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WCN24-931 AKI Phenotypes in Ugandan children hospitalized with Hypoxemia and Malaria

Andrea Conroy

Anthony Batte

Rodney Ogwang

Sophie Namasopo

Robert Opoka

See next page for additional authors

Authors

Andrea Conroy, Anthony Batte, Rodney Ogwang, Sophie Namasopo, Robert Opoka, and Michael Hawkes

WCN24-456

ACUTE KIDNEY INJURY IN DENGUE VIRUS INFECTION DURING PREGNANCY IN AN OBSTETRIC INTENSIVE CARE UNIT IN MERIDA, YUCATAN, MEXICO

Julio Ismael Pech Cruz[*1]

[1]Merida, Internal medicine, Mexico,

Introduction: In dengue virus (DENV) infection, acute kidney injury (AKI) frequency varies from 0.9% to 30.7% and is associated with longer hospital stay and increased mortality. Dengue in pregnancy increases the risk for adverse maternal and fetal outcomes, including the development of AKI. AKI is one of the least studied complications of DENV infection, especially during pregnancy. Yucatan is a dengue endemic area, being the first place in confirmed cases in Mexico as of September 2023. The General Hospital Dr. Agustín O'Horán, a second level care unit is a referral hospital for uninsured pregnant patients from the southeast of Mexico. The aim of our study was to describe the prevalence, clinical features and outcomes related to AKI in DENV infection during pregnancy in our hospital, from January to September 2023.

Methods: This was a retrospective study in an obstetric intensive care unit (OICU) in the General Hospital Dr Agustín O'Horán in Merida, Yucatan, Mexico. We included women during pregnancy and post-partum periods, with confirmed DENV infection between January to September 2023. Demographical, clinical and laboratory data were collected from medical records. AKI was diagnosed according to the Kidney Disease Improving Global Outcomes (KDIGO) criteria. We evaluated the prevalence, clinical features and outcomes related to AKI in DENV infection during pregnancy.

Results: Forty-two patients admitted to the OICU were identified with confirmed DENV infection. The mean age was 21.5 years old. Six (14.3%) women presented in the first trimester, 13 (31.0%) in the second trimester, 11 (26.2%) in the third trimester and 12 (28.6%) in the postpartum period. According to the 2009 World Health Organization (WHO) dengue classification, 31 (73.8%) had dengue with warning signs and 11 (26.2%) had severe dengue. Ten women developed AKI, with a prevalence of 23.8%. Those who developed AKI had a tendency to lower blood pressure measurements (systolic blood pressure 105 vs 112, p = 0.095; and diastolic blood pressure 63 vs 71, p = 0.015), and grater disseminated intravascular coagulation (DIC) International Society on Thrombosis and Haemostasis (ISTH) score (4 vs 2, p = 0.004). Alanine aminotransferase or aspartate aminotransferase levels greater than 1000 IU/L were more common in patients with AKI (30.0% vs 3.1%, p = 0.012). Patients with AKI had a longer stay in the OICU (5.3 days vs 3.3 days, p = 0.006), and greater use of mechanical ventilation (40.0% vs 3.1%, p = 0.002), vasopressor (40.0% vs 3.1%, p = 0.002), and blood transfusion (50.0% vs 6.3%, p = 0.002). The women with AKI had higher mortality (30.0% vs 0%, p = 0.001) and postpartum hemorrhage (40.0% vs 3.1%, p = 0.002).

