

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0255

Abstract Submission No. : APCN20250106

End-of-Life Care Decisions and Outcomes in Kidney Palliative Care: A Cohort Study from Negeri Sembilan, Malaysia

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Abstract

Introduction: The rising prevalence of chronic kidney disease (CKD) has prompted healthcare providers to initiate advance care planning discussions earlier in the disease trajectory. With greater patient awareness and empowerment, kidney palliative care is increasingly recognized as a viable option for frail patients.

Objective: To evaluate decisions leading to palliative care initiation and assess the concordance between patients' preferred and actual place of death.

Methods: We conducted a retrospective cohort study of all inpatients referred to the kidney palliative care service in the two largest hospitals in Negeri Sembilan, Malaysia, from January 1 to December 31, 2023.

Results: A total of 92 patients were included. The mean age was 69.23 years (SD 11.04), with 51.1% male. Diabetes mellitus was present in 72.8% of patients, and over 90% had hypertension. At referral, 27.2% (n=25) were already receiving chronic dialysis, predominantly haemodialysis (84%). Additionally, 21.7% were significantly physically debilitated.

Functional assessments revealed a mean Karnofsky Performance Score of 44.67 (SD 10.32), a median ECOG score of 3 (IQR 3–4), and a mean Charlson Comorbidity Index of 6.64 (SD 1.96) signifying high mortality risk. Mean laboratory values were: haemoglobin 8.38 g/dL (SD 1.88), eGFR 5.08 mL/min/1.73 m² (SD 4.48), and serum albumin 31.22 g/L (SD 4.96).

The decision for palliative care was initiated by patients in 40.2% of cases, while 30.4% resulted from shared decision-making with family and healthcare providers. In 19.6% of cases, patients were deemed unfit for long-term dialysis, and 9.8% lacked viable dialysis access. Upon discharge, 30.4% had recurrent admissions mostly for symptomatic volume overload (mean 0.43, SD 0.76). 33% were reviewed in outpatient clinic (mean 0.7, SD 1.29) and 17.4% received hospice care.

By the end of the study period, 86 patients (93.5%) had died, with a median time from referral to death of 14 days (IQR 4–46). Three patients (3.3%) reversed their decision and were initiated on chronic haemodialysis. Most patients died at home (53.3%), followed by in-hospital (34.8%) and nursing home (5.4%) deaths. An 85.2% concordance was observed between the preferred and actual place of death.

Conclusion: Most patients referred for kidney palliative care received conservative management until the end of life. The high rate of home deaths reflects the fulfilment of patients' final wishes to remain with their families. These findings highlight the growing importance of kidney palliative care in the management of advanced CKD in Malaysia and support its integration into routine nephrology practice.

Keywords : kidney palliative, palliative nephrology, advance care planning

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

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Abstract Submission No. : APCN20250110

The Combination of Traditional Chinese Medicine and CIK Cell Therapy for Renal Cell Carcinoma : A Review

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Abstract

Introduction : Conventional therapies for advanced renal cell carcinoma (RCC) exhibit limited efficacy, necessitating novel therapeutic strategies. Cytokine-induced killer (CIK) cells, characterized by rapid proliferation, potent tumor-killing activity, and fewer adverse reactions, have emerged as a research focus in tumor immunotherapy. Traditional Chinese medicine (TCM) demonstrates unique advantages in immune regulation, tumor growth suppression, and mitigation of treatment-related toxicities. This review aims to summarize recent advances in TCM combined with CIK cell immunotherapy for advanced RCC, exploring their synergistic mechanisms and clinical value.

Methods : Through systematic analysis of recent clinical studies, experimental data, and relevant literature, we delineated the biological characteristics of CIK cells, their antitumor mechanisms (e.g., non-MHC-restricted cytotoxicity, cytokine secretion), and clinical applications in RCC. We further elucidated TCM's anticancer mechanisms, including multi-target regulation (e.g., PI3K/Akt/mTOR pathway modulation), immune modulation, and apoptosis induction, as well as its therapeutic effects in advanced RCC. Synergistic outcomes and clinical trial results of combination therapy were synthesized.

Results : CIK cells exert antitumor effects via non-MHC-restricted cytotoxicity, secretion of cytokines (e.g., IFN- γ), and direct tumor cell lysis. Clinical evidence indicates prolonged survival and favorable safety profiles in advanced RCC patients. TCM formulations (e.g., Bushen Jianpi Formula, curcumin) inhibit tumor proliferation through pathway regulation and alleviate toxicity from targeted therapies. Combination regimens (e.g., Compound Kushen Injection with CIK cells) synergistically enhance immune function, improve quality of life, and demonstrate increased median progression-free survival (PFS) and overall survival (OS) rates in select studies.

Conclusion : The integration of TCM with CIK cell immunotherapy exhibits synergistic and enhanced therapeutic potential in advanced RCC, combining augmented antitumor activity with reduced toxicity. Future research should prioritize the development of personalized combination regimens and mechanistic exploration to advance clinical translation of integrated Chinese-Western therapies for advanced RCC.

