



CONGRESS PROCEEDINGS

Abstracts of the South African Renal Congress 2018, held in Johannesburg, 11-14 October 2018

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South African Renal Congress 2018: Oral Presentations

SARS Oral Presentations

Saturday, 13 October 2018

Use of 'Home-Made PD' adapted intravenous fluid solution for acute peritoneal dialysis in Africa

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Peritoneal Dialysis (PD) in paediatric Acute Kidney Injury (AKI) is usually dependent on commercially manufactured peritoneal dialysis fluid and surgically inserted PD catheters. These fluids are not available in many African countries. In addition, there is also a shortage of trained surgeons to place PD catheters. The objective of this study was to determine the safety and effectiveness of hospital made peritoneal dialysis fluid to treat children with AKI.

Retrospective database review of paediatric AKI cases in which acute PD was used at Red Cross Children's Hospital from 1999 – 2014. A subgroup analysis was done on cases in which a hospital made bicarbonate solution was used to treat cases of severe acidosis. This fluid was made at the bedside by the treating physician by adding 50% Dextrose to an intravenous solution (Balsol).

611 cases were reviewed. 49 cases were treated with hospital made PD fluid. Age: mean 1.13 yrs (range 1day-10.2yrs). This included 17 Neonates and 40 infants. Weight: median 4.1 kg (range 1.3-50kg). Time on PD: mean 3.9 (range 1-17 days). Manual PD was performed 37/49 cases. 47 catheters percutaneously placed at the bedside by the treating physician. PD complications: bladder insertion of catheter in one case, this was removed with no side effects; blockage of catheter needing 're-wiring' in five cases; peritonitis in 2 patients although only one was attributed to the peritoneal dialysis; no bleeding and no electrolyte abnormalities were noted. Patient survival was 43%.

Hospital made PD fluid using an intravenous solution proved to be safe and effective.

This has important relevance for centers in less well-resourced countries across the world where commercially produced PD fluid is not available for management of AKI.

The complications of peritoneal dialysis in children with end-stage renal disease in Johannesburg, South Africa: a 5-year experience

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Introduction / Background

Children with end-stage renal disease are commonly placed onto chronic peritoneal dialysis (PD) while awaiting transplant. Mechanical, infectious and metabolic complications of PD may lead to technique failure, morbidity or mortality. This study aims to describe the mechanical and infectious complications and associated risk factors in children on chronic PD.

Methods

A retrospective record review of patients less than 18 years old enrolled on the chronic PD program of Charlotte Maxeke Johannesburg Academic and Chris Hani Baragwanath Academic Hospitals between 1 January 2009 and 31 December 2013.

Results

Thirty-five patients had complete records which were suitable for analysis. Seventy one percent of the patients had one or more complications while on PD. The most common complication was peritonitis (54%) followed by catheter obstruction (29%). Patients on automated peritoneal dialysis (APD) were significantly less likely to develop peritonitis than those on continuous ambulatory PD (Odds Ratio [OR] 23.14, 95% CI 2.45 – 218.0, $p = 0.002$). Patient age was found to be significantly associated with dialysate leak, with the younger patients having an increased risk of developing a leak. (OR 19.5, 95% Confidence Interval [CI] 1.29-292.8, $p = 0.003$). No statistically significant associations were found between patient sex, early use of the peritoneal dialysis catheter, starting serum albumin or BMI and any of the complications.

Conclusions

Children on APD are significantly less likely to have peritonitis. This benefit is likely to translate into reduced hospital admissions, cost savings, less technique failure and better patient quality of life. We recommend that patients be preferentially placed on APD.

An audit of treatment of AKI in SADC and Nigeria: are we ready for zero deaths by 2025 in sub-Saharan Africa?

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Introduction / Background

Acute kidney disease (AKI) is estimated to be responsible for 1.7 million deaths annually with an excess coming from the developing world due to inadequate access to care. The International Society of Nephrology has called for zero deaths by 2025. This survey aimed to determine the preparedness of Southern African Development Community (SADC) countries and Nigeria to heed this call.

Methods

Facilities where renal replacement therapy was available were identified. A questionnaire was created to determine type of services available, quality of care and to identify the clinicians involved in the care of AKI. The questionnaire was emailed to hospitals and clinicians.

Results

Completed questionnaires were received from 12 out of the 15 SADC countries and Nigeria, covering 48 service providers. Hospitals were either tertiary or university in 89.6% of cases. The government provided funding for dialysis in 41.7% of services. Out of the 16 countries that were included in the survey, 14 provided government funding for dialysis. Interdisciplinary teams in 72.9% of hospitals covered the intensive care units (ICU), which included at least 1 nephrologist in 75%. However, only 77% of hospitals were able to provide dialysis in an ICU. Intermittent haemodialysis was the most common modality available in 91.7% of facilities, SLED in 50%, continuous therapies in only 35% and peritoneal dialysis in 33.3%. Almost half the sites were limited to one mode of dialysis and unable to care for severely ill patients. The clinical status was used to initiate and monitor dialysis, with very few sites having clear written indications for dialysis or standard operating procedures.

Conclusions

In the sixteen countries surveyed assessed the majority had very limited ability to provide comprehensive dialysis programme for patients with AKI due to lack of facilities and government funding. Additionally, there is a scarcity of nephrologists, limitation in the modes of dialysis, limitation in the care for the most severely ill patients and lack of standard operating procedures. Resources, training and funding need to be made available to create universal coverage of dialysis for AKI.

Using a novel urinary biomarker (MCP-1) to assess disease activity in patient with lupus nephritis – Interim results from a single centre in Cape Town

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Introduction / Background

Lupus nephritis (LN) is a common cause of chronic kidney disease and end-stage renal disease requiring dialysis in South Africa. A non-invasive, easy to obtain and accurate biomarker that can discriminate disease activity and severity, predict flares, and monitor treatment response and disease progression would be very useful in guiding patient management. Within the kidney, locally secreted chemokines such as monocyte chemoattractant protein-1 (MCP-1) are instrumental in the pathogenesis of LN and may therefore have the potential to accurately reflect renal inflammatory disease activity in LN. This study aimed to assess the correlation between urinary MCP-1 concentrations and disease activity in patients with lupus nephritis.

Methods

A cohort of fifty patients was recruited from the Nephrology Clinic at Groote Schuur Hospital. This consisted of (i) a clinically stable group with quiescent LN (n=30) and (ii) an active disease group (n=20) made up of newly biopsied LN. Relevant demographic and biochemical data was collected from each group. Urinary MCP-1 was measured by Enzyme-linked Immunosorbent Assay (Quantikine ELISA, R&D Systems USA). Statistical analysis was performed for non-parametrical data using Wilcoxon rank-sum test (Stata14, StataCorp LLC). A p value <0.05 was deemed statistically significant.

Results

Demographic features (age, gender and race) were similar in both groups. Serum creatinine was not significantly different between the groups (p=0.093), however, disease activity index (SLEDAI score) was significantly higher in the active group (p<0.0001). Patients with active LN demonstrated a significantly higher urinary MCP-1 concentration than patients in the quiescent group [data described as median (P25; P75): 1440 (683; 2729) vs 256 (175;477) pg/mL; p<0.0001]. When the patients' MCP-1 concentrations were corrected for their urinary creatinine concentrations (in pg per mg of creatinine), the active group demonstrated values that were again significantly higher than the quiescent group [1093 (577; 1848) vs 286 (138; 774) pg/mgCr; p<0.0001].

Conclusions

As per previous studies in other countries, this interim analysis of our data suggests that urinary MCP-1 reflects renal disease activity in our South African cohort of LN patients and could be useful for diagnosis and disease activity monitoring.

The influence of dialysis modality on post-transplant outcomes

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Introduction / Background

Renal transplantation is the therapy of choice for end stage kidney disease, offering mortality risk reduction and improved morbidity over dialytic therapies. Limited data is available evaluating the effect of pre-engraftment dialysis modality on transplant outcomes.

Methods

A retrospective review was conducted on all adult patients undergoing renal transplantation at Charlotte Maxeke Johannesburg Academic Hospital for the period 01/01/2006 – 31/12/2011 (n=103). Transplant outcomes were assessed by dialysis modality. χ^2 testing was used to compare dialysis modalities; Cox proportional hazard modelling was used to assess effect on graft outcomes. A $p < 0.05$ was deemed statistically significant.

Results

Antecedent dialytic modality was as follows: 55 patients (53.4%) received hemodialysis (HD), 35 (34%) received peritoneal dialysis (PD), and 13 (12.6%) received a combination of both (HD+PD, defined as either modality for > 3 months). Acute rejection (AR) was documented in 43.7% of patients; 54.3% of PD patients developed AR compared to 38.2% of HD patients and 38.5% of HD+PD patients ($p=0.29$). No significant difference in the number of episodes of AR was detected between modality groups ($p=0.44$). Chronic rejection (CR) developed in 22.3% of patients overall; 21.8% of HD patients, 25.8% of PD and 15.9% of HD+PD patients ($p=0.74$). PD was associated with an increased risk of developing any rejection (HR=2.4, 95% CI 0.9–6.4, $p=0.02$). Whereas dialysis modality did not affect graft survival (for HD $b = 0.57$, SE=0.5, Wald=1.2, 95% CI -0.4-1.6, $p=0.27$; for PD $b=0.58$, SE=0.5, Wald = 1.4, 95% CI -0.4-1.6, $p=0.24$). AR was associated with future graft loss ($b=1.29$, SE=0.3, Wald = 18.1, 95% CI 0.7-1.9, $p<0.001$).

Conclusions

Antecedent PD is associated with an increased risk of graft rejection. Although AR is associated with graft loss, antecedent dialysis modality does not directly predict graft survival, likely reflecting the multifactorial nature of cumulative allograft injury.

Plasma fibroblast growth factor 23 and all- cause mortality in South African patients on maintenance haemodialysis

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Background

Few studies have linked high levels of plasma C-terminal fibroblast growth factor 23 (FGF23) with poor clinical outcomes in patients on maintenance haemodialysis (MHD), while the association between intact FGF 23 and mortality in this group of patients remains inconclusive.

Therefore, the aim of this study was to evaluate the association between plasma levels of intact FGF 23 and mortality in MHD patients.

Methods

A 3 year prospective multicentre study involving patients undergoing MHD at three dialysis centres in Johannesburg was undertaken between the periods of October 2014 and December 2017.

The association between the quartiles of FGF-23 and mortality was assessed using the Cox proportional hazard model.

Results

The study comprised 165 MHD patients (111 blacks, 54 whites) with a mean age of 46.5 ± 14.2 years. During a three year follow up period, there were 40 deaths (0.9 per 100 person- years). The median plasma FGF 23 was 382 pg/ml (interquartile range [IQR], 148-2977). In adjusted multivariable analyses, there was a non-statistically significant increase in the risk of mortality with higher quartiles of FGF 23 levels : the adjusted hazard ratios(HR) for the second, third and fourth quartiles were HR 1.85 (95% CI, 0.66-5.22; P=0.24), HR 1.55 (95% CI, 0.55-4.36; P=0.40), and 1.65 (95% CI, 0.55-4.97; P= 0.37) respectively. As compared with normal levels (2.11-2.37 mmol/l), serum calcium levels > 2.38 mmol were independently associated with increased risk of all-cause mortality HR 2.40 (95% CI, 1.13-5.09; P=0.023).