Table 1. Characteristics of patients with dengue virus infection according to acute kidney injury status				
Characteristics	Total (n = 42)	With AKI (n = 10)	Without AKI (n = 32)	P - value
Age	21.5 ± 6.0	20.7 ± 4.8	21.8 ± 6.4	0.626
Vital signs at OICU admission				
Systolic blood pressure, mm Hg	110 ± 12	105 ± 17	112 ± 10	0.095
Diastolic blood pressure, mm Hg	69 ± 9	63 ± 9	71 ± 9	0.015
Heart rate, beats per minute	85 ± 12	93 ± 14	82 ± 10	0.009
Respiratory rate, breaths per minute	18 ± 3	20 ± 6	18 ± 2	0.117
Peripheral saturation, %	98 ± 1	98 ± 1	99 ± 1	0.084
Temperature, °C	36.4 ± 0.6	36.5 ± 0.9	36.3 ± 0.4	0.48
Laboratory features				
Leukopenia	7 (16.7)	3 (30.0)	4 (12.5)	0.195
Limphocytopenia	14 (33.3)	3 (30.0)	11 (34.4)	0.798
Anemia	19 (45.2)	6 (60.0)	13 (40.6)	0.283
Disseminated intravascular coagulation	6 (14.3)	3 (30.0)	3 (9.4)	0.104
ISTH score	3 ± 2	4 ± 2	2 ± 2	0.004
ALT or AST >1000 IU/L	4 (9.5)	3 (30.0)	1 (3.1)	0.012
Clinical outcomes				
OICU stay, days	3.8 ± 2.1	5.3 ± 3.0	3.3 ± 1.5	0.006
Mechanical ventilation	5 (11.9)	4 (40.0)	1 (3.1)	0.002
Vasopressor	5 (11.9)	4 (40.0)	1 (3.1)	0.002
Blood transfusion	13 (31.0)	7 (70.0)	6 (18.8)	0.002
Red blood cell transfusion	7 (16.7)	5 (50.0)	2 (6.3)	0.001
Plasma transfusion	8 (19.0)	7 (70.0)	1 (3.1)	0.001
Platelets tranfusion	12 (28.6)	6 (60.0)	6 (18.8)	0.012
Cryoprecipitate transfusion	6 (14.3)	5 (50.0)	1 (3.1)	0.001
Renal remplacement therapy	1 (2.4)	1 (10.0)	0 (0)	0.07
Obstetric outcomes				
Adverse outcomes	16 (38.1)	7 (70.0)	9 (28.1)	0.017
Abortion	1 (2.4)	1 (10.0)	0 (0)	0.07
Threatened abortion	2 (4.8)	0 (0)	2 (6.3)	0.418
Death	3 (7.1)	3 (30.0)	0 (0)	0.001
Pre-eclampsia	4 (9.5)	2 (20.0)	2 (6.3)	0.196
Postpartum hemorrhage	5 (11.9)	4 (40.0)	1 (3.1)	0.002
AKI, acute kidney injury; ISTH, International Society on Thrombosis and Haemostasis; ALT, alanine aminotransferase; AST, aspartate aminotransferase.				

Conclusions: In patients with DENV infection during pregnancy, those who developed AKI had more adverse clinical and maternal outcomes. Hence, women in pregnancy and postpartum periods with DENV infection should be monitored for the development of AKI and offer appropriate therapy to reduce adverse outcomes.

I have no potential conflict of interest to disclose.

WCN24-931

AKI PHENOTYPES IN UGANDAN CHILDREN HOSPITALIZED WITH HYPOXEMIA AND MALARIA

Andrea Conroy[*1], Anthony Batte[2], Rodney Ogwang[3], Sophie Namasopo[4], Robert Opoka[5], Michael Hawkes[6]

[1]Indianapolis, Pediatrics, United States; [2]Centre for Child Health and Development, Makerere University College of Health Sciences, Kampala; [3]CHILD Laboratory, Global Health Uganda, Kampala; [4]Pediatrics, Kabale Regional Referral Hospital, Kabale; [5]Undergraduate Medical Education, Aga Kkan University, Nairobi, [6]Infectious Diseases, University of British Columbia, Vancouver,

Introduction: Acute kidney injury (AKI) is a frequent life-threatening complication in hospitalized children. Emerging data suggest AKI is a heterogeneous condition that varies based on the underlying cause and is composed of distinct phenotypes. The objective of this study was to define AKI phenotypes using proposed classification systems in Ugandan children hospitalized with hypoxemia and to evaluate differences in phenotypes by malaria infection.

Methods: Between 2019 and 2021, 2402 Ugandan children <5 years of age hospitalized with hypoxemia were enrolled in a cluster randomized trial of solar powered oxygen delivery across 20 districts in Uganda. At enrollment, urine NGAL was measured using a point-of-care lateral flow test with a positive test defined as a level ≥150ng/mL. Malaria was assessed using a threeband rapid diagnostic test. In an extended substudy, 491 children had creatinine measured to define AKI. AKI was defined using a single creatinine measure at enrolment and phenotypically characterized using two acute dialysis quality initiative (ADQI) proposed AKI phenotypes. The AKI biomarker definition incorporated urine NGAL into the KDIGO definition

[group 1, no AKI; group 2, subclinical AKI (biomarker positive); group 3, AKI; group 4, biomarker positive AKI]. The ADQI sepsis AKI phenotype groups stage 1 AKI as sepsis phenotype (SP)-1 irrespective of biomarker status and differentiates severe AKI (stage 2/3) based on biomarker positivity where severe AKI that is biomarker negative is (SP2) and severe biomarker positive AKI is SP3. AKI phenotypes are depicted in Figure 1.
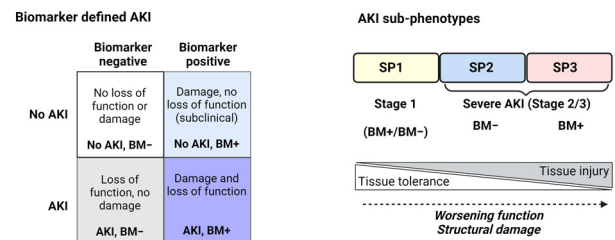
AKI: Enrolment SCr >1.5x increase from estimated baseline
Biomarker (BM): uNGAL ≥150ng/mL (BM+), uNGAL<150ng/mL (BM-)