Keywords : Traditional Chinese Medicine ; Cytokine-induced killer cells ; Renal cell carcinoma ; Synergistic therapy ; Immunotherapy

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0257

Abstract Submission No. : APCN20250133

Impact of Kidney Palliative Care on Symptom Burden in Advanced CKD and ESKD: A Cohort Study from Negeri Sembilan, Malaysia

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Introduction: Palliative care aims at improving the quality of life for patients and their caregivers. Individuals with advanced chronic kidney disease (CKD) and end-stage kidney disease (ESKD) often suffer from a high symptom burden, making symptom management a key aspect of care.

Objective: This study aimed to evaluate changes in symptom burden following the introduction of palliative care.

Methods: We conducted a retrospective cohort study of all patients referred to the kidney palliative care team in Negeri Sembilan, Malaysia, between January 1 and December 31, 2023. Patients with complete baseline and follow-up Edmonton Symptom Assessment System (ESAS) scores were included, with follow-up data collected until June 2024. All patients received psycho-social and pharmacological interventions. Data normality was assessed using the Shapiro–Wilk test. Paired t-tests were used for normally distributed data, while the Wilcoxon signed-rank test was applied to non-normally distributed data.

Results: A total of 44 patients were included, with a mean age of 70.2 years (SD 11.5); 52.3% were female. The mean Karnofsky Performance Status was 45.91 (SD 9.23), indicating that most patients were significantly debilitated. The mean eGFR was 6.36 mL/min/1.73 m² (SD 4.72), and the mean number of palliative clinic visits was 1.43 (SD 1.56). At the end of the study, 86.4% of patients had died, with a median time from initial referral to death of 8.5 weeks (IQR 2–16.25).

At baseline, the most severe symptoms were impaired general well-being (M = 3.25, SD 1.59), breathlessness (M = 2.11, SD 2.15), lack of appetite (M = 1.61, SD 1.48), and tiredness (M = 1.09, SD 1.63). Other symptoms included nausea (M = 0.84, SD 1.61), pain (M = 0.70, SD 1.56), and drowsiness (M = 0.34, SD 1.12), while anxiety, depression, and “other” symptoms had very low initial scores.

By the end of the study, significant improvements were seen in pain (M = 0.23, SD 0.77; p = 0.014) and nausea (M = 0.45, SD 1.02; p = 0.045). However, drowsiness significantly worsened (M = 1.25, SD 2.13; p = 0.010). Other symptom domains showed no statistically significant change.

Conclusion: The introduction of pharmacological and psycho-social interventions through kidney palliative care was associated with a reduction in pain and nausea, demonstrating effective symptom management. The observed worsening in drowsiness may reflect treatment-related adverse effects. These findings provide valuable insights into symptom trajectories in kidney palliative care and underscore the importance of individualized, multidimensional symptom monitoring.

Keywords : renal palliative, palliative nephrology, advance care planning, symptoms prevalence

Table 1: Symptom prevalence in renal palliative care patients

Symptom	Baseline M (SD)	Follow-Up M (SD)
Pain	0.70 (1.56)	0.23 (0.77)
Tiredness	1.09 (1.63)	1.39 (1.74)
Nausea	0.84 (1.61)	0.45 (1.02)
Depression	0.07 (0.33)	0.00 (0.00)
Anxiety	0.14 (0.55)	0.02 (0.15)
Drowsiness	0.34 (1.12)	1.25 (2.13)
Shortness of Breath	2.11 (2.15)	2.64 (2.39)
Appetite	1.61 (1.48)	1.77 (1.85)
Wellbeing	3.25 (1.59)	3.59 (2.09)
Others	0(0)	0.09(0.49)

Mean (M) and Standard deviation (SD)

Table 2: Change in ESAS score during follow-up compared to baseline.

Symptom	Statistic	<i>p</i>	Mean Δ (Baseline – Follow up)
Pain	<i>W</i> = 2.00	0.014	+0.48
Tiredness	<i>W</i> = 65.50	0.231	-0.30
Nausea	<i>W</i> = 21.00	0.045	+0.39
Depression	<i>W</i> = 0.00	0.180	+0.07
Anxiety	<i>W</i> = 1.50	0.197	+0.11
Drowsiness	<i>W</i> = 15.00	0.010	-0.91
Shortness of Breath	<i>W</i> = 176.50	0.247	-0.52
Appetite	<i>t</i> (43) = -0.54	0.594	-0.16
Wellbeing	<i>t</i> (43) = -1.05	0.298	-0.34
Others	<i>W</i> =0.00	0.371	-0.09

Wilcoxon signed-rank test (*W*) and paired t-test (*t*)

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0258

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Exploring the Role of Retinoid X Receptor in the Senescence of Renal Tubular Cells

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Abstract

Introduction

As human lifespans extend, the proportion of elderly individuals globally is expected to increase substantially. Aging often correlates with a higher prevalence of chronic illnesses. In Taiwan, nearly 37% of those aged 65 and above are diagnosed with chronic kidney disease (CKD). Additionally, older adults experiencing acute kidney injury (AKI) face a markedly elevated mortality risk compared to younger patients, and even survivors are more prone to subsequent CKD development. Recent findings have highlighted a strong association between the nuclear receptor retinoid X receptor (RXR) and cellular senescence in human lung fibroblasts. These observations raise the possibility that RXR may also be involved in the aging process of renal tissues. Motivated by this, our study investigates the role of RXR signaling in the senescence of renal tubular epithelial cells.