Conclusion

Higher levels of intact FGF 23 appear not to be independently associated with all cause mortality in MHD patients, while hypercalcaemia was found to be an independent predictor of mortality in this cohort of patients.

However, larger studies are further needed to confirm the non significant association between the intact FGF 23 and all cause mortality in MHD patients.

Sensitivity and specificity of anti-phospholipase A₂ receptor (APLA₂R) A and thrombospondin type-1 domain-containing 7a (THSD7A) in identifying idiopathic membranous nephropathy in a South African cohort

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Introduction / Background

Idiopathic membranous nephropathy (IMN) is a common cause of nephrotic syndrome in adults accounting for up to 18.5% of primary glomerulonephritides in South Africa. Anti-phospholipase A₂ receptor (APLA₂R) antibodies have been described to be useful for identifying IMN. In this study, we describe the utility of APLA₂R and thrombospondin type-1 domain-containing 7A (THSD7A) in identifying IMN in a single centre.

Methods

In a 10-year period (2007 to 2016), we assessed biopsies identified as IMN and stained their slides for APLA₂R and THSD7A using standard methods as described by manufacturers. We also stained, with the same antibodies, the biopsies of patients with lupus membranous nephropathy (LN-V) and diabetic nephropathy (DN) for the same study period as controls. All the biopsies were analyzed and reviewed by a single pathologist (B.F.).

Results

There were a total of 88 biopsies assessed (46.6% IMN; 21.6% LN-V and 31.8% DN). Overall, there were 31.8% males, black Africans were 33.0% and mean age was 42.9 ± 16.4 years. Overall, 64.8% had nephrotic range proteinuria (85% - IMN; 74.5% - LN-V and 56.5% - DN; p = 0.045). The sensitivity of APLA₂R for identifying each disease condition was 51.2% vs 0% vs 0% for IMN, LN-V and DN, respectively (p<0.0001). The specificity of APLA₂R was also highly significantly different for IMN than LN-V and DN (p<0.0001). However, the sensitivity of THSD7A for IMN, LN-V and DN was 4.9% vs 0% vs 0% respectively (p=0.309).

Conclusions

To the best of our knowledge, this is the first African study assessing the roles of biomarkers in identifying IMN and our data has shown that APLA₂R is a more sensitive test than THSD7A for identifying IMN in histological tissues of renal biopsy patients. Further studies are needed to corroborate our findings.

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CYP3A5 polymorphisms and their effect on tacrolimus exposure in an ethnically diverse South African renal transplant population

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Introduction / Background

Tacrolimus forms the cornerstone for immunosuppression in solid organ transplantation. It has a narrow therapeutic window with wide inter and intra-patient variability. CYP3A5 is the predominant enzyme for tacrolimus metabolism. The rs776746A>G is the most frequently studied polymorphism in CYP3A5. The rs776746A>G (i.e. CYP3A5*3) single nucleotide polymorphism (SNP) in CYP3A5 alters tacrolimus concentration (C₀) levels, which may lead to immune and/or drug mediated allograft injury. CYP3A5*3 may result in absent (*3/*3), partial (*1/*3) or normal (*1/*1) expression of CYP3A5. The effect of CYP3A5*3 on tacrolimus exposure has not been studied in South African transplant recipients.

Methods

All consenting stable renal transplant recipients on tacrolimus at Livingstone Hospital Renal Unit were included. Tacrolimus concentrations were obtained using a micro particle enzyme immunoassay method (ARCHITECT analyser). PCR/RFLP was used to genotype for CYP3A5.

Results

There were 43 participants (35% Black, 21% White and 44% Mixed Ancestry ethnicity) with a mean age of 44.5 (SD 12.3) years, median duration post-transplant of 47 (IQR 24-110) months and median creatinine and eGFR was 114 µmol/L (IQR 92-140) and 61 ml/min (IQR 49-76) at study inclusion. Overall, 37% were CYP3A5 expressors (*1/*1), while 28% were partial expressors (*1/*3) and 26% were non-expressors (*3/*3). CYP3A5*1/*1 and CYP3A5*1/*3 genotype carriers required a two fold increase in dose compared to non-expresser genotype carriers, CYP3A5*3/*3 (P<0.05). The distribution of CYP3A5 expressors (i.e. CYP3A5*1/*1 + *1/*3) was 100%, 75% and 12.5% among Black, Mixed Ancestry and Caucasian participants, respectively. The mean tacrolimus C₀ in the study was 7.2 ng/ml with no difference across race groups. However, the mean total daily dose of tacrolimus required was 9.1 (0.12 mg/kg), 7.2 (0.09 mg/kg) and 4.3 (0.06 mg/kg) milligrams daily in Black, Mixed Ancestry and White ethnicity, respectively.

Conclusions

CYP3A5 genetic variation affects tacrolimus dose requirements. Knowing CYP3A5 genotypes of transplant recipients may allow better dose prediction compared to current standard dosing recommendations.

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Clinical utility of urinary transforming growth factor beta (TGF- β) in the diagnosis of chronic kidney disease (CKD) in the HIV population

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Introduction / Background

The early diagnosis and management of CKD in the HIV population may aid in the reduction of adverse health consequences including kidney failure and cardiovascular disease. This would require a clear understanding of the pathobiology of kidney disease in HIV population. Upregulation of TGF-beta-1 activity is linked to the pathogenesis of diabetic nephropathy and some forms glomerulonephritides, and is well established as a potent facilitator of renal fibrosis. The utility of TGF-beta-1 as a biomarker in HIV-related CKD remains unclear.

Methods

One hundred and seventy-eight HIV-infected patients without CKD and 130 HIV-infected patients at various stages of CKD had their serum creatinine, urinary protein-creatinine ratio, serum TGF-beta-1 and urinary TGF-beta-1 measured after collection of important sociodemographic variables. TGF-beta-1 was measured using ELISA techniques. Urinary TGF-beta-creatinine ratios (uTGFCr) were calculated. Individuals with hypertension or diabetes mellitus were excluded from the study. Comparison of uTGFCr levels was performed using the Mann-Whitney U-test. Spearman Rank correlation was employed to assess the linear relationship between uTGFCr and other continuous variables. Multivariable linear regression model was used to assess independent association with changes in uTGFCr levels. Receiver Operator Characteristic (ROC) analysis was used to assess the utility of uTGFCr in the diagnosis of CKD in the HIV population.

Results

The mean age of the participants was 38.3 \pm 10.3 years with 73.4% being female. The median uTGFCr was significantly higher among HIV patients with CKD compared to those without [4.85 (IQR 1.96-12.35) versus 2.95 (IQR 1.02-5.84); p=0.001]. There was no significant correlation between uTGFCr and age, mean arterial blood pressure, waist circumference and body mass index. Among the patients with CKD, there was gradual reduction in the median level of uTGFCr as CKD stage became more severe. HIV-infected individuals with CKD had significantly higher levels of uTGFCr after controlling for changes in age, gender, BMI, blood pressure levels, waist circumference and CKD stage. The area under the ROC curve was 0.63.

Conclusions

HIV patients with CKD express higher levels of TGF-beta-1 activity in urine especially in the early stages of CKD and therefore may be useful as an early indicator of CKD occurrence among HIV patients.

RCSSA Oral Presentations

Saturday, 13 October 2018

Analysis of chronic haemodialysis population demographics and outcomes in a private practice in Johannesburg

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Background and Aim

Disparities in South Africa have resulted in differences in approach to renal replacement therapy between public and private sectors. Little data is available on the demographics, co-morbidity and outcomes of patients in the private sector. We embarked on a review of our dialysis private practice in the in Johannesburg. We have collected data from our practice haemodialysis pool. This represents an interim data analysis.

Methods

Data source used in the study was dialysis patient's charts. Our practice uses specifically designed A5-size charts for clinical rounds and record keeping. The charts record clinical information, medical history, laboratory tests, medication, investigations and dialysis prescription. Data collection on prevalent patients in our practice was carried out for the period January 2012 to May 2018. Patient demographics, comorbidities, survival and causes of death were collected from the charts. An interim analysis was done after collection of data from two dialysis units. Survival analysis was also performed on incident patients using billing records during the above selection period.

Results

Data collection from 357 prevalent files was completed. Mean age at initial dialysis was 56.3yrs. 38% were black, 33% white and 13.5% Indian. Sex: 61% were male. Hypertension (31%) and Diabetes (30%) were the commonest causes of ESRF. Comorbidity included cardiac disease (25.4%), malignancy (8%) and HIV disease (10%). Survival analysis: 443 incident patients included with median follow up 2.5 years. Outcome: 1,3 and 5-year survival was 87.5%,67.6% and 59% respectively.

Conclusion

Demographics of sector this private dialysis cohort were somewhat surprising and warrants further investigation. Comorbidities are common. Rate of HIV infection was lower than expected. Five-year survival was low at 59% in this sample.

Comparative analysis of urea reduction ratios (URR) of chronic renal failure patients on nocturnal and diurnal haemodialysis treatment

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Background

Dialysis machine technology has advanced significantly enabling us to receive better understanding of clearance, by having a greater capacity for increased blood and dialysate flow rates as well as greater membrane porosity and biocompatibility. These advancements allow for better measurement of dialysis adequacy and improved clearance. Private units in SA and USA provide mostly 4 hour dialysis. The concern with 4-hour dialysis is whether it provides optimum removal of toxins and solutes. Nocturnal chronic haemodialysis (NCHD) consist of at least 8 hour dialysis. Longer dialysis provides a better option for enhanced clearance.

Methods

This is a prospective and quantitative study consisting of 30 patients on CHD, nocturnal 8-hour dialysis and 4-hour, 3 x week diurnal dialysis. The patients were recruited from National Renal Care (KZN and Gauteng) and were monitored over a course of 3 months. Measurement of adequacy were measured using URR

Results

Nocturnal haemodialysis resulted in better urea clearance. The values are strongly significant $P < 0.0001$ with a high correlation coefficient $r = 0.5009$. The urea reduction ratio in the nocturnal CHD group was significantly higher than the diurnal CHD group. The difference between the percentage change of URR from each modality were significant $p < 0.05$.

Conclusion

Longer nocturnal dialysis provides better clearance. It is observed that the URR in the nocturnal group was significantly higher than the diurnal group.

Implementing strategic change in a selected private healthcare company in South Africa: The importance of leadership and change readiness

Edmund Jacobs

National Renal Care

Today's organisations find themselves in a complex and changing world, characterised by great uncertainty, volatility and risk. In order for organisations to survive and remain competitive in today's business environment, organisations must continuously look at different and more efficient ways of doing business, and in extreme situations re-engineer the whole organisation. The implementation of organisational change seems to remain challenging to most organisations, especially as the stakeholders of the organisation have different expectations and experiences of the change.

A clearer understanding of the organisational and personal factors that influence the implementation of change within the organisation is required in order to improve the success rate of the implementation of organisational change. The research sought to investigate employees' perceptions and experience of organisational change via a descriptive quantitative research study. Data was collected via e-questionnaire.

The main research findings showed that there are both organisational and personal characteristics present, which could potentially lead to the ineffective implementation of organisational change and employee resistance to change. Organisational issues identified in the research included allocation of organisational resources, employee participation, communication and change leadership. Personal issues identified included fear of loss of status, job insecurity, impact on self-interests and habits.