Results: Overall, 491 children were included in the extended study with AKI defined and uNGAL measured. The median age was 1.3 years (interquartile range, 0.7 to 2.3) and 53.8% of children were male. There were 4 deaths (0.8%) and 24 children required transfer to a higher-level health facility (4.9%). Among children included, 91.2% met a clinical definition of pneumonia and 49.5% were positive for malaria. The frequency of creatinine defined AKI was 32.0% (157/491) and 36.5% (179/491) were biomarker positive. AKI was associated with a 3.24-fold increase in mortality (95% CI 0.34 to 31.4) but underpowered to show a difference. In children without malaria, 17.7% were biomarker positive and AKI negative (subclinical AKI, 44/248) while 37.5% of children had AKI (93/284) of whom 39.8% (37/93) were biomarker positive. In children with malaria, 14.0% had subclinical AKI, 34/243), 59.3% had AKI (144/243) with 44.4% of AKI cases biomarker positive (64/144). Children with malaria had a higher frequency of AKI compared to children without malaria (59.6% vs. 37.6%, p<0.001) but comparable

frequency of a positive biomarker test (41.3% vs. 36.2%, p=0.10). Using the sepsis phenotype criteria, 16.3% of children had SP1, 17.9% were SP2 and 14.1% were SP3. When evaluating the sepsis phenotype by malaria status, children with malaria were more likely to have SP2 (23.1% vs. 12.9%) and SP3 (18.1% vs.

10.1%) compared to children without malaria (p<0.001).

Conclusions: In this population of children hospitalized with hypoxemia across 20 health centers in Uganda, KDIGO-defined AKI was more common in children with malaria. While there was no difference in the AKI-biomarker classification based on malaria status, children with malaria were more likely to have severe phenotypes of AKI.

I have potential conflict of interest to disclose.

WCN24-1081

SERUM NGAL ASSOCIATED WITH QUICKLEPTO SCORE: EVALUATING SEVERITY BIOMARKERS UPON HOSPITAL ADMISSION OF LEPTOSPIROSIS PATIENTS

Raoni de Oliveira Domingues da Silva[1]:
Gabriela Studart Galdino[*2], Silvana Daher Costa[3],
ÁLVARO ROLIM GUIMARÃES[1],
PEDRO QUARANTA ALVES CAVALCANTI[1],
HUCKELL HOLANDA DE MORAIS PINHO[1],
Alice Maria Costa Martins[4], Tainá Veras de Sandes-Freitas[2],
Luis Gustavo Modelli de Andrade[5],
Gdayllon Cavalcante Meneses[6], Geraldo Bezerra da Silva Junior[7],
Elizabeth De Francesco Daher[2]

[1]School of Medicine, Universidade Federal do Ceará, Fortaleza; [2]Department of Clinical Medicine, Universidade Federal do Ceará, Fortaleza; [3]Kidney Transplant Section, Walter-Cantídio University Hospital, Fortaleza; [4]Clinical and Toxicological Analysis Department, Universidade Federal do Ceará, Fortaleza; [5]Botucatu Medical School, Universidade Estadual Paulista, São Paulo; [6]Postgraduate Program in Medical Sciences, Universidade Federal do Ceará, Fortaleza, [7]School of Medicine, University of Fortaleza, Fortaleza,

Introduction: Leptospirosis is a neglected disease that continues to incur significant morbidity and mortality rates, despite advancements in identification and management. Early detection of severity factors in these patients is essential for guiding appropriate care. The primary objectives of this study were to assess the correlations between a mortality score (QuickLepto) in leptospirosis patients and early, non-traditional kidney biomarkers.

Methods: This is a prospective study that evaluated consecutive cases of leptospirosis admitted to the 3 tertiary hospitals in Fortaleza from January 2017 to April 2023. Utilizing the parameters and characteristics documented upon hospital admission, QuickLepto scores were computed for each patient and subsequently visualized in the context of mortality distribution. Blood and urine samples were obtained upon hospital admission for the quantification of severity and renal biomarkers (MCP-1, serum and urinary NGAL and FGF-23). Other clinical data of medical records were collected.