Methods

We employed primary tubular epithelial cells (PTECs) for in vitro studies. RXR signaling was selectively modulated with bexarotene, an RXR agonist, and HX531, an RXR antagonist. The proliferation of PTECs was assessed by a population doubling assay, while flow cytometry was used to evaluate cell cycle progression and identify phases of arrest.

Results

Under standard culture conditions, PTECs exhibited continuous proliferation. Administration of bexarotene notably enhanced the transcription of RXR-responsive genes compared to untreated controls ($p < 0.01$). This treatment also led to a slowing of cell growth, suggesting the onset of proliferation arrest. Flow cytometric analysis showed an increased proportion of cells arrested in the G0/G1 and G2/M phases. Conversely, HX531 treatment accelerated PTECs proliferation relative to controls. Importantly, lactate dehydrogenase (LDH) levels remained stable across treatments, indicating minimal cytotoxic effects.

Conclusions

Our findings demonstrate that RXR signaling plays a critical role in regulating renal tubular epithelial cell proliferation and senescence. Specifically, RXR activation via bexarotene hinders cell division and promotes senescence, while its inhibition may counteract these aging-associated effects, offering potential therapeutic insight for renal aging.

Keywords : retinoid X receptor (RXR), renal aging, tubular epithelial cells, cell cycle arrest

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0259

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Symptom burden of patients on conservative kidney management

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Abstract

Background: Symptom burden is subjective and shaped by personal experiences and biopsychosocial factors. Understanding the variabilities of symptoms as chronic kidney disease stage 5 progresses, will help in shared decision making, establishing the goals of care to maintain the quality of life for patients on conservative kidney disease management (CKM).

Objective: We aimed to analyse the burden of the symptoms and changes before patients' passing.

Methodology: We conducted a single-center prospective study of patients who have opted for CKM from April 2021 to September 2024. These patients were referred to a renal conservative care program that integrates outpatient nephrology service and palliative-trained community nursing. Community nurses conducted monthly home visits and administered the Edmonton Symptom Assessment System-revised (ESAS-r, 2016 version) to track patients' symptoms as part of the routine clinical care. Total and individual ESAS-r scores were mapped longitudinally. Trajectories were examined and categorized into stable, fluctuating or progressive.

Results: One hundred and nine patients were enrolled in our CKM program. Seventy (64.2%) were female, 90 (82.6%) were Chinese. The mean age was 79.8 ± 7.3 years, baseline estimated glomerular filtration rate (CKD-EPI) was 10.3 ± 2.8 ml/min/1.73m². Seventy-six (69.7%) patients had diabetes mellitus being the primary cause of CKD G5. At baseline, median total ESAS-r was 1 (IQR:0, 3). There were 62 descendants during the study period, of which five had only one community nurse visit. Median time to demise was 11.9 months. Of the remaining 57 patients, 26 were categorized as having an overall stable symptom trajectory, 14 as fluctuating and 17 as progressive. Pain, insomnia and tiredness were the most frequently fluctuating symptoms affecting 21, 22 and 22 patients respectively. The anxiety and depression were largely stable in 87% of patients. The most frequent progressive symptoms were tiredness which reported in 20 patients.

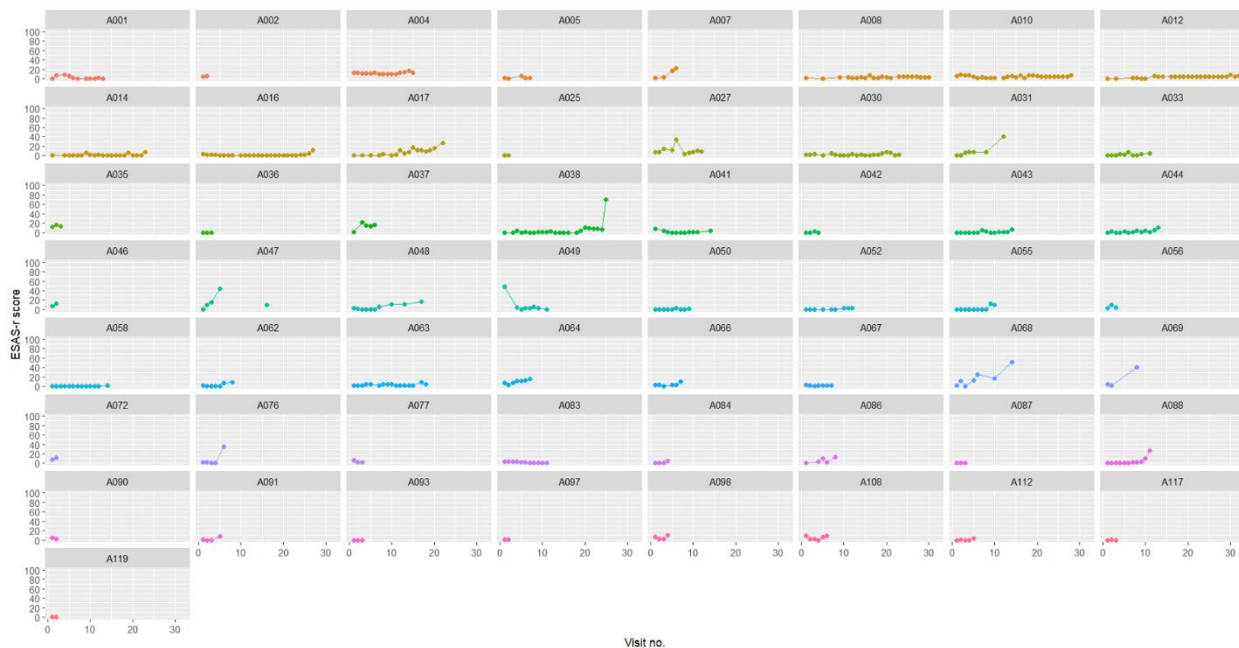
Discussion and Conclusion: The findings from our study highlight the subjective nature of symptom burden in patients with CKD G5, emphasizing the importance of continuous monitoring and individualized care.