The report concludes with practical recommendations for improving the way change is managed within the organisation. These initiatives are intended to modify the way change is managed within the organisation by improving resource allocation, participation, communication and leadership change management skills and knowledge. These initiatives will also seek to reduce employee resistance to change. Organisations that implement organisational change initiatives are advised to carefully consider employee resistance to change, and change programmes should be designed in such a way so as to deal with the uncertainties and insecurities that tend to result from organisational change.

Assessing the effectiveness of management tools in healthcare: A case study of the quadruple aim model at a private dialysis company in South Africa

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Introduction

Healthcare systems are being challenged to reform by rising costs and disparities in quality. South African healthcare is unable to support RRT for everyone with only a select few making it on dialysis. In an era of significant change, effective management is essential for sustainability. The study aimed to assess the Quadruple aim model as a management tool in the dialysis supply area in South Africa.

Methods

A descriptive correlational research study carried out on 1197 HD patients and 60 healthcare professionals in 20 privately run dialysis units, evaluating the quadruple aim: 1) patient satisfaction; 2) clinical outcome; 3) cost and 4) provider experience.

Results

The research study provided a holistic understanding of how the organizational context influences the operational effectiveness of a dialysis facility and ability to optimize its resources and strategies. The study revealed economies of scales are achieved in a larger dialysis unit, however an inverse correlation was seen between profit before interest and tax (PBIT) and patient satisfaction. The top box patient satisfaction score for a dialysis unit, and dialysis staff were higher in comparison to the nephrologist score. A higher patient satisfaction score was seen in smaller dialysis units. The study exposed a high extent of burnout in nephrology professionals, particularly in a larger dialysis unit. The overall dialysis unit safety grade was high although shortages of healthcare professionals was highlighted. The study has indicated that the Quadruple aim model has the potential to guide the redesign of healthcare systems in the chronic hemodialysis delivery business and provide a template to the transition to quality care.

Conclusion

The Quadruple aim model has been shown to be a relevant and a valuable framework which can be used to address the challenges facing the supply of dialysis in South Africa. This evaluation could prove to be invaluable with ongoing regular successful implementation.

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Chronic dialysis therapy yields a significant infectious burden – a call for national surveillance

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Background

Patients receiving chronic dialysis therapy are vulnerable to infection because of regular contact with hospital environments, indwelling catheters for dialysis access and comorbid conditions e.g. diabetes.

Methods

A retrospective review of laboratory confirmed infections in patients receiving chronic peritoneal or hemodialysis care from June 2015 to May 2016. Comparisons were made between gram-positive, gram-negative bacteria and fungal organisms and their antimicrobial sensitivity profiles as well as between PD and HD patients

Results

Overall, 238 infections were reported, corresponding to an infection rate of 9.1/100 dialysis patient years (95% CI: 8.1-10.4). The overall infection rate for PD was 31.3/100 dialysis patient years (95% CI 24.6-40.) and this was significantly higher than that for CHD (7.2/100 dialysis patient years (95% CI 6.2-8.3)) (p<0.0001). 51 blood stream infections were reported in the HD group and 41 cases of peritonitis in the PD group.

Patients who developed infections, one third had been admitted to hospital in the last 90 days, 34% had diabetes and 66% were male. The average length of stay was 7 days and there was a 5 % (12) mortality. Forty-nine percent of the patients had gram-positive infections, 44.4% had Gram-negative infections. 2 patients had yeast/fungal infections on peritoneal fluid. The most common group of gram negative organisms was the Enterobacteriaceae (77.7%) and the most common gram positive pathogen was staphylococcus aureus (41.2%).

Multidrug resistance was high with Enterobacteriaceae showing 55% were beta-lactamase and 24% were Carbapenemase producers. Forty-nine percent of staph aureus were methicillin resistant and 70% of coagulase negative staph were methicillin resistant.

Conclusion

This study is the first published data from SA on the microbiological profile of infections in a population of chronic dialysis patients. Results show that patients present with approximately equal proportions of gram positive and negative organisms and a significant amount (50%) of organisms exhibit antimicrobial resistance.

Tackling the drought in the Western Cape Province in South Africa – strategies to alleviate the impact on dialysis patients

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National Renal Care

South Africa is a water scarce country. In the Western Cape (WC) rainfall decreased significantly causing dam levels to drop from 66% in 2015 to 25 % in 2018 (-41%). As a result, Cape Town has been severely impacted upon which has in turn had an effect on delivering dialysis. As dialysis is a life sustaining therapy, a WC Contingency Dialysis Plan (WCCDP) was developed in preparation for 'Day Zero'.

The WCCDP has three parts based the anticipated length of the outage and includes four key concepts:

1. **Knowing the numbers:** includes knowing the water usage per dialysis unit i.e. water consumption, RO capacities, current water storage capacity, conservation dialysis and transportation of water.
2. **Operational contingency** played a fundamental role throughout the development of the contingency dialysis plan. Disaster units that were identified were based on capacity, referring to space for additional emergency dialysis points, secured water sources, space for additional tanks and accessibility for patients to dialysis. The aspects further include staffing, fire risk, laundry, meals, stock, transport, machines and equipment, hygiene, security, emergency patient diet plan, conservation dialysis and documentation.
3. Utilising **alternative water sources** such as drilling.
4. **Water conservation** strategies implemented focussed on minimizing water losses through increasing the RO recovery capacity, recycling of reject water through implementation of grey water systems. Other water conservation strategies that were implemented included installation of flow restrictors, closing of non-essential taps and water awareness campaigns.

Considering the above four concepts, the contingency dialysis plan for a water disaster, has to be considered to ensure the safety and well-being of the dialysis patients during a drought. The plan has been developed in a format that could easily be adopted and implemented. It could also be adapted and used in the event of other similar disasters.

Adherence to treatment and quality of life in patients with end-stage kidney disease undergoing haemodialysis

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Introduction

Chronic kidney disease (CKD) can result in the progressive loss of kidney function. Haemodialysis (HD) patients can experience a number of lifestyle changes such as dietary and fluid restrictions. Non-adherence with dialysis treatment could impact the quality of life. This study seeks to determine whether there is any correlation between the adherence to treatment and the quality of life in HD patients.

Design

A retrospective research strategy was applied in this study with a quantitative, correlative, cross-sectional design.

Methods

A sample of 50 patients was selected using retrospective blood results and quality of life questionnaire results from January to December 2016. The quality of life results was compared to the compliance of the prescribed haemodialysis treatment.

Results

The results indicated that adherence with the prescribed treatment did not have an impact on the quality of life of haemodialysis patients. More than 90% of patients dialyzed for the recommended dialysis length and frequency. However, a correlation between symptoms caused by urea and phosphate exceeding normal values was found with a probability value for urea at $p = 0.0163$ and phosphate at $p = 0.0545$.

Conclusion

There was no direct correlation found between non-adherence with the prescribed treatment and the quality of life of the sample of patients. However, the side effects of dialysis treatment and renal diet did have an impact on the patients' quality of life. In addition, the study found that haemodialysis patients dialyzing for more than one year comprehended the importance of quality of life and that adherence towards treatment would reduce symptoms and likely impact on future morbidity and mortality.

Evaluating patients understanding of their diagnosis of chronic renal failure and the importance of compliance on haemodialysis

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Introduction

Patients undergoing chronic haemodialysis (CHD) have many clinical challenges including water and phosphate retention, secondary hyperparathyroidism, hypertension, chronic anaemia, dyslipidaemia and heart disease. Patients are required to maintain strict fluid and dietary restrictions, use of multiple medications and educated by staff. Considering how difficult chronic renal failure (CRF) is to manage, non compliance is a problem and impacts on patient's long term survival and short term morbidity. Patients need to understand their diagnosis of CRF to facilitate compliance on the CHD programme.

Objectives

- 1) To evaluate patients understanding of diagnosis in CRF.
- 2) To determine if patients understanding of CRF contributes to non-compliance on HD programme.
- 3) To make recommendations to improve compliance in patients on HD.

Method

This was a quantitative cross-sectional study conducted at NRC unit in the KZN region; with patients on CHD. Information was obtained from patient files and a questionnaire. Purposive sampling method was used; 35 CHD patients participated in the study.

Results

Despite participants being educated prior to the questionnaire. Only 37% (13) understood their diagnosis and the other 63% (22) participants had minimal understanding. When evaluating participant understanding of urea, 46% (16) participants understood, while 54% (19) had no knowledge of urea or appropriate levels. Regarding fluid intake, 66% (23) of participants were compliant and 44% (12) were fluid overloaded. Inquiring about dietary restrictions and potassium intake specifically; 71% (25) participants knew about potassium and albumin; 82% (29) had minimal knowledge on the required protein intake.

Conclusion

Patients overall understanding of their disease and the required restrictions was poor, although some do understand concepts. The ultimate goal is to achieve long-lasting changes in behaviour, by providing patients and family with knowledge through education. When a patient has a clear understanding of what is expected of themselves, this will facilitate patient's understanding of CRF and compliance on the HD programme.

My 10 year journey – from zero to hero

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Introduction / Background

Following my previous presentations on my life, and my journey with kidney failure, I now boast 10 years post transplant and I couldn't be healthier, or more proud of my achievements. From a teenager who had to stop all sport or physical activities at 13 years old, to an athlete winning various medals at the World Transplant Games.

Methods

While still on sick leave post transplant, a friend asked me if I'd ever thought of playing bowls, as it was a non-strenuous activity and something to get me a little fitter. I tried it out, and absolutely loved it. At my first Renal Congress presentation, 5 months after my transplant, I met Prof Heilie Uys, and she introduced me to the World Transplant Games, where I started taking part in various events.

Results

The World Transplant Games is an international sporting event for transplant athletes, held every second year. It demonstrates the physical success of transplant surgery and the ability of transplant recipients to lead healthy, normal lives. The event aims to significantly enhance the understanding and acceptance of organ donation and transplantation. South Africa transplantees have been attending these Games since 1995, and have brought home many medals in the past 21 years.

Conclusions

After 5 World Transplant Games, and 5 medals, the experience of taking part in these games has changed my life completely. I have met the most amazing people from all over the world, heard the most wonderful, as well as the saddest stories from all ends of the globe, shared laughter and tears, but above all I have found an incredible family – all related by the organ we have had transplanted. We are now training for Newcastle Gateshead, United Kingdom, for the World Transplant Games 2019. We are all heroes.

Contrast-induced acute kidney injury when using ioversol and iomeprol: a systematic review and meta-analysis

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Introduction / Background

Loversol and Lomeprol are radiological contrast media commonly used interchangeably in many South African imaging facilities. Despite differences in chemical composition, they are presumed to have similar renal safety profiles. However, no studies directly compare the renal safety of these two contrast media for coronary angiography in a predominantly healthy population.

Methods

A systematic review was performed to establish which contrast medium is safer. Articles were sourced from Medline, CINAHL, Scopus, Science Direct, and PubMed Clinical Queries databases. Eligible studies were peer-reviewed articles of coronary angiography examinations carried out on a healthy adult population, where loversol and/or lomeprol were administered, with contrast-induced acute kidney injury as the primary end-point.

