.3%), while they were infectious peritonitis (47.6%) and cardiovascular disease (31.9%) in PD patients. The ever hospitalised patients had lower SF-36 scores in the domains of PF, BP, GH, RE, SF, VT and MH as compared to those of non-hospitalised patients. CONCLUSION: Our study indicated that with the current practice in China, PD patients may enjoy better quality of life than their HD counterparts. Our results also showed that the most common cause of hospitalisation was cardiovascular disease in HD patients and peritonitis in PD patients.

Zhang, X., Z. Shou, et al. "The role of an integrated care model for kidney disease in the development of peritoneal dialysis: a single-center experience in China." Perit Dial Int. 2014 Jun;34 Suppl 2:S55-8. doi: 10.3747/pdi.2013.00124.

Peritoneal dialysis plays a crucial role in the integrated care of patients with end-stage renal disease (ESRD). In this paper, we retrospectively analyzed the quality indicators of peritoneal dialysis (PD) in 712 patients from our center who underwent PD between 2004 and 2011. In 43% of patients, follow-up was undertaken every 3 months at our outpatient department, and 54% patients were followed up by both our hospital and other local hospitals. The patient survival rate at 1, 3 and 5 years was 96.3%, 85.4% and 76.2%, respectively. The technique survival (excludes death/transplantation) at 1, 3 and 5 years was 95.1%, 87.7% and 79.6%, respectively. Fluid overload occurred in 29.2% of patients and was one of the major reasons for discontinuing PD. The peritonitis rate in our center decreased to 0.16 episodes/year in 2011. In addition, since our center is one of the largest integrated-treatment centers for ESRD in China, we have developed a multilevel care program in Zhejiang Province, which resulted in rapid growth of PD in our province in recent years.

Zhou, L., Y. L. Cao, et al. "Transitional cell carcinoma associated with aristolochic acid nephropathy: most common cancer in chronic hemodialysis patients in China." Chin Med J (Engl). 2012 Dec;125(24):4460-5.

BACKGROUND: The research of cancer in patients on hemodialysis (HD) in China has not been reported. The aim of this study was to investigate the clinical and histological features and outcomes of cancer in Chinese HD patients. METHODS: The study subjects were 49 cancer patients (1.4%) out of 3448 end stage renal disease (ESRD) patients

maintained on HD at China-Japan Friendship Hospital from October 1997 to July 2011. RESULTS: Urinary tract cancer (74%) was the most common followed by gastrointestinal tract cancer (12%), breast cancer (6%), lung cancer (4%), thyroid cancer (2%), and hematologic cancer (2%). Thirty-three patients (67%) had urinary tract transitional cell carcinoma (TCC) and 29 of them had aristolochic acid nephropathy (AAN) as underlying disease. Death occurred in eight patients out of 49, and the survival rate of HD patients with cancer was similar to those without cancer (P = 0.120). CONCLUSION: The urinary tract TCC is the most common cancer in HD patients with AAN in one of the centers of northern China.

Zuo, L. and M. Wang "Current burden and probable increasing incidence of ESRD in China." Clin Nephrol. 2010 Nov;74 Suppl 1:S20-2.

AIMS: To illustrate the incidence and prevalence of ESRD in mainland China, and estimate future trends. MATERIALS AND METHODS: The Chinese Society of Blood Purification (CSBP) produced a survey form. The form was designed for use at the facility level, rather than at the patient level. The data were those prevailing at the end of 2008, i.e., the total number of patients at the end of 2007 and the number of new patients during the year 2008; numbers of males and females and each of the age groups; numbers of diabetes, hypertension, polycystic kidney disease, chronic interstitial nephritis, etc. as primary cause of ESRD; and numbers of cardiovascular disease, stroke, infection, etc. as primary cause of death. The forms were distributed to each dialysis facility, and returned to CSBP for analysis. The point prevalence of ESRD patients on maintenance hemodialysis (MHD) at the end of 2007 and 2008, and the annual incidence in 2008 were calculated. The primary cause of ESRD and primary cause of death were also reported. RESULTS: Among 31 provinces and/or regions, 27 responded. At the end of 2007, there were totally 65,074 ESRD patients on MHD or PD; the point prevalence was estimated to be 51.7 per million population (pmp) around mainland China. The number increased to 102,863 at the end of 2008; point prevalence increased to 79.1 pmp. The annual increasing rate of prevalence was 52.9%. The number of new ESRD patients was 45,423; the annual incidence was 36.1 pmp in the year 2008. The main causes of ESRD were glomerulonephritis (45%), diabetes (19%), hypertension (13%), polycystic kidney disease (2%) and others or unknown (20%). The main cause of death was cardiovascular (31.0%), stroke (20.3%), infection (19.9%) and others (28.8%). CONCLUSIONS: Although the prevalence was relatively low compared with other Asian regions, the incidence of MHD was high. Mainland China is anticipating an increasing burden of ESRD in the near future.

Zuo, L. and M. Wang "Current status of maintenance hemodialysis in Beijing, China." Kidney Int Suppl (2011). 2013 May;3(2):167-169.

The Beijing Hemodialysis Quality Control and Improvement Center started patient data collection from 2007. We report here the trends in incidence, prevalence, and mortality of end-stage renal disease (ESRD) patients on maintenance hemodialysis (MHD). The incidence increased from 94 per million population in 2007 to 147.3 per million population in 2010. The leading cause of ESRD changed from chronic glomerulonephritis (32.1%) to diabetes (40.1%). The point prevalence of MHD at the end of 2006 was 269 per million population, and gradually increased to 509 per million population in the end of 2010. The leading cause of ESRD in 2010 prevalent patients was chronic nephritis (33.9%), followed by diabetes (29.5%). The annual mortality varied from 7.4 to 9.0%. Old or diabetic patients suffered a higher mortality. The 2010 prevalent MHD patients achieved KDOQI hemoglobin, calcium, phosphate, and intact parathyroid hormone guidelines, which was comparable to other DOPPS (Dialysis Outcome and Practice Pattern Study) countries; Beijing MHD patients had a relatively higher albumin level.

The above contents are the collected information from Internet and public resources to offer to the people for the convenient reading and information disseminating and sharing.

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