Our results indicate that pain, insomnia, and tiredness were the most frequently fluctuating symptoms. Timely intervention and support might improve the quality of care.

In conclusion, our study identifies key symptoms that community CKM programs should focus on, particularly those that fluctuate or progress over time. By addressing these symptoms effectively, we can enhance the quality of life for patients with CKD G5 and support their journey through conservative kidney management.

Keywords : Conservative kidney management

Individual Trend (2): ESAS-r (deceased cohort)



Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

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Abstract Submission No. : APCN20250249

Deficiency of PLCL in Tumor-Associated Macrophages Exacerbates the Tumor Microenvironment and Promotes Cancer Malignancy

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Abstract

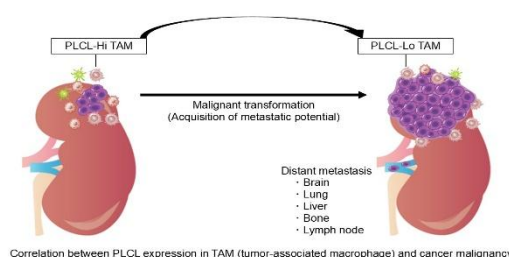
Introduction: Clinical studies have demonstrated an association between decreased phospholipase C-like protein (PLCL) expression in kidney renal clear cell carcinoma (KIRC) tissues and poor prognosis. PLCL suppresses PI3K-AKT-mTORC1 signaling, which negatively regulates tumor cell proliferation and survival. Tumor-associated macrophages (TAMs) are a major type of inflammatory cell in the tumor microenvironment (TME). TAMs often exhibit type 2 macrophage (M2)-like phenotypes and promote tumor growth. In this study, we examined the relationship between PLCL expression in tumor cells and TAMs, as well as the role of PLCL molecules in immune system cells, in relation to tumor metastasis.

Methods: We performed a bioinformatics analysis using 508 cases from The Cancer Genome Atlas (TCGA)-KIRC data for which survival information was available. For the Gene Ontology (GO) analysis, we used the transcript per million (TPM) gene expression level. The human samples consisted of KIRC tissue from 30 cases that were approved by Kyushu University Hospital. PLCL-positive areas were automatically calculated using a hybrid cell counting method. PLCL-positive TAMs in TME were detected by fluorescent multiplex immunostaining. Additionally, we analyzed TAM induction by co-culturing bone marrow-derived macrophages (BMDMs) from Plcl-KO or WT mice with Caki-1 (non-metastatic kidney cancer cells) or OS-RC-2 (metastatic kidney cancer cells).

Results: Patients with low PLCL expression in KIRC tissues had poorer survival rates, and this trend was also observed in macrophage-rich KIRC tissues. The extracellular matrix (ECM) plays a central and dynamic role in shaping the tumor microenvironment. GO analysis revealed that ECM-related genes were abundant in KIRC cases with low PLCL expression. PLCL expression decreased significantly in the area of tumor tissues with metastases compared to non-tumor tissues. This decrease was not observed in tumor tissues without metastases. The rate of PLCL-positive TAM in the TME was significantly lower in metastatic cases than in non-metastatic cases. BMDMs derived from Plcl-KO mice exhibited significantly greater polarization into M2 macrophages than BMDMs derived from WT mice. Additionally, OS-RC-2 cells exhibited significantly lower PLCL expression than Caki-1 cells. Importantly, BMDMs derived from Plcl-KO mice that were co-cultured with OS-RC-2 cells exhibited the greatest TAM induction.

Conclusion: We indicated that decreased PLCL expression in KIRC promotes tumor malignancy and that reduced PLCL expression in TAMs exacerbates TME, leading to tumor progression and malignant transformation. Therefore, a drug that enhances PLCL expression could be an effective new cancer therapeutic for KIRC.