Results

Six articles with a total population of 2431 patients were selected. The Cochrane Risk of Bias Tool was used in evaluating included articles. Pooling studies using the random effects model did not show a statistically-significant reduction in contrast-induced acute kidney injury when lomeprol was administered (Risk ratio 1.14, 95% confidence interval 0.797-1.643, $p = 0.466$). Moderate heterogeneity ($I^2=54.21\%$) across the studies was observed.

Conclusions

Lomeprol may be better for use in the clinical setting because of more a predictable renal safety profile despite the lack of statistical significance that was noted after meta-analysis of included studies. Further research is warranted into the effect of ethnic origin on contrast-induced acute kidney injury incidence rates.

Improving high volume HDF for hemodialysis patients sensitive to polysulfone-based membranes

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Introduction / Background

High volume HDF is becoming the method of choice for the treatment of hemodialysis patients. It has been shown to improve the treatment outcome and survival of patients by increasing the clearance of middle molecular weight molecules and inflammatory molecules. However, this type of treatment is not accessible for some patients because they are sensitive to polysulfone-based membranes, and alternative membranes cannot support the high convective needs of HDF. Unfortunately, the prevalence of sensitive patients appears to have increased in the last few years. This might be due to an increase in high convective treatments, as this treatment puts more strain on both membrane and blood cells. We would like to show that it is possible to maintain the added value of high volume HDF even for patients sensitive to polysulfone-based membranes.

Results

A search of recent scientific literature showed that there were 40 cases of hypersensitivity against polysulfone/polyethersulfone (PS/PES)-based membranes reported. Within this patient group, 38 needed to be switched to an alternative membrane: 26 were treated successfully with a cellulose-based membrane, 5 with polyacrylonitrile, and 7 with polymethylmethacrylate. All of these alternative membranes have a symmetric membrane structure that is not well equipped to withstand high volume therapy. Solacea™ dialyzer is an asymmetric triacetate membrane that easily reaches a convective volume of 100 ml/min, has good removal rates for β_2 microglobulin (0.85) and myoglobin (0.80), and only minor albumin loss (RR 0.01).

Conclusions

High volume HDF treatments require an asymmetric membrane to sufficiently withstand transmembrane pressures, and patients that are sensitive to polysulfone-based membranes benefit most from a cellulose triacetate membrane. Solacea combines both of these essential needs into one membrane, making it possible to maintain the benefits of high volume HDF for patients that are sensitive to polysulfone-based membranes.

Conflict of interest: Funded by Nipro Medical Europe

South African Renal Congress 2018: Poster Presentations

Hypertension in pregnancy: a future risk for chronic kidney disease (CKD) in South Africa

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Introduction / Background

Hypertension in pregnancy is a risk factor for early onset of CKD, and pre-eclampsia for end stage CKD. Hypertension in pregnancy is particularly common in South Africa, and there are no data for the risk of CKD. With this in mind we decided to conduct an audit of all female presenting for the renal replacement programme at Groote Schuur Hospital.

Methods

This was a retrospective study performed on female patients with end stage CKD who were presented to the renal replacement meeting between 2007 and 2017. Each assessment had a comprehensive letter recorded detailing patient demographics, psychosocial and medical history, and these served as the source data. Patients with a history of hypertension in pregnancy were identified as the case group and those without were the control group. Patient demographics, causes of CKD, kidney function and outcome of the meeting were documented. Results were analysed using basic statistical tests.

Results

Of the 415 female patients with end stage CKD 70 (16.9%) had a history of hypertension in pregnancy. Compared to the control group the cases were younger with a median age of 33 vs. 41 years ($p<0.001$), higher serum creatinine 1045 vs. 751 $\mu\text{mol/L}$ ($p=0.017$), and lower eGFR 4 vs. 5 ml/min ($p=0.029$). Cases were more likely to abuse methamphetamine (5.7% vs. 1.7%, $p=0.049$), and less likely to be diabetic (1.4% vs. 20.9%, $p<0.001$) and HIV positive (2.9% vs. 12.5%, $p=0.019$). Underlying causes of renal disease showed significant differences as cases were more likely to have hypertensive nephropathy (57.1% vs. 22.9%), and less likely to have diabetic kidney disease (1.4% vs. 20.4%), HIVAN (1.4% vs. 6.4%) and polycystic kidney disease (1.4% vs. 7%) ($p<0.001$). There was no difference in acceptance to the dialysis and transplant programme (50% vs. 46%).

Conclusions

This study suggests an important link between hypertension in pregnancy and CKD. These patients are significantly younger, present later, and more likely to have hypertensive nephropathy. Methamphetamine abuse appears to be a risk factor. Further study is warranted but this study suggests that all women with hypertensive disorders in pregnancy need further evaluation and follow up postpartum.

Histological patterns associated with mortality and renal morbidity in renal TB-IRIS

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Introduction / Background

Tuberculosis immune reconstitution inflammatory syndrome [TB-IRIS] is a well described clinical entity affecting multiple organs in HIV infected patients. However, a paucity of information exists regarding renal involvement. This study aimed to illustrate the clinical, biochemical and histopathological features of HIV patients with suspected renal TB-IRIS, and to assess the mortality and renal outcomes of these patients.

Methods

Renal biopsies were retrospectively reviewed for the presence of granulomatous interstitial nephritis [GIN] from 2 HIV+ve renal biopsy registries. Patients' folders and laboratory records were reviewed for evidence of tuberculosis [TB], the possibility of renal TB-IRIS and for other causes of GIN (drugs, other infections and sarcoidosis). The data were analysed comparing 3 groups: [TB:no IRIS], [TB+IRIS] and [other] (other causes of GIN).

Results

68 biopsies were identified with GIN. The mean age was 37.5 ± 9.1 years. There were 33 males (48.5%); 61 (89.7%) were of black african ancestry, 29 (43%) were on a medications known to cause GIN. The shortest time between ART initiation to biopsy was in those with [TB+IRIS]. The mean CD4 at biopsy was 105, with the lowest value in the [TB+IRIS] group (P-value 0.0175). Granulomas were better formed in the [TB:IRIS] group (P value 0.075). Sixteen (25%) subjects had died within 2 years of their biopsy, 12 (44%) in th [TB:no IRIS] group(P-value 0.01).

Conclusions

There is a clinical entity of TB-renal IRIS that is associated with GIN on renal biopsy. There were significant findings in the [TB+IRIS] group that included a shorter time from ART initiation to biopsy, a lower CD4 count at biopsy and nadir and a very low occurrence of poorly-formed granulomas. The majority of deaths within 2 years were noted in the [TB:no IRIS] group. This entity seems to be in keeping with other TB-IRIS descriptions previously published.

Amphotericin B nephrotoxicity in patients with cryptococcal meningitis

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Introduction

Opportunistic cryptococcal infections are responsible for 20% of HIV-related deaths in sub-Saharan Africa. Amphotericin B deoxycholate is a cornerstone of treatment for cryptococcal meningitis but is associated with risk of nephrotoxicity. South African data on Amphotericin B associated nephrotoxicity is sparse.

Methods

A retrospective observational review of patients diagnosed with cryptococcal meningitis at Klerksdorp / Tshepong Hospital Complex from July 2013 to June 2014 (n = 53) was undertaken in order to describe the incidence and outcome of Amphotericin B (AmpB) nephrotoxicity.

Results

83% of HIV positive patients receiving AmpB for cryptococcal meningitis developed acute kidney injury (AKI); 5.66% progressed to chronic kidney disease (CKD). The development of AKI was dependent on the dose of AmpB received and was more frequent in patients receiving Tenofovir. No patient required dialysis during the course of the study. Mortality in this cohort was 18.87%; mortality was higher in those with AKI group, although this was not statistically significant.

Conclusion

Nephrotoxicity is common in patients receiving AmpB and is dose-dependent. The risk of AKI is significantly increased by co-administration of Tenofovir, necessitating ART regimen review before initiating therapy. The development of AmpB nephrotoxicity carries a low risk of CKD but is associated with a non-significant increased frequency of mortality. Of note, mortality of cryptococcal meningitis in this cohort of HIV-infected patients was lower than that reported in other studies (18.87% vs. 30 – 40%).

Early life factors and longitudinal blood pressure trajectories are associated with elevated blood pressure in early adulthood: Birth to Twenty Plus cohort

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Introduction / Background

Multiple perinatal and early life risk factors have been implicated in the development of hypertension in later life. The Birth to Twenty Plus (BT20) cohort in urban Soweto (South Africa) recently showed a prevalence of elevated blood pressure (EBP) that ranged from 22,4% at age 5 years to 34,9% at age 18 years. We therefore sought to determine the prevalence of EBP at age 23 within this cohort and assess whether this could be linked to any perinatal, maternal and early life factors and previously defined childhood and adolescent blood pressure (BP) trajectories.

Methods

Blood pressure (BP) and anthropometric measurements were completed on the BT20 cohort participants at age 23 (n=1540, 49% males). Early life and maternal factors were obtained from previous data collected on the cohort. Blood pressure trajectory groups in childhood and adolescence were previously defined using group latent class modelling.

Results

Thirty six percent of young adults had EBP of whom 63% were male ($p < 0,001$) and greater linear growth from birth to 2 years of age conferred a 19% increased risk (1.19, [1.01–1.41] per SD). Females had a 77% lower risk of EBP (odds ratio 0.23 [95% confidence interval 0.16–0.34] per SD). Childhood and adolescent BP trajectories contributed significantly in terms of risk. Participants in the highest SBP trajectory (a trajectory where BP was elevated early and remained elevated) had a four-fold higher risk of elevated blood pressure at 23 years of age. Similarly, participants in the highest diastolic BP (DBP) trajectory had a five-fold higher risk of elevated blood pressure at 23 years of age.

Conclusions

These findings suggest that risk for EBP in adulthood may be set in childhood and adolescence. The data also suggest that BP trajectories in childhood and adolescence may identify those who are at risk for EBP in early adulthood. What remains to be determined is whether this group with EBP will progress to develop hypertension as young adults and, if so, whether they would benefit from therapeutic interventions to lower blood pressure at a young age.

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Acute kidney injury in critically ill patients in an Eastern Cape tertiary intensive care unit

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Introduction / Background

Acute Kidney Injury (AKI) is associated with substantial morbidity and mortality in ICU. There are wide variations in the reported incidence of AKI in high-income country ICU's. In Sub-Saharan Africa, where there is a substantial burden of HIV, there is a paucity of data concerning AKI and its incidence, aetiology and effect on mortality plus functional renal recovery.

Methods

Prospective data was collected on all patients admitted to the multi-disciplinary Livingstone Tertiary Hospital ICU during 2017. Demographics, co-morbidities, details relating to the ICU admission and the development of AKI were recorded. Those with AKI were assessed for renal recovery 90-days after ICU discharge.

Results

Of 852 admissions, the mean age was 42 (SD16.7), 56% required ventilation, 23% required vasopressors, median length of stay was 3 days (IQR 1-6) and mean admission SAPS3 score was 48.1 (SD15.93). Comorbidities included hypertension (30.5%), HIV (18.4%), diabetes (13.3%), CKD (7.8%) and active tuberculosis (6.2%). AKI developed in 498 (58%); 42% of these were KDIGO stage III and 88 (18%) required dialysis. Positive predictors of AKI included age, diabetes, HIV, antiretroviral use, emergency surgery, higher illness severity score, longer stay, ventilation, ARDS, septic shock and the use of vasopressors ($p < 0.05$ for all). The commonest ascribed causes of AKI were hypovolaemia (55%), sepsis (40%), rhabdomyolysis (25%) and drug/toxin (4%). Overall hospital mortality rate was 21.2% but was higher in the AKI cohort (32% vs 5.4%; OR 9.17; 95%CI 5.6-14.9). Full renal recovery occurred in 95.7% of AKI survivors while 14 (12.7%) of those with stage III AKI had chronic kidney disease at 90 days after discharge.

