SURVIVAL AMONG KENYAN CHILDREN TREATED FOR ENDEMIC BURKITT LYMPHOMA BETWEEN 2003 AND 2011: A LONGITUDINAL ANALYSIS OF RISK FACTORS

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Endemic Burkitt lymphoma

- Most common pediatric cancer in Kenya
  - Admit an average of 2 eBL patients per week at JOOTRH
  - Peak incident age 5–9 years
  - Sex ratio 1.5 males to females
  - Only 1.2% were HIV positive

- Extranodal monoclonal B cell tumor
  - High tumor proliferation index therefore responsive to combination chemotherapy without radiotherapy
  - Diagnosis by fine needle aspirate (May Grunewald–Giemsa stain), ultrasound or Xray

Rochford, Cannon, Moormann
Nat Rev Micro 2005
Map of JOOTRH catchment area for pediatric Burkitt lymphoma patients

- Western Kenya referral hospital for all cancers
- Region with highest incidence of BL in Kenya (about 2 cases per 100,000 children per year).
- Also area with highest malaria transmission area in Kenya (shaded by intensity in green)
**BL treatment regimen used from 2003–2012**

**Induction–Consolidation schedule:**
Cyclophosphamide (1200mg/m²) and vincristine (1.5mg/m²) IV weekly for six doses
Doxorubicin (60mg/m²) IV on days 1 and 22
Methotrexate (7.5mg/m²) intrathecal (IT) weekly for four doses
Tapering dose of oral prednisone

**Maintenance schedule:**
Cyclophosphamide (300 mg/m²) and vincristine (1.5mg/m²) IV monthly for the next 24 months as out–patient.
Summary of eligibility for survival analysis and outcomes

Children with confirmed eBL assessed for eligibility (N=548)

Excluded (N=120)
- Incomplete anthropomorphic data, (N=108)
- Date of death/relapse or discharge date
- Never initiated treatment (N=12)

Children included in the survival analysis (N=428)

Died during in-hospital treatment (N=94)

Completed treatment, discharged for follow up (N=334)

Relapsed or died (N=68)

Continued clinical remission (N=134)

Lost to follow up (N=132)
Result: Higher dosages of Cyclophosphamide or Doxorubicin associated with poor outcomes

A. Cyclophosphamide (HR=1.43, [0.84 to 2.43]).
B. Vincristine – not significant
C. Methotrexate – not significant
D. Doxorubicin (HR: 1.25, [0.66 to 2.35]).
Result: LDH levels but not EBV load are predictive of survival

Lactate Dehydrogenase  

HR = 1.84, [0.91 to 3.69]

Epstein-Barr virus  

HR = 0.85, [0.34 to 2.16]

>2000 EBV copies/µg human DNA

HR = 0.95, [0.33 to 2.73]

200-2000 EBV copies/µg human DNA

Compared to 0-200 EBV copies/µg human DNA

Analysis only included accurately dosed patients. Hazard Ratios are adjusted for age, tumor stage and sex.
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