Keywords : Kidney renal clear cell carcinoma (KIRC), Tumor-associated macrophage (TAM), Phospholipase C-like protein (PLCL), PI3K-AKT-mTORC1 signaling



Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0261

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Establishment of Kidney Organoids Model of Nephronophthisis from Human Induced Pluripotent Stem Cells (iPSCs)

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Abstract

Background: Nephronophthisis (NPH) is an genetic kidney disease characterized by progressive tubulointerstitial fibrosis. NPH is clinically important as the most common cause of end-stage kidney disease in the juvenile period. However, there is currently no reliable animal model that faithfully replicates the pathology of human NPH. Consequently, the molecular mechanism of NPH caused by NPHP1 deficiency, the most common form of NPH, has not yet been elucidated. Therefore, novel models to recapitulate the pathology of NPH are required. In this study, we used human induced pluripotent stem cells (iPSCs) to establish a 3D kidney organoid model of fibrosis that provides insight into the pathogenesis of NPH.

Methods: Wild-type iPSCs and NPHP1^{-/-} iPSCs derived from the same cell line were differentiated into 3D kidney organoids, with subsequent analysis of phenotypes associated with NPHP1 deficiency. Initially, we compared the morphology of both wild-type and NPHP1^{-/-} organoids by immunofluorescence. Subsequently, fibrosis was induced via IL-1 β treatment, and differences in fibrosis severity between the two groups were evaluated.

Results: We successfully generated kidney organoids from both wild-type and NPHP1^{-/-} iPSCs. In the absence of stimulation, there were no observable differences in morphology, including nephron-like structures or fibrotic features, between the two groups. This is consistent with the clinical course of human NPH caused by NPHP1 deficiency, in which renal dysfunction does not appear during the postnatal period. On the other hand, fibrosis was triggered by a significantly lower concentration of IL-1 β in NPHP1^{-/-} organoids compared to wild-type organoids. These results suggest that the NPHP1-deficient kidneys are more sensitive to fibrotic stimuli than the wild-type kidney, which may explain why NPHP1-deficient NPH patients reach end-stage kidney disease earlier.

Conclusions: We established NPHP1-deficient 3D kidney organoids; the first human cell-based system capable of recapitulating NPH pathology. This model provides a valuable platform for elucidating disease mechanisms and advancing the development of therapeutic approaches for NPH.

Keywords : Nephronophthisis, NPHP1, fibrosis

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

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The Effect of Moral Distress Severity on Training Program Drop-out Tendencies among Adult Nephrology Fellows-in-Training in the Philippines during the Second and Third Quarter of 2024: A Cross-Sectional Study

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Abstract

Introduction: Moral Distress is the psychological and emotional response that occurs when a healthcare professional recognizes a morally challenging situation and experiences a sense of constraint or powerlessness in acting in accordance with their ethical beliefs. This is an emerging phenomenon and yet, there is paucity of data about the instances that elicit moral distress among Filipino nephrology fellows. This study aims to determine the effect of moral distress severity on training program drop-out tendencies among adult nephrology fellows-in-training in the Philippines.

Methodology: This cross-sectional study utilized a validated survey questionnaire (Moral Distress Scale - Revised) to determine the frequency and severity of moral distress among adult nephrology fellows in the Philippines. We sent the survey to all PSN-accredited training institutions throughout the country. Using a 5-point (0–4) scale, fellows rated both the frequency (never to very frequently) and severity (not at all disturbing to very disturbing) of commonly encountered workplace scenarios. The MDS-R total composite score was calculated and was further categorized into a binary variable using the cut-off 100.

Results: The survey was answered by a total of 135 Adult Nephrology Filipino Fellows-in-training. The domain that had the strongest relationship with moral distress was institutional/fellowship culture, particularly, carrying a high patient census (60% reported to experience it frequently to very frequently while 76.3% answered it to be disturbing to extremely disturbing). The MDS-R total score had a median of 71 (IQR: 58 - 98). Using the cut-off of 100, 107 (79.3%) had at most 100 points or non-severe moral distress, meaning 20.7% can be considered as those with severe moral distress. More than half (53.3%) of the sample reported that “No”, they have never considered quitting nor had left any fellowship training program. When asked about their present status, 87.4% reported that they are not considering leaving their position now. Those who consider dropping out of fellowship have a higher proportion of those with severe moral distress as compared to the no drop-out tendency (35.3% vs 18.6%). However, there was no sufficient evidence to ascertain this association (p=0.098).

Conclusion: Majority (79.3%) of participants reported non-severe moral distress and suggests that while many cope with the pressures of their roles, a substantial minority (20.7%) experience severe moral distress, indicating a need for intervention and support. Despite the high percentage (87.4%) of those not considering quitting, the challenges identified necessitate ongoing attention to moral distress and retention strategies.