Conclusions

Despite a young population, AKI is frequently encountered in our ICU and is associated with high mortality, but good functional renal recovery in survivors. Patients with AKI were generally more ill and had common co-morbidities including diabetes and HIV.

Histopathological pattern of renal diseases among HIV infected treatment-naïve patients in Kano Nigeria

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Introduction / Background

A wide spectrum of renal diseases is seen in patients with HIV infection. Some are directly related to the HIV infection while others are multifactorial. There are variations in the occurrence of these renal diseases based on the ethnicity and geographic setting of the patients. Histological diagnosis is only certain by doing renal biopsy in suitable patients. This allows for institution of appropriate treatment. There are limited data on the histological pattern of HIV renal diseases in most sub-Saharan African countries. Many of the reported studies were limited by the small number patients who had renal biopsies.

Methods

This is a cross sectional observational study in which 984 individuals with HIV infection were screened and 40 HIV infected and treatment-naïve patients with either persistent significant proteinuria and/or an eGFR of less than 60mls/min, with no contraindications to a renal biopsy, were consecutively recruited. The tissues obtained were sent for histopathology and were reviewed independently by two renal pathologists.

Results

The mean age of the study population was 34±12.5 years, with 40% females. Mean serum creatinine was 252.5±201µmol/L, mean CD4 count was 136±103 cells/ml. Almost all the patients had persistent significant proteinuria. The majority (42.5 %) had HIVAN as the histological diagnosis, followed by chronic interstitial nephritis in 22.5% and 20% had no significant pathological finding. Patients with HIVAN had a lower age, lower CD4 count and higher serum creatinine.

Conclusions

Renal involvement is common among HIV infected treatment naïve patients and HIVAN is the commonest histological type. Persistent proteinuria is the commonest presentation. We recommend assessment of renal function and urinalysis as part of the routine evaluation of newly diagnosed HIV patients.

The prevalence of depression in CKD 5 patients on renal replacement therapy, associated risk factors and common presenting features

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Background

A high prevalence of depression exists in patients with end stage renal failure (ESRF). Studies have shown that 15%-60% of patients with ESRF are diagnosed with depression, a rate 3-4 times higher than that estimated for the general population and 2-3 times higher than in other chronic illnesses. The presence of depression in ESRF patients is associated with decreased quality of life, non-compliance to medical treatment, worsening of nutritional status, higher risk of withdrawal from dialysis, increased hospitalisation and increased mortality. Common risk factors for depression include younger age, female gender, white race, longer duration of dialysis and co-morbid illnesses such as cardiovascular disease. Despite occurring commonly in patients with ESRF, depression is under-recognized and under-treated due to the similarity between depression symptoms and uremic symptoms, and a lack of awareness among clinicians. Identifying depression is key to improving treatment outcomes and patient survival.

Methods

This study looked at patients on chronic haemodialysis or peritoneal dialysis at three major centres in Johannesburg. The Beck Depression Inventory (BDI) is used as a screening tool to assess for clinically significant depression. Laboratory data, information regarding dialysis vintage, drugs, and comorbid illnesses is obtained from the patient files. A BDI score of 15 was used to detect clinical depression and patients in whom the diagnosis is made will be referred for further clinical evaluation.

Results

All patients on haemodialysis or peritoneal dialysis who qualified were approached. A significant proportion (12%) declined to participate citing reasons such as not willing to undergo formal psychiatric review due time constraints outside their dialysis time. Depression symptoms were identified in about 40% patients interviewed. The common symptoms identified were depressed affect, loss of energy, and feelings of apathy. Scores positive for depression were above 30 indicating moderate to severe depression.

Conclusion

The results of this study indicate that clinical depression is a common comorbidity in CKD 5 patients on dialysis and results will help to inform practices surrounding the diagnosis and management of depression in ESRF patients on dialysis in our population.

Traditional and non-traditional cardiovascular risk factors in the chronic dialysis population at Chris Hani Baragwanath Academic Hospital and Sebokeng Provincial Hospital

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Background

The link between chronic kidney disease (CKD) and cardiovascular disease (CVD) is well established. Even from the earliest stages of CKD, patients are at significantly elevated risk from CVD related events such as cerebrovascular accident and myocardial infarction. There is significant data that point to the contribution of non-traditional risk factors towards CVD in those patients with CKD. These non-traditional risk factors are often poorly recognised and managed within the CKD population, resulting in premature morbidity and mortality.

Methods

All patients 18 years or older; on the chronic dialysis programme at Chris Hani Baragwanath Academic Hospital (CHBAH) and Sebokeng Provincial Hospital (SPH) were included in this audit. Recent records were used to collect data including: demographics, medical history, chronic medication, clinical and laboratory data such as blood pressure, body mass index, random blood glucose, lipogram, uric acid, haemoglobin and iron studies.

Results

Complete clinical and laboratory data was available for 176 patients (77 Peritoneal dialysis and 99 haemodialysis). Preliminary analysis showed that while HIVAN was the cause of CKD for 9% of patients, hypertension accounted for 60%. Analysis showed that 55% of patients had uncontrolled blood pressure and 44% had a BMI over 25, both modifiable risk factors for CV events. Analysis of non-traditional risk factors shows that 86% of women and 89% of men were anaemic, while 37% of patients had an elevated parathyroid hormone level.

Conclusions

The prevalence of traditional and non-traditional risk factors is elevated in the chronic dialysis population of CHBAH and SPH. Traditional risk factors need to be optimally managed by developing standardised treatment targets for the dialysis population. Further prospective studies are needed to evaluate the CV impact of non-traditional risk factors and to demonstrate whether modifying non-traditional risk factors provides benefit with regards to CV endpoints.

A retrospective study of the presentation and outcomes in primary focal segmental glomerulosclerosis in a South African population

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Background

Focal Segmental Glomerulosclerosis (FSGS) is a clinico-pathological disease entity estimated to have a global annual incidence of 0.2 to 1.8 per 100000 population per year. In South Africa, Primary FSGS occurred in 15.7% of patients biopsied for nephrotic syndrome. FSGS occurs more commonly in patients of African descent with significant variations in presentation with race and geographical location. The most common pathological subtypes in Africa are the classical and collapsing subtypes. Approximately 50-60% of patients will respond to primary treatment with steroids however, FSGS accounts for a significant proportion of patients who develop end-stage renal disease (ESRD).

Methods

Data was collected from 73 patients from three hospitals in Johannesburg over a 10-year period. The average follow-up period was 3 years. Statistical analysis was completed using Statistica™ software.

Results

Of the 73 patients, the majority, 58 (79.5%) were black. The median age of the patients was 30 years at diagnosis, and 57% were male. The most common subtype on biopsy was FSGS not otherwise specified which occurred in 56.7% of patients. All patients were started on corticosteroids as first line therapy, and 57.5% achieved complete remission after an average of 1.23 therapeutic courses. Second line therapy was initiated in 23.2% of patients for refractory disease and 31.5% of patients relapsed after attaining remission. Two patients demised from sepsis complicating therapy. At five-year follow-up 43.5% had developed chronic kidney disease (CKD), and 2 (2.7%) patients had ESRD.

Conclusion

In our setting, FSGS was commonly seen in young, black patients with a slight male preponderance. Initial response to corticosteroids was good but the relapse rate was marginally higher than in other studies. Almost half of the patients still being followed up at five years had developed CKD, a phenomenon requiring further study.

Incidence of complications in adults after percutaneous native renal biopsy in low to middle income countries: a systematic review

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Background

Kidney biopsy is essential in guiding clinicians to diagnose, treat and prognosticate renal disease. However, the procedure can be marred by various complications. The reported occurrence varies among countries or regions and is also affected by several clinical and technical factors. This systematic review aims to evaluate the incidence of major complications after percutaneous renal biopsy in low to middle income countries (LMIC).

Methods

We included studies of populations from LMIC as per the published World Bank 2017 country list. Relevant abstracts published from 1 January 1980 to 30 December 2017 were searched in PubMed. Two review authors independently screened, selected studies, extracted data and assessed the risk of bias in each study. A third reviewer arbitrated in cases of disagreements. The data was entered on Excel spreadsheet and analysed according to geographical region and Income group

Results

22 studies with total biopsies of 12 153 biopsies met inclusion criteria. The ages ranged 3 to 84 years. Most of the studies (90%) were from middle income countries with only one study from sub-Saharan Africa. The reported renal biopsy complication rate was 9.4% in low income countries and 22.9% in middle income countries. The rate of macroscopic haematuria was min-max (4.4- 8%) in low income and 0.08-8.1% in middle income countries. The overall rate of minor complications ranged 4.4 -24% in low income countries and 0.3- 8.9% in middle-income countries. There were no major complications reported in low income countries but occurred in 0.2-15.3% in middle-income countries. There was no death reported in all studies. Nephrectomy was only reported in one middle income country.

Conclusion

There are few studies reported from low income countries Majority of the studies were from Asia. Renal biopsy appears to be safe from reported studies with low rates of major complications reported. There is need for intervention to increase biopsy rates in low income countries and strategies to reduce complications.

An analysis of nephrology human resources for South Africa

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Background

The global nephrology workforce is shrinking and, in many countries, is unable to meet the healthcare needs of patients with renal disease. Accurate South African data pertaining to human resources in nephrology is lacking. This data is critical for the planning and delivery of renal services and the training of nephrologists in South Africa to meet the challenge of the growing burden of chronic kidney disease.

Methods

Registered nephrologists currently delivering nephrology services in South Africa were identified using various data sources, including the register of the Health Professions Council of South Africa. This cohort of doctors was described in terms of demographics, distribution, and nephrology activities. A survey was then conducted to describe the training, scope of practice, and the quality of life and other challenges faced by these nephrologists.

Results

A total of 120 adult nephrologists and 22 paediatric nephrologists were identified (2.4 per million population). There is a male predominance (66%) and the median age is 47 years. Of the nine provinces in South Africa, most nephrologists practice in Gauteng (42%), the Western Cape (28%) and KwaZulu-Natal (22%), with two provinces having no nephrologists at all. Preliminary results of the survey (51 responses) indicate that approximately half (47%) are White, only two did a nephrology fellowship abroad, 30 (59%) are working in the public sector and nearly all (94%) are working full time. Half of respondents spend 60% of their working week on clinical renal work and 5% of their time doing research. Many respondents are unhappy with their current workload (55%) and remuneration (37%) and 5 (10%) plan to emigrate before retirement, citing predominantly personal reasons.

Conclusions

There are insufficient numbers of nephrologists in South Africa, with an uneven distribution amongst the provinces and between public and private sectors. Provisional survey data indicate that South African nephrologists are faced with the challenges of a high workload and unsatisfactory remuneration. In the public sector, inadequate time for research is an additional challenge. A substantial proportion is contemplating emigration.