Results: Among the 44 included patients, 81.8% were male, with an average age of 40.8 ± 16.9 years, and a 9.1% mortality rate. The correlations between the new QuickLepto score and the severity biomarkers measured on hospital admission have shown that serum NGAL showed a positive correlation with statistical significance (r=0.388, p=0.009). No association was observed with creatinine, serum FGF-23 and urinary MCP-1.

Correlation between clinical scores and admission biomarkers with QuickLepto

	QuickLepto	
	rho	p
Renal Biomarkers		
Serum creatinine	-0,099	0,548
MCP-1	-0,061	0,696
FGF-23	0,263	0,084
Urinary NGAL	-0,014	0,927
Serum NGAL	0,388	0,009

Source: Author, 2023.

Conclusions: This indicates the potential utility of serum NGAL as a valuable marker in relation to the QuickLepto score's predictive capabilities. Conversely, no discernible associations were observed with creatinine, serum FGF-23, and urinary MCP-1, suggesting these parameters might not serve as direct indicators in the context of the QuickLepto score for the patient cohort examined.

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WCN24-1838

GENITOURINARY TUBERCULOSIS IN PRISONERS IN BRAZIL, 2010 – 2020

Geraldo Bezerra da Silva Junior[*1], Carlos Vasconcelos[2],
João Furtado[2], Rafael Aguiar[2], Maria Maia[2], Matheus Rodrigues[2],
Vitória Apolinário[2], Anne Moreno[2]

[1]Fortaleza, school of medicine, Brazil, [2]school of medicine, UNIFOR, Fortaleza,

Introduction: Tuberculosis (TB) is a chronic infectious and inflammatory disease caused by the bacillus Mycobacterium tuberculosis. Renal TB is the third most common form of extra-pulmonary TB. The disease has shown an increase in incidence in the last decade, and the prison population is more susceptible to this disease. The aim of this study is to analyze the prevalence of genitourinary TB in prisoners in Brazil.

Methods: This is a cross-sectional and documentary study with a quantitative approach, with data from SINAN from DATASUS (public health system data set from Brazil), from 2010 to 2020. The variables gender, TB clinical manifestation and age group per year were evaluated.

Results: In the study period, there were 969,427 reported cases of TB in the Brazilian population, of which 539,846 affected the general population and 70,687 affected prisoners, mainly in the age group of 20-29 years (83.4%) and affecting more males. (97%), with 3104 cases reported of the genitourinary form. It was possible to observe that in 2010 there was a large underreporting of the specific form of TB manifestation with around 95% of cases not having their form specified. Over time, underreporting decreased and it was demonstrated that in the prison population the prevalence of genitourinary TB was on average 2.5% of cases, compared to the general population which is around 0.15%, confirming the position of prisoners as a population at risk. It was also possible to observe a peak in the prevalence of the genitourinary form in 2017, following the increase in TB cases in the general population.

Conclusions: Genitourinary TB remains a frequent condition among the Brazilian population and that it has a prevalence of infection pattern consistent with the demographic data of the prisoners, affecting mainly young males aged 20 to 29 years. Furthermore, in low- and middle-income countries, such as Brazil, underdiagnosis and underreporting are higher when compared to other countries, corroborating the mortality levels and the lack of prevention measures and early diagnosis.

There is a need for greater knowledge and identification of the disease to carry out new health promotion measures.

I have no potential conflict of interest to disclose.

WCN24-1894

PEDIATRIC KIDNEY DAMAGE IS AN EMERGING CONCERN IN CHRONIC KIDNEY DISEASE OF UNKNOWN ETIOLOGY (CKDU) ENDEMIC COMMUNITIES GLOBALLY: A COMPREHENSIVE SYSTEMATIC REVIEW

Anna Strasma[*1], Anisha Gerber[2], Isabela Maluli[3],
Beth Blackwood[4], Sameera Gunasekara[5], Mangala De Silva[5],
Nivedita Kamath[6], Marvin Gonzalez-Quiroz[7], Christina Wyatt[8],
Nishad Jayasundara[9]

[1]Durham, Department of Medicine, Division of Nephrology., United States; [2]Department of Medicine, Division of Nephrology and Hypertension, Pediatric Nephrology, University of North Carolina - Chapel Hill, Chapel Hill; [3]Trinity College of Arts and Sciences, Duke University, Durham; [4]Medical Center Library, Duke University, Durham; [5]Department of Zoology, University of Ruhuna, Matara; [6]Deptartment of Pediatric Nephrology, St. John's Medical College Hospital, Bangalore; [7]Department of Renal Medicine, University College London, London; [8]Department of Medicine, Division of Nephrology, Duke University, Durham, [9]Nicholas School of the Environment, Duke University, Durham,

Introduction: Chronic kidney disease of unknown etiology (CKDu) is a tubulointerstitial disease that disproportionately affects young,