Keywords : Moral Distress, Nephrology fellows-in-training, Philippines

	Baseline	Crude Odds Ratio				Adjusted Odds Ratio [a]			
		Coef.	95% CI (LL - UL)		Sig.	Coef.	95% CI (LL - UL)		Sig.
Severe Moral Distress (> 100)	MDS-R <= 100	2.38	0.794	7.131	0.121	4.055	1.082	15.20 1	0.038
Type of Institution (Private)	Public	2.483	0.823	7.488	0.106	3.184	0.966	10.49 3	0.057
Year Level									0.037
Year Level (Second Year)	First Year	0.389	0.132	1.142	0.086	0.27	0.081	0.904	0.034
Total Number of Palliative Care Experiences	N/A	1.097	0.788	1.527	0.585	1.026	0.675	1.558	0.906
Constant						0.082			<.001

a. Outcome: Drop-out tendency or "Are you considering leaving your position now?"
b. Variable(s) entered in the model: Severe Moral Distress (Score > 100), Type of Institution, Year Level, Total Number of Palliative Care Experiences.
c. Demographics were either significant in the bivariate associations or were initially identified in the protocol.

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

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Pregnancy in Chronic Dialysis Patient

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Abstract

Background: Pregnancy in patients with chronic dialysis is uncommon due to various factors. Even if pregnancy occurs, the risks and complications that may arise during pregnancy present a challenge in managing the patient. Risks to the fetus such as congenital abnormalities, premature birth, low birth weight, and even fetal death can still occur if the mother's kidney failure management is not optimally provided.

Case illustration: A 34 year-old patient who had been undergoing hemodialysis for 2.5 years, discovered her pregnancy after the second trimester. Subsequently, the patient underwent dialysis for 15 hours/week, received PRC transfusions, erythropoietin injections, antihypertensive medications, and multivitamins. The patient experienced contractions and amniotic fluid leakage at 35 weeks, leading to the baby being delivered via cesarean section (C-section) with a birth weight of 1800 g. The patient was discharged five days post-C-section without complications and continued dialysis twice a week, while the baby was admitted to the NICU for stabilization.

Discussion: Many literatures recommended increased hemodialysis sessions up to 20 hours per week during pregnancy to improve maternal and fetal outcome. With limited resources in our center, we can only give this patient 15 hours of dialysis per week. Nevertheless, we can maintain BUN below 50 and SBP about 140-150 mmHg. The problem in this patient was the Hb level that keep decreasing despite ESA injection, supplement, and PRC transfusion. The baby was having CTEV, small secundum ASD, mild TR, and hypoganglionosis. She discharged after about one month admitted in the NICU.

Conclusion: Even with recent advances in CKD management resulting in increased prevalence of pregnancy, it still a relatively high-risk event. Provision of multidisciplinary team is necessary to manage these cases.

Keywords : pregnancy, chronic kidney disease, renal failure, dialysis, hemodialysis, hypertension

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

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Novel Mutation in AVP in Arginine vasopressin (AVP) deficiency

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Abstract

Introduction: Arginine vasopressin (AVP) deficiency (neurohypophyseal diabetes insipidus (NDI) or central diabetes insipidus (CDI)) is a rare endocrine disorder resulting from deficient production or release of arginine vasopressin. Acquired CDI can result from trauma, tumors, or infiltrative diseases affecting the hypothalamic-pituitary axis, a subset of cases are inherited, most commonly due to mutations in the AVP gene located on chromosome 20p13, known as autosomal dominant (AD) familial NDI.

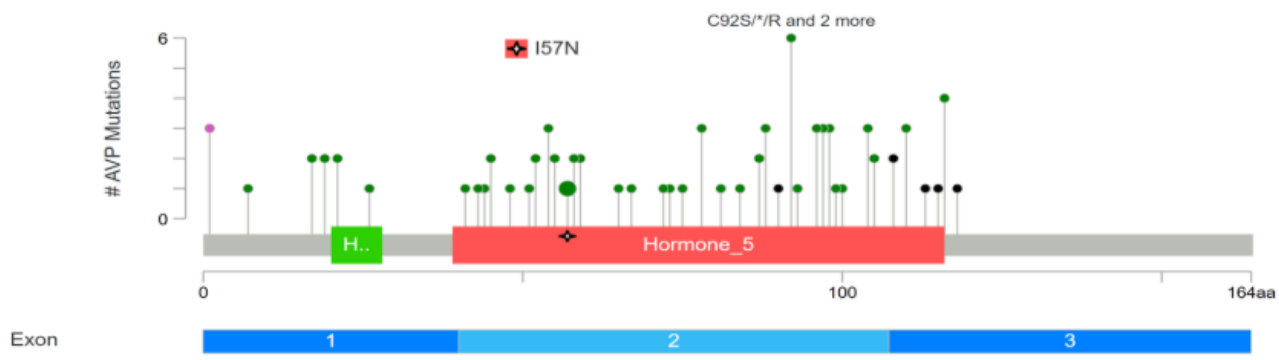
Case presentation: A 46-year-old male presented with long-standing polyuria, polydipsia, frequent urination, bilateral flank discomfort, and nocturia since adolescence. A health screening at age 29 revealed elevated serum creatinine (1.75 mg/dL) and a markedly low urine specific gravity (<1.005), suggestive of impaired urinary concentration. Urinalysis was negative for hematuria, infection, and glucose. Abdominal CT imaging demonstrated a markedly distended urinary bladder with bilateral hydroureter and hydronephrosis (Figure 1B). A water deprivation test revealed a >50% increase in urine osmolality following administration of desmopressin, confirming the diagnosis of CDI.[3] Brain MRI showed normal pituitary anatomy and no intracranial pathology. Psychiatric and neurologic assessments were unremarkable. The patient was diagnosed with idiopathic CDI and achieving stable symptom control for 17 years with intranasal desmopressin. At age 46, the patient returned for evaluation of his 5-year-old son, who exhibited similar symptoms of polyuria and polydipsia. Imaging of the child revealed a mildly distended bladder but no evidence of hydroureter or hydronephrosis (Figure 1C). This prompted genetic evaluation due to the familial clustering of symptoms.