Renal amyloidosis in South Africa in the HIV era

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Background

Kidney disease is a serious manifestation of systemic amyloidosis and is a major source of morbidity and mortality. Tuberculosis (TB) occurs up to 34 times more commonly in human immunodeficiency virus (HIV) infected patients and is also an important cause of renal amyloid; there are however, no reports of renal amyloidosis in South Africa in the HIV era.

Methods

This was a retrospective record review of cases of amyloidosis diagnosed on renal biopsies at our tertiary referral hospital between January 1985 and December 2016.

Results

46 cases of amyloidosis were identified over the 32-year study period and calculated biopsy prevalence was 1.38 per 100 non-transplant renal biopsies (95% Confidence Interval 1.02 – 1.86). AL amyloidosis was identified in 26 (57%) of the cases and AA in 20 (43%). The median age at presentation was 51 years and 52% of cases were female. Patients with AA amyloidosis were significantly younger compared to their AL counterparts (median age 42 years vs. 58 years, $p = <0.001$) and were all significantly not of Caucasian ancestry. The main clinical presentation was with nephrotic syndrome (85%) and 52% of cases also had a serum creatinine value greater than 120 $\mu\text{mol/L}$. Of the 20 cases of AA amyloidosis, 12 (60%) were associated with tuberculosis. Non-TB causes included other chronic infections (four cases, 20%) and rheumatoid arthritis (two cases, 10%). Two cases of AA amyloid had no known association. HIV infection was noted in two (10%) of the 20 AA cases. Median survival after diagnosis was two months; however, patients with AA amyloidosis had a significantly worse outcome with median survival of one month as compared to nine months in AL amyloidosis ($p = 0.02$).

Conclusions

Amyloidosis is a rare cause of kidney disease in our setting and typically presents with nephrotic syndrome. A similar number of AA and AL types were observed, and outcomes are significantly worse in cases of AA amyloid. While TB remains the major underlying disease in this type, HIV infection was found infrequently in cases of renal amyloidosis and we suggest that HIV infection and amyloidosis may be mutually protective.

Multicystic dysplastic kidney disease at Chris Hani Baragwanath Academic Hospital over a thirty year period

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Introduction / Background

Multicystic dysplastic kidney (MCDK) disease is a common non-inherited developmental anomaly, increasingly diagnosed antenatally. It is a single functional kidney associated with increased risk of anomaly of the opposite kidney.

Methods

A retrospective descriptive study of paediatric patients with MCDK disease was undertaken at a secondary-tertiary level hospital from January 1986 to December 2015.

Results

Over a 30 year period, 59 patients were identified; 36 (59%) were male and 31 (52.5%) were left sided. Overall, 20 (33.9%) of cases were diagnosed antenatally, with an increased frequency of cases diagnosed in the last decade ($p=0.015$). Eight (13.6%) had associated contralateral abnormalities; none had reflux into contralateral kidney.

Conclusions

The number of MCDK diagnosed was low but increasing, possibly due to increasing antenatal sonar. None of the patients had reflux into the contralateral kidney. Hyperfiltration, in children older than two years, had a median value of 157.0 ml/min/1.73m² ($n=25$), without proteinuria.

An audit of haemodialysis in children weighing less than 20 kg in an African paediatric nephrology unit

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Introduction / Background

Peritoneal dialysis and kidney transplantation remain the preferred choices for renal replacement therapy in young children. These options however aren't always feasible and haemodialysis (HD) is therefore an accepted alternative. In small children presenting with end stage renal disease (ESRD) haemodialysis presents several challenges and is often unavailable in lower and middle-income countries (LMIC).

Methods

To assess these challenges and outcome of maintenance haemodialysis in young children, we performed an audit of children below 20 kg with ESRD, receiving haemodialysis ≥ 4 weeks from 1st January 2008 to 31st July 2016 at the Red Cross War Memorial Children's Hospital.

Results

We identified 15 children weighing 6.8-18.5 kg (mean 12.9 kg \pm 3.5 SD) and aged 11.5-105 months (mean 52.2 months \pm 4.2SD) at HD initiation. Mean duration of HD was 11.8 months (range 1- 61.5 months \pm 16.9 SD). Seven children underwent successful transplantation, two patients died and four currently still receive HD. Two patients while on HD relocated to other centers. An average 2.6 (range 1-5) different vascular accesses were required per patient. Mechanical difficulties were the most common cause of central-line removal (81%) while catheter-associated bacteraemia was 1.1/1000 catheter days. Frequent problems were intradialytic hypotension, growth stunting and interdialytic hypertension.

Conclusions

Haemodialysis in LMIC is feasible in small children but presents with certain challenges. Advocacy with lobbying for funding and development of 'child-friendly' dialysis equipment and specialized centers with highly skilled personnel are the cornerstones of successful paediatric HD programs in less resourced centres.

A retrospective descriptive study on primary hyperoxaluria at Chris Hani Baragwanath Academic Hospital from 1984 to 2017

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Introduction / Background

Primary hyperoxaluria (PH) is a rare autosomal recessive condition characterized by defects in the metabolism of glyoxylate which leads to increased oxalate production and deposition. It is an important disease to consider due to the rapid progression to end stage renal disease (ESRD). The objective of this study is to increase awareness of clinicians on this disease and also describe the characteristics, diagnosis and management of PH in South African.

Methods

A retrospective study of all children, less than 16 years old, diagnosed with PH from the Paediatric Renal Clinic at the tertiary centre Chris Hani Baragwanath Academic Hospital from 1984 to 2017.

Results

A total of 19 patients was identified. The median age of presentation was 6 years. The most common and devastating clinical presentation was ESRD (89.5%) and the other symptoms included urolithiasis (89.5%), nephrocalcinosis (73.7%), urinary tract infections (52.6%), stunting (42.1%) and haematuria (31.6%). There was better correlation of identifying nephrocalcinosis on plain abdominal film compared to ultrasound. Five patients had A112D genetic mutation in the *AGXT* gene. ESRD was present in 17 patients at presentation of which 14 received dialysis. Only two patients had combined liver – kidney transplantation. The mortality rate in our cohort was 78.9%.

Conclusions

PH is a devastating disease due to its rapid progression to ESRD. This is reflected in our cohort with a high mortality rate of 78.9%. This is most likely due to the presence of ESRD at presentation and further reinforced by the fact that two patients demised prior to dialysis. Therefore, recognising the disease prior to onset of ESRD would allow early referral and management in order to prevent ESRD and fast track for dialysis and transplantation. In clinical practice routine urine dipsticks at each clinic visit could assist in early referral as well as appropriate referral of haematuria.

The incidence and anti-microbial sensitivity of urinary tract infections in HIV positive and negative nephrology patients at Inkosi Albert Luthuli Central Hospital in KwaZulu-Natal Province, South Africa

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Background

Urinary tract infection is among the most common causes of sepsis presenting in hospitals. The aim was to collect data to enable empirical treatment of urinary tract infections in HIV negative and positive patients while waiting for urine culture results in order to reduce hospital stay.

Objectives

To assess incidence, antimicrobial susceptibility and outcomes of urinary tract infections in HIV negative and infected patients.

Methods

A retrospective charts review of nephrology patients admitted in January to December 2014 in Nephrology ward and the first 200 outpatients seen in Nephrology clinic in 2014 at Inkosi Albert Luthuli Central Hospital was conducted. Information was gathered with the use of a data collection sheet and urinary tract infection was based on urine culture results.

Results

The incidence of UTI in nephrology patients was 9%, 10.1% in inpatients and 6.5% in outpatients. Twenty – two % were HIV positive (0.883, 95% CI 0.550-2.003). 19% had Diabetes mellitus, 15 % had Systemic Lupus Erythematosus and 5% were post renal transplant patients. Escherichia coli and Klebsiella pneumonia were the common causes of urinary tract infection at 40.7% and 15.3% respectively with 2 cases on Extended beta lactam resistance and 15.3% mortality.

Conclusions

There was no statistical significant difference in the distribution of micro-organism isolates sensitivity between HIV infected and HIV negative nephrology patients with urinary tract infection. Escherichia coli and Klebsiella pneumoniae were the most commonly cultured organisms in both groups. There is an increasing microbial resistance to commonly used antibiotics.

Chronic kidney disease the Zimbabwean situation

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Zimbabwe's health care system has gone through a hard time during the last two decades resulting in unprecedented suffering of patients with non-communicable conditions like chronic kidney disease (CKD). There has not been any specific national policy on prevention, screening and management of chronic kidney disease. The emergence of HIV in the 1980s diverted all attention from other chronic illnesses including CKD. When Zimbabwe was put under political and economic sanctions just after the land reform program in 2001 the health care system took a huge knock that saw the closure of the only dialysis unit in the public sector and the inevitable death of almost all patients who were on dialysis then. In this presentation I intend to highlight challenges which continue to haunt CKD patients particularly those on dialysis in the public sector. The impact of medical tourism in our country will also be discussed. Finally, I will highlight recent successes in the care of CKD patients and outline our desired goals as we strive to improve the survival of patients with kidney diseases in the new Zimbabwe.

Crescentic glomerulonephritis in children: a retrospective study at Chris Hani Baragwanath Academic Hospital

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Introduction / Background

Crescentic glomerulonephritis as a cause of progressive renal failure is rare. Crescent formation represent a response to injury of the glomerular capillary walls in patients with glomerulonephritis.

Methods

A retrospective study conducted at Chris Hani Baragwanath Academic Hospital between 01 January 1990 to 30 June 2012. Children younger than 14 years who had crescents greater than 50% on renal biopsy were included from data extracted using the renal biopsy register and files.

Results

A total of 961 renal biopsies were performed. Fourteen patients (1.5%) met criteria. Common findings were oedema (n=13, 92.9%), microscopic haematuria (n=12, 85.7%), hypertension (n=11, 78.6%) and proteinuria (n=10, 71.4%). All patients presented with acute renal injury. The median GFR was 23.9ml/min/1.73m².

Renal biopsies were done on average of 13.8 days from admission to hospital. On renal biopsy three patients (21.4%) had crescents which involved between 50-59% of glomeruli, six patients (42.9%) had crescents which involved between 60-79% of glomeruli, and five patients (35.7%) had crescents which involved greater than 80% of glomeruli. Acute post-infectious glomerulonephritis accounted for seven (50%) of cases, membranoproliferative glomerulonephritis, IgA nephropathy and chronic crescentic glomerulonephritis each accounted for two cases (14.3%) and immune-complex mediated diffuse proliferative glomerulonephritis accounted for one case (7.1%). Treatment included renal replacement therapy, methylprednisone and cyclophosphamide. The median duration from the time of presentation to treatment was 10 days. At follow-up seven (50%) patients had a normal function, and six (42.9%) patients had progressed to chronic kidney disease. One patient (7.1%) defaulted follow up. Patients who had an improved final renal outcome, had a lower creatinine at presentation. Poor renal outcomes were observed in patients who presented late and patients with fibrous crescents.

Conclusions

The patients suspected of having crescentic glomerulonephritis should be referred early, if there is deteriorating renal function, macroscopic haematuria and difficulty in controlling hypertension.

A series of unfortunate events: a case of fatal drug induced rhabdomyolysis

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Introduction / Background

Rhabdomyolysis is an uncommon but serious complication of statins and usually occurs in the setting of potentiating patient risk factors and concomitant use of other drugs. This case study illustrates this fatal drug interaction and aims to raise its awareness.

