Autopsy based studies in Kenya: Potential impact, global health

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Death Notification & Autopsy practice in Kenya

• Inadequate death notification
• Limits utilization of health data
• Autopsies: rates at KNH (forensic mortalities): 76%.
• Autopsies: rates at KNH (clinical mortalities): 0.1% (WHO recommendation: 30%)
• KNH: 1800 recorded autopsies per year, 40 clinical autopsies
• Outside KNH
Autopsies (Kenya)

- Mainly forensic autopsies
- Numbers: estimates of 2000 per year, mainly forensic
- Performed by medical officers (MBChB basic qualification)
- Few pathologists (total: 100, less than 40 practice autopsy pathology)
Previous autopsy studies

• Complete diagnostic autopsies: 1 published (FS Rana, 2002, 75 HIV +, 47 HIV – autopsies). For localized disease: 1 (Cardiovascular, Nairobi)

• Unpublished:
  - Chumba D (Moi University, Eldoret, 2010, HIV+)
  - Pediatric Respiratory Surveillance Study, 2016. (KNH/UoN/CDC pneumonia etiology (65 autopsies, infants/children 1-59 months)


• Verbal Autopsies: 15 studies (Nairobi, Western Kenya, Kilifi)
PRESS Study

- Complete diagnostic autopsies
- Histopathology, focus on lung disease, represents all organs
- Investigators: CDC, UoN, KNH
- Additional testing: Immunohistochemistry, molecular diagnostics
Outcomes

• Understanding of the causative organisms associated with respiratory disease among children at KNH – clinical impact
• Pathology training: 3 recently qualified pathologists,
  Pediatric Infectious Lung Pathology
  Pediatric Neuropathology
  Pediatric Bone marrow Pathology
Outcomes

- Current Trainees in Pathology (working on archived tissue): 3 trainees
  - Pediatric thymic Pathology (International Society for Infectious Disease grant)
  - Pediatric Renal Pathology (2 trainees)

- Thematic areas identified for further training and research
  - Liver (fatty liver disease in children)
  - Pancreas (endocrine pancreas – inflammation and endocrine effect)
  - Pediatric malnutrition: Vitamin D deficiency and its systemic pathologic effects
Autopsy case reports

• Primary immunodeficiency diagnosed at autopsy

Promoted Local and international interest in pediatric immune deficiencies

Is pediatric AKI a big problem in Africa?

Controversies: p-RIFLE, p-KIDGO
May not adequately identify AKI in African children.
Contribution to mortality is largely unknown

Senegal
- 1 case series, pediatric TMA

Nigeria
- 30, cross sectional studies, clinical criteria

DRC
- Cross sectional studies, malaria and AKI

Sudan:
- Description of pathology of pediatric AKI, 30% Due to acute glomerulonephritis

Uganda
- Retrospective cohort, AKI in acutely ill children, 80% mortality if AKI is identified

Kenya
- Neonatal AKI, Clinical criteria
- Pediatric fluid studies (Fluid overload related to bolus infusions, role of AKI hypothesized)
Current D43 supported work (PHERT Fellow)

**Figure 4:** Distribution of glomerular histopathologic changes in fatal Paediatric SARI.
Diffuse Proliferative GN in 64% (n=39), FSGS in 18% (n=11), Membranoproliferative/membranous in 13.1% (n=8), Crescents in 3.2% (n=2), Normal histology in 1.6% (n=1). There was no correlation between Glomerular histopathologic patterns observed with SARI aetiologic agent, age and Gender (p=>0.05 for bacterial, viral, fungal and protozoa).
Current Research work – Pediatric Acute Kidney Injury

• Severe pneumonia and acute kidney injury

• Immune complex deposits in the kidney

• Analysis of archived tissue

• Expected outcome: identifying renal disease as a risk factor for severe acute respiratory illness mortality

• Fellowship: Renal Pathology at Vanderbilt (funding: East African Kidney Institute)
Final remarks

• Autopsy studies in Kenya: under reported, low publication rate
• Cross sectional studies (need for analytic studies examining specific themes)
• Potential for disease surveillance, death notification
• Catalyst for improved quality of care

• Excellent tool for training of pathologists (psychologists – counselling, others – pediatricians, etc)
Acknowledgements