Discussion: Half of non-traumatic acquired CDI are classified as idiopathic due to lack of an identifiable underlying cause. However, many so-called idiopathic cases may be autoimmune or hereditary in origin. Autoimmune CDI may present with clinical features such as sudden onset, rapid progression, and concomitant anterior pituitary hormone deficiencies.

In contrast, hereditary CDI usually follows an insidious course, with symptom onset in early childhood and gradual progression. Most familial cases are linked to autosomal dominant mutations in the AVP gene. In the case presented here, the delayed diagnosis in the father and early detection in the son illustrate the natural course and generational penetrance typical of FNDI. A mutation distribution map illustrating the locations of these variants along the AVP gene is shown in Figure 1D (figure modified from Mutation Mapper).

Conclusion: Genetic testing should be considered in all patients with CDI of unknown cause, especially when a hereditary component is suspected.

Keywords : Familial neurohypophyseal diabetes insipidus



Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0266

Abstract Submission No. : APCN20250806

Ellagic acid inhibits the migration and invasion of human renal cancer cells.

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Abstract

Ellagic acid (EA) has been shown to have anti-cancer effects across various cancer types. Matrix metalloproteinases (MMPs) play a crucial role in the development of metastasis in renal cell carcinoma (RCC). This study employs in vitro methodologies to elucidate the mechanisms through which EA inhibits the migration and invasion of RCC cells. The results indicate that EA treatment effectively reduces RCC cell migration and invasion without adversely affecting the viability of normal human kidney cells (HK2) or RCC cell lines (786-O and ACHN). A human proteinase array analysis revealed that EA treatment led to a decrease in both mRNA and protein expression levels of MMP1 in the 786-O and ACHN cell lines. Notably, MMP1 expression is elevated in RCC tissues and is associated with tumor grade, stage, and overall survival in patients with RCC. Molecular docking studies suggest a robust interaction between EA and MMP1. The introduction of recombinant human MMP1 (Rh-MMP1) to RCC cells resulted in increased migration and invasion; however, co-treatment with Rh-MMP1 and EA effectively mitigated these effects. Furthermore, EA was found to downregulate the expression of the transcription factor RUNX2 in both RCC cell lines, and the knockdown of RUNX2 significantly diminished the migration and invasion capabilities of EA-treated 786-O cells. Elevated RUNX2 expression in RCC patients correlates with higher tumor grade, stage, and poorer survival outcomes, and it shows a positive correlation with MMP1 expression levels. These findings suggest that EA exerts its anti-invasive effects on RCC cells by inhibiting RUNX2-mediated regulation of MMP1 expression.

Keywords : ellagic acid; renal cell carcinoma; MMP1; RUNX2; migration; invasion

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0267

Abstract Submission No. : APCN20250931

Computational Deconstruction of Blastemal and Stromal Differentiation Trajectories in Pediatric Wilms Tumor through Single-Nucleus RNA Sequencing: An AI-Based Framework for Prognostic Stratification

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Abstract

Introduction: Wilms tumor is the most common kidney cancer in children, often composed of varying proportions of blastemal, stromal, and epithelial components, each linked to distinct treatment responses and outcomes. However, conventional histopathology provides limited insight into the underlying transcriptional programs that define cell lineage commitment and tumor behavior. This study aims to reconstruct the cellular differentiation trajectories of Wilms tumor and determine whether these trajectories can serve as early predictors of tumor risk classification using a machine learning framework applied to single-nucleus RNA-sequencing data.

Methods: We analyzed single-nucleus transcriptomic data from the Gene Expression Omnibus (GEO) under accession ID GSE296618, which includes 15,420 nuclei derived from three histologically distinct Wilms tumor samples. After quality filtering (removal of nuclei with <500 genes or >5% mitochondrial reads), data were normalized using SCTransform and batch-corrected via Harmony. Dimensionality was reduced using a variational autoencoder (scVI), followed by unsupervised clustering and pseudotime trajectory inference using Monocle 3, with epithelial-like progenitors as the root state. Branch Expression Analysis Modeling (BEAM) identified bifurcation-associated genes. A gradient-boosted tree classifier (XGBoost) was trained using expression features from early pseudotime states to distinguish high-risk from intermediate-risk tumors. Feature contributions were evaluated using SHAP. Performance was measured using stratified 5-fold cross-validation.