Methods

Mr JM presented with a four day history generalized body pain. He had a background of hypertension, HIV and dyslipidaemia. He was unsure of his medication but had the following drugs with him, amlodipine, simvastatin, lamivudine and lopinavir/ritonavir. On further posthumous investigation, it was found that he had a recent admission for a missed anterior ST elevation myocardial infarction (STEMI) and was started on 40 milligrams of simvastatin at that time. He was also on second line anti-retroviral regimen.

Results

The patient was treated with intravenous fluids and analgesia. His subsequent renal function results showed a rising creatinine and he became oliguric. His creatinine kinase levels were 10750 U/L. His clinical condition deteriorated and he demised later that day.

Conclusions

HIV positive patients are managed by all doctors in South Africa and because of the many comorbidities associated with HIV, they are often managed by multiple sub-specialists at a time. Although this is a necessity in the case of HIV patients, it also creates a potential for errors due to drug interactions. This case demonstrates a worst case scenario of this possibility and intends to draw focus on the need to be informed about potentially fatal drug interactions.

A high prevalence of chronic kidney disease in a community along Hadejia River Basin, North-Western Nigeria

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Introduction / Background

There were unconfirmed reports of higher cases of CKD from Hadejia, which is an irrigation farming community, along the Hadejia River Basin in North Western, Nigeria. There were similar reports of CKD epidemics in some communities from parts of the world such as the reported Aristolochic Acid Nephropathy along Danube River, Mesoamerican Nephropathy seen among agricultural workers in Nicaragua and later in many parts of Central America and the epidemic reported among irrigation farmers in Sri Lanka. This made us to design this crosssectional study to get an insight into the true prevalence of CKD and its risk factors in Hadejia, which will help in the formulation of appropriate control measures. It will also lead to further studies into possible aetiologic factors.

Methods

Multistage sampling technique was used to select individuals 18years and above. The selected individuals were interviewed and physical examination conducted. Urine and blood samples were collected for laboratory analysis including Urinalysis, serum creatinine and estimation of GFR among others to evaluate for presence of CKD and its risk factors. Those with evidence of Kidney Disease were followed up with a repeat assessment after 3 months to confirm diagnosis of CKD.

Results

Eight hundred and sixty three of the 893 recruited completed the study. The mean age was 40.9 ± 16 years with male to female ratio of 2.2:1. The overall prevalence of CKD in Hadejia was 30.94% which is higher than reported community prevalence of CKD in Nigeria. The commonest CKD risk factors among the study population are Hypertension, use of traditional medications and use of analgesics. Regression analysis showed that age and high blood pressure were found to be independent predictors of CKD.

Conclusions

This study confirms high prevalence of CKD and its risk factors among this predominantly farming community along River Hadeja Basin. The call upon further studies to find out possible aetiologic agent and the institution of appropriate preventive measures.

Augmented renal clearance in critically ill trauma patients admitted to Chris Hani Baragwanath Academic Hospital Intensive Care Unit: a retrospective review of data

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Augmented renal clearance (ARC) is enhanced elimination of solutes by the kidneys. Patients with ARC have normal renal function and typically display a hyperdynamic circulation with increased cardiac output resulting in renal hyper-perfusion and increased creatinine clearance. The resultant enhanced elimination of renally cleared agents may be associated with sub therapeutic drug levels and lower minimum inhibitory concentration of antibiotics. Risk factors associated with ARC include trauma, young age and male gender. We conducted a retrospective review of 96 trauma patients admitted to our Intensive Care Unit (ICU) at Chris Hani Baragwanath Academic Hospital (CHBAH) during a one-year period to identify those with features of ARC. Of the 96 trauma patients admitted to CHBAH ICU over the study period, 40 met our inclusion criteria. Of these, 29 showed features of ARC. The majority of patients with ARC were male 75.9% (n=22), with a mean age of 32.3 years (SD11.9) and an age range of 18 to 56 years. Majority of these 82.7% (n=24) had undergone emergency surgery on admission and 86% (n=34) had required inotropic support. There was no significant difference in modified Sequential Organ Failure Assessment (SOFA) scores, Acute Physiology and Chronic Health Evaluation (APACHE) scores, or Injury Severity Scores (ISS) between patients with ARC and those who did not demonstrate this phenomenon as indicated by p value of greater than 0.05.

ARC is common in our South African ICU population, likely occurring in a substantial number of critically ill, ICU trauma patients. Trauma, the need for emergency surgery, male gender, and young age are likely to significantly influence the presence of ARC. The pharmacotherapeutic implications of patients demonstrating ARC should be considered. Further studies exploring the presence of ARC in other populations are still needed.

Socio-economic determinants, regional differences and quality of nephrological research in Africa

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Introduction / Background

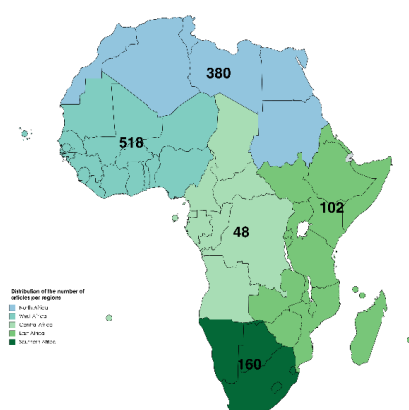
Given the global rising prevalence of chronic kidney disease (CKD), there is need to develop strategies through well-designed research that guides clinicians to improve diagnosis and delivery of care to CKD patients. Although the quantity and quality of general medical research in Africa is thought to be sub-optimal; factors influencing nephrology research in Africa have not been studied.

Methods

We searched PubMed and African Journal Online to identify articles focused on nephrology research published between Jan 1, 1960, and May 31, 2017. They had to be done in Africa with focus on core areas in nephrology e.g. CAPD, HD, glomerulonephritis, CKD, AKI, tubular disorders, HIV and transplantation. We carried out analysis of these studies, including multi-variable regression analysis to determine regional quantities and qualities of research as well as factors associated with lead author of research.

Results

We selected 1,326 articles from 17,256 identified. Using first author as variable of interest, 91.4% of articles were from Africa (WA – 39.9%, NA – 29.3%, SA – 12.3%, EA – 7.9% and CA – 3.7%) while others were non-Africans (Fig 1). The top 5 countries of first author was Nigeria (31.7%), Egypt (13.5%), South Africa (12.2%), “Outside Africa” (7.0%) and Morocco (5.5%). However, the top 5 countries based on mean number of articles per 10 million population was Tunisia (55.3), South Africa (28.3), Senegal (26.0), Nigeria (22.2) and Morocco (20.1). Overall study types identified were cross-sectional (62.6%), case reports (12.4%), cohort (8.6%), case control (6.7%), reviews (4.7%), RCTs (1.4%) and others (3.6%). Only 37.3% were published in a journal with an impact factor (median IF =1.56). Using multivariable regression, population was the only factor associated with country of first author (1.26 [95%CI: 0.85 – 1.68]; P<0.0001). GDP, HDI, literacy rate or number of physicians did not play a role.



Conclusions

Our study shows that the quality of nephrology research in Africa is still low (based on low proportion of RCTs and low IF publications). Country wealth (GDP and HDI) should be leveraged to improve the quality of research in Africa.

Assessing the role of urinary monocyte chemoattractant protein – 1 (MCP-1) in monitoring treatment response in patients with active lupus nephritis in Cape Town

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Introduction / Background

There is need for judicious use of immunosuppression in patients with active lupus nephritis (LN) and this is guided by how well patients have responded to treatment. Currently, treatment response is monitored using markers such as urine protein-creatinine ratio (UPCR) and serum creatinine which are not very accurate in assessing inflammation within the kidney. Measured in the urine, novel biomarkers such as MCP-1 which are secreted within the kidney may be more useful in monitoring disease activity within the kidneys. We assessed the utility of urine MCP-1 at 6 months following initial treatment of LN in newly biopsied patients.

Methods

The study was approved by our local ethics committee. We recruited 20 consenting patients with active LN confirmed on a recent kidney biopsy. Relevant baseline demographic, biochemical and histological information was collected from the patients. Urine was also collected for ELISA assay of MCP-1 at baseline and a repeat assay was performed after 6 months. Urine collection, storage and assessment followed described process. Results are presented as median (min- max).

Results

There were 14 females and 6 male patients; mean age was 29.8 ± 10.7 years, 60% were of mixed ancestry and 70% had proliferative LN. Only 20% received MMF for induction therapy and most patients had achieved partial or complete remission after 6 months of therapy. At 6 months, there was significant reduction from baseline for UPCR (0.37 (0.12 – 0.86) vs 0.06 (0.001 – 0.52); $p < 0.0001$) and urine MCP-1 (1440.2 [409.1 – 5362.2] vs 484.2 [21.9 – 2472.5]; $p = 0.033$). However, there was no significant change in serum creatinine from baseline to 6 months (104.0 [39.0 – 1104.0] vs 90.5 [51 – 192]; $p = 0.272$).

Conclusions

Our study shows that urine MCP-1 is useful monitoring disease response in patients with active LN. Further studies are needed to assess the sensitivity and specificity of this biomarker for monitoring treatment response.

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Screening for Fabry disease in chronic haemodialysis patients in South Africa

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Background

Fabry disease is a rare genetic disorder which results in a deficiency of the enzyme alpha-Galactosidase A (a-Gal-A). This causes accumulation of lipid called Globotriaosylceramide (Gb3). Manifestations include kidney, cardiac and neurological disease. Fabry disease is often misdiagnosed due to its rarity. Patients on dialysis often have unknown causes of kidney failure. Screening studies in dialysis populations have demonstrated a prevalence of Fabry disease of approximately 0,3%. Data is unavailable in sub-Saharan Africa. Treatment, although expensive, is available. We aimed to determine the prevalence of Fabry disease in the haemodialysis population in South Africa.

Methods

We received permission to perform screening tests, after ethics approval in all Fresenius and National Renal Care haemodialysis units in South Africa. Consent was obtained from consulting physicians and all patients after pre-test counseling. Dry blood spot testing was performed to screen for lysosomal Gb3, a-Gal-A levels and the GLA genetic variants.

Patients with abnormal GLA variants were classified based on lyso-Gb3, a-Gal-A and family and clinical history. This represents an interim analysis of patients screened until July 2018.

Results

1261 tests were performed in 35 dialysis units. 1080 results have been received. 1072 results are negative. Five confirmed or possible cases in dialysis patients have been identified. The following mutations have been identified - Thr385Ala in two patients; Asp313Tyr in two patients; Asn215Ser in one patient. In addition, one family member was identified with a pathological mutation on pedigree analysis. We describe individual cases in our study. The above represents a possible prevalence of 0.46%.

Conclusion

Our screening study demonstrates at least three different mutations associated with Fabry disease in South African patients. The prevalence in the test results received so far are similar to other reported studies elsewhere in the world.

Lipid profile in chronic renal failure patients in the department of Internal Medicine at Kamenge University Hospital, Burundi

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Introduction / Background

Dyslipidaemia is one of the cardiovascular risk factors responsible for cardiovascular disease and rapid progression of chronic kidney disease (CKD) to end stage renal disease. Early detection and management of dyslipidaemia will reduce cardiovascular burden and retard progression of CKD.