Results:

Conclusions: This study presents a computational framework integrating single-nucleus RNA-seq and machine learning to model Wilms tumor cell differentiation and identify early prognostic signatures. These findings may support non-invasive molecular risk stratification strategies in pediatric renal cancer.

Keywords : Wilms tumor, single-nucleus RNA sequencing, trajectory inference, AI-based risk prediction, pediatric nephrology

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0268

Abstract Submission No. : APCN20251059

Different effect of herbal medicines on bladder cancer cells and macrophages

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Abstract

Background: According to the Globocan 2020 report of WHO Global Cancer Observation, bladder cancer is the 10th in terms of incidence and 13th in terms of mortality among all types of cancer worldwide. Bladder cancer has a high recurrence rate, which indicates that the therapeutic effects of advanced bladder cancers are still limited. In this study, we tried some herbal medicines, including *Scutellaria barbata* Herba, *Polyporus umbellatus*, and Guizhi Fuling Wan, on bladder cancer cells for their cytotoxicity. In macrophages, the cytotoxicity and M1-M2 marker expression affected by the herbal medicines were also analyzed.

Results: *Scutellaria barbata* Herba and *Polyporus umbellatus* belong to single herbal medicine, Guizhi Fuling Wan is a complex herbal medicine including *Cinnamoni Ramulus*, *Poria*, *Moutan Radicis Cortex*, *Paeoniae Rubra Radix*, and *Persicae Semen*. In bladder cancer cells, the IC₅₀ of *Scutellaria barbata* Herba is 3.1 and 1.4 mg/mL in 5637 and BFTC 905 cells, and the IC₅₀ of Guizhi Fuling Wan is 4.2 and 1.7 mg/mL in 5637 and BFTC 905 cells, respectively. There is no cytotoxicity up to 4 mg/mL *Polyporus umbellatus* treatment in bladder cancer cells. All the three herbal medicines have no cytotoxicity in macrophages up to 4 mg/mL. Because there is no obvious cytotoxicity by *Scutellaria barbata* Herba, *Polyporus umbellatus* and Guizhi Fuling Wan treatment in macrophages, the M1-M2 marker expression was analyzed by using 4 mg/mL herbal medicine treatment. Up to now, it is known that *Scutellaria barbata* Herba induces M1 type formation, the effects of *Polyporus umbellatus* and Guizhi Fuling Wan will be analyzed.

Conclusions: Based on the results of cytotoxicity of three herbal medicines, *Polyporus umbellatus* has no cytotoxicity in bladder cancer cells and macrophages. On the other hand, *Scutellaria barbata* Herba and Guizhi Fuling Wan have cytotoxicity in bladder cancer cells but not in macrophages. It is known that *Scutellaria barbata* Herba induces M1 type formation, which might play an anti-cancer effect in the immune-therapy mechanism.

Keywords : Bladder cancer , microphage, herbal medicines

Poster Presentation : Pediatric, Geriatric, Hospice, and Other Nephrology

Poster No. : B0271

Abstract Submission No. : APCN20251237

Risk Factors and Management Strategies for Steroid Resistance in Children with Minimal Change Nephropathy

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Abstract

Objective: Minimal change disease (MCD) is the primary type of nephrotic syndrome in children, with most cases being steroid-sensitive. However, approximately 10%-15% develop steroid resistance, which can easily progress to chronic kidney injury. This study aims to analyze the risk factors for steroid resistance in pediatric MCD and explore targeted intervention strategies to improve prognosis.

Method: Prospectively enrolled 100 children diagnosed with MCD from January 2020 to June 2024, all receiving standard prednisone treatment (60mg/m²/d). Based on treatment response after 8 weeks, they were divided into steroid-sensitive group (78 cases) and steroid-resistant group (22 cases). Collected clinical data and performed multivariate logistic regression analysis to identify risk factors for drug resistance; randomly assigned resistant cases to cyclophosphamide group (11 cases) and rituximab group (11 cases), comparing 6-month remission rates.

Results: Multivariate analysis showed that age of onset ≥ 10 years, initial urinary protein excretion ≥ 8 g/24h, concurrent hematuria, and serum IL-6 level ≥ 10 pg/ml were independent risk factors for steroid resistance ($P < 0.05$). After intervention, the rituximab group exhibited a significantly higher complete remission rate at 6 months compared to the cyclophosphamide group ($P < 0.05$), with a lower incidence of infections ($P < 0.05$).

Conclusion: Steroid resistance in children with MCD is associated with age of onset, urinary protein level, hematuria, and elevated IL-6. Rituximab demonstrates superior efficacy over cyclophosphamide for steroid-resistant pediatric patients and can serve as a preferred treatment option, providing reference for clinical individualized therapy.

Keywords : Children with Minimal Change Nephropathy; Risk Factors ; Management Strategies; Steroid Resistance