Methods

This is a prospective and descriptive study conducted at Kamenge University Hospital, from March 2014 to February 2015, in the Department of Internal Medicine. We studied the quantitative and qualitative variations of lipids in patients with chronic renal failure to determine the prevalence of dyslipidaemia.

Results

Thirty-three patients were included, 22 (66.6%) men and 11 (33.4%) women. The average age was 56.6 ± 10.4 years and the most affected age group (42.40%) was 56-65 years old. Twenty five (75.8%) patients were from urban areas, 20 (60.6%) were unemployed, 18 (54.5%) were with history of alcohol intake and 3 (9.1%) with history of smoking. The principal comorbidities were hypertension (78.8%) and diabetes (63.6%). Twenty patients (60.6%) were of normal weight, 5 (15.2%) were overweight and 8 (12.2%) were obese. According to MDRD, 14 patients (42.42%) were stage V, 9 patients (27.27%) stage IV, 9 patients (27.27%) stage IIIb and 1 (3.03%) stage IIIa. The average triglyceride level was 1.8142 ± 1.1580 mmol / l. Lipid profile was hypertriglyceridemia (34.6%), hypercholesterolemia (15.1%), high HDLc (27.2%) and high LDLc (18.1%). The atherogenicity index was high in 11 (33.3%) patients.

Conclusions

Lipid abnormalities are common in patients with chronic renal failure. We recommend early evaluation of CKD patients for dyslipidaemia using ratio of lipid components at all stages with the aim of management with both lifestyle modification and therapeutic intervention.

Point-of-care creatinine testing in a nephrology outpatient clinic in an academic hospital: an evaluation of analytical performance

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Introduction / Background

We evaluated the diagnostic accuracy of the Nova StatSensor[®] creatinine point-of-care (POC) testing system in a nephrology outpatient clinic. We determined the need and reasons for requesting urgent creatinine measurements, audited the existing operating procedure and compared capillary and venous POC measurements.

Methods

Paired capillary and venous POC measurements were compared to laboratory measurements on the Roche cobas[®] 6000 analyser, which uses an enzymatic method. The need and reasons for urgent measurements were determined by physician-applied questionnaires. The TrakCare[®] laboratory database was used to evaluate the existing operating procedure.

Results

Urgent measurements were required in 20% (49/245) of patients to guide decisions around dialysis initiation (20%, 10/49) and to monitor kidney disease progression (18%, 9/49). The median time (interquartile range, IQR) to obtain an urgent creatinine result was 434 min (266-525 min). This was mainly due to delays in sample registration (median 250 min, IQR 100-346 min).

Paired POC measurements (209) were compared to laboratory measurements (range 40 -1749 $\mu\text{mol/L}$). Many POC measurements exceeded the total allowable error (8.8%) and the minimal acceptable total error (11.4%). A negative bias was seen at higher levels. The Statsensor[®] demonstrated good sensitivity and specificity for detecting reduced estimated glomerular filtration rates (eGFR <60) on capillary and venous blood. POC measurements on venous blood had a lower sensitivity for detecting eGFR <10 than capillary blood (65%, 95% CI 43-84% vs 91%, CI 72-99%). There was a bias of -18.9 (-101.8 – 63.7) between capillary and venous POC measurements. Patients were assigned the same CKD stage with capillary and venous measurements in 77.5% of cases (kappa coefficient 0.73, $p < 0.05$).

Conclusions

There is an unmet need for immediate assessment of kidney function. The Nova Statsensor[®] is not accurate enough to determine exact creatinine measurements. Capillary rather than venous blood should be used for POC measurements.

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The point prevalence of children on renal replacement therapy in South Africa for 2017 and for 2018

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Introduction

The true incidence and prevalence of chronic kidney disease (CKD) in South Africa (SA) is unknown. The prevalence of children on renal replacement therapy (RRT) in Europe is approximately 62.1 pmarp and South Africa has around 16.7 million children under 15 years of age. Given these numbers we estimate that at least 1000 children should be on RRT at any one time in South Africa.

Aim

To determine the point prevalence of children on RRT in SA for 2017 and for 2018

Method

A telephonic survey was conducted of all paediatric nephrology units in SA offering a dialysis service. A request for information was also posted on the SARS WhatsApp group. All the paediatric units and three adult units responded. Data was captured on the current number of children on chronic RRT in each unit and on the RRT mode.

Results

95 children were on chronic RRT for both years with equal numbers on HD and PD. Of the PD patients more were on APD than on CAPD.

Conclusions

We found that less than 10% of the 1000 expected were on dialysis. The reasons for the stability of the number of children on dialysis from 2017 to 2018 were likely to be due to old patients coming off dialysis either due to transplantation or death.

Further research should investigate the incidence of ESKD amongst children in SA, and also the reasons for such low dialysis numbers given the size of our population. Issues such as missed diagnosis of ESKD, lack of referral for RRT and denial of RRT need to be explored if we are to give all children in ESKD in SA an equal chance of access to this life saving treatment.

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TMPRSS6 RS 855791 polymorphism and susceptibility to iron deficiency anaemia in non-dialysis chronic kidney disease patients in South Africa

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Introduction / Background

The Transmembrane protease 6 gene (TMPRSS6) encodes matriptase-2. The TMPRSS6 allele A 736V (rs 855791) is related to significantly lower levels of serum iron, transferrin saturation, haemoglobin, and mean corpuscular volumes in genome-wide association studies in the general population. Whether this genetic variant influences the susceptibility to iron deficiency anaemia (IDA) in chronic kidney disease (CKD) patients has not been studied.

Methods

This was a cross sectional study of black adult participants (n=260) with CKD and healthy controls (members of staff and patients' relatives) (n=146) at the Charlotte Maxeke Johannesburg Academic Hospital, South Africa. Analysis of their complete blood counts and genotyping of rs 855791 was undertaken using polymerase chain reaction -restriction fragment length polymorphism (PCR)-RFLP.

Results

The prevalence of anaemia in the CKD patients and control groups was (46.9%), and iron deficiency occurred in (26.1%). There were similar rs 855791 C homozygotes in both the iron deficiency and non-iron deficiency anaemia groups (86.1% vs 84.2%, p=0.723), when the analysis was confined to subjects with or without functional iron deficiency anaemia; C homozygote (88.3% vs 84.4%, p=0.425) was similar for both groups.

Conclusions

Our study suggests that homozygosity for TMPRSS6 rs855791 C genotype does not influence IDA in non-dialysis CKD patients.

Key words: iron deficiency anaemia, CKD, TMPRSS6, rs 855791.

The prevalence of depression in CKD 5 patients on renal replacement therapy, associated risk factors and common presenting features

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Background

A high prevalence of depression exists in patients with end stage renal failure (ESRF). Studies have shown that 15%-60% of patients with ESRF are diagnosed with depression, a rate 3-4 times higher than that estimated for the general population and 2-3 times higher than in other chronic illnesses. The presence of depression in ESRF patients is associated with decreased quality of life, non-compliance to medical treatment, worsening of nutritional status, higher risk of withdrawal from dialysis, increased hospitalisation and increased mortality. Common risk factors for depression include younger age, female gender, white race, longer duration of dialysis and co-morbid illnesses such as cardiovascular disease. Despite occurring commonly in patients with ESRF, depression is under-recognized and under-treated due to the similarity between depression symptoms and uremic symptoms, and a lack of awareness among clinicians. Identifying depression is key to improving treatment outcomes and patient survival.

Methods

This study looked at patients on chronic haemodialysis or peritoneal dialysis at three major centres in Johannesburg. The Beck Depression Inventory (BDI) is used as a screening tool to assess for clinically significant depression. Laboratory data, information regarding dialysis vintage, drugs, and comorbid illnesses is obtained from the patient files. A BDI score of 15 was used to detect clinical depression and patients in whom the diagnosis is made will be referred for further clinical evaluation.

Results

All patients on haemodialysis or peritoneal dialysis who qualified were approached. A significant proportion (12%) declined to participate citing reasons such as not willing to undergo formal psychiatric review due time constraints outside their dialysis time. Depression symptoms were identified in about 40% patients interviewed. The common symptoms identified were depressed affect, loss of energy, and feelings of apathy. Scores positive for depression were above 30 indicating moderate to severe depression.

Conclusion

The results of this study indicate that clinical depression is a common comorbidity in CKD 5 patients on dialysis and results will help to inform practices surrounding the diagnosis and management of depression in ESRF patients on dialysis in our population.

Prevalence of risk factors for chronic kidney disease in South African youth with perinatally-acquired HIV

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Introduction / Background

Little is known about renal pathology among perinatally HIV-infected children and adolescents in Africa. We assessed the prevalence of risk factors for chronic kidney disease in South African children and adolescents with perinatally acquired HIV-1 (HIV+) on antiretroviral therapy (ART) and HIV negative children and adolescents.

Methods

HIV+ youth aged 9-14 years, on ART for >6 months and age matched HIV negative children and adolescents were eligible for assessment via urine dipstick and microalbuminuria. Blood pressure, glomerular filtration rate, HIV-related variables and metabolic co-morbidities were assessed at enrolment.

Results

Amongst 620 children and adolescents, 511 were HIV+. The median age was 12.0 years and 50% were female. In HIV+, 425 (83.2%) had a CD4 count >500 cells/mm³ and 391 (76.7%) had an undetectable viral load. The median duration of ART was 7.6 years (IQR: 4.6-9.3) with 7 adolescents receiving Tenofovir. The prevalence of any proteinuria or microalbuminuria was 6.6% and 8.5% respectively, with no difference between HIV+ and negative children and adolescents. All participants had a normal glomerular filtration rate.

Conclusions

Proteinuria and microalbuminuria appeared uncommon in this population. Follow up of those with microalbuminuria may inform long term outcomes and management of this growing population of HIV+ youth.

Funding

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The effect of distance from hospital on referral for paediatric RRT, Nelson Mandela Children's Hospital, Johannesburg, South Africa

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Introduction

There are 7 million children under the age of 15 years in Gauteng, Limpopo and Mpumalanga. NMCH provides a dialysis service to 18/94 (19%) of the children on RRT across South Africa and 18/70 (26%) of all paediatric patients on RRT from Gauteng, Limpopo and the surrounding provinces. The prevalence of children on RRT in Europe is approximately 62.1 pmarp and we estimate that there should be 400 children on RRT in our area. Reasons for low RTT numbers might include low rates of referral and acceptance onto the dialysis program for patients who live far away.

Aim

To document the effect distance has on our patient numbers

Method

A cross sectional study performed in August 2018 of patients on chronic RRT at NMCH documenting their demographic details and distance from their home town to the hospital

Results

16 children were on dialysis (M:F = 0.5), 56% on IHD and 44% on PD. The main causes of renal failure were FSGS (37.5%) and CAKUT (18.5%). 11/16 (69%) come from within 175km of our centre and include 10/11 (90%) who live within 50km. 4/16(25%) live between 175-300km away and 1/16 (6.25%) lives more than 300km away.

Conclusion

The radius of Gauteng is 175km and, although 69% of our patients live within this distance, only 50% of the children in the area we drain are from Gauteng. Of the patients who live further away 25% are from within 175-300km of the centre and only 1/16 is from further than 300km away.

Further research is needed to understand what happens to children in ESKD who come from further than 300km away. If the other units in the area are not caring for them then it implies a significant lack of equity and disadvantage for children living far away from a central renal unit.