Investigating exposure to a neglected fungal disease at the human-animal interface in Kenya

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HISTOPLASMA CAPSULATUM

HUMAN HISTOPLASMOsis IS A PRIORITY DISEASE IN KENYA AND A NEGLECTED TROPICAL DISEASE [1,2]
- Poorly recognised yet important co-infection in HIV patients [3,4]
- Paucity of data relating to human burden of disease, and the contribution of animals and environment to infection dynamics
- Bat/bat guano exposure [5,6], environment [7], and clinical status [8], important in disease epidemiology
- Widespread case reports including sporadic observations in Kenya [9-11]
- Hospital-based case series predominantly in North, South and Central America [12-14]

Background & Rationale

How might demographic, clinical and household factors be associated with exposure?

- Biobanked samples and metadata from 2113 study participants in 143 locations, western Kenya (2010-12) originating from the PAZ project [16,17]
- Random selection of 670 study participants from 178 households
- Systematic selection of participants with variable HIV status and bat exposure
- Serum samples tested with IMMY LATEX AGGLUTINATION TEST (LAT)
- UNI- & MULTIVARIABLE ANALYSES to explore factors associated with presence of Histoplasma antibody [16,17]

RESEARCH AIMS

1. IS THERE EVIDENCE OF HUMAN EXPOSURE TO HISTOPLASMA IN BUSIA COUNTY, WESTERN KENYA?
2. HOW MIGHT DEMOGRAPHIC, CLINICAL AND HOUSEHOLD FACTORS BE ASSOCIATED WITH EXPOSURE?

Methods

Cross-sectional Household Survey in Western Kenya [16,17]

- Composition of dataset including 670 participants, n (%)
- Latex Agglutination Test results [18]

Results

Causal Web Hypothesising Connectivity Between Demographic, Clinical & Household Variables:
Variables included here with p value <0.20 on univariable analysis and contributed to multivariable modelling

- Household Environment
- Surrounding Environment

- Evidence of high level of exposure to Histoplasma in Busia County, western Kenya
- Associations between presence of Histoplasma antibody and epidemiological variables suggest possible routes of exposure, but do not infer direct causality. Factors surrounding these associations may be linked with lifestyle and socioeconomic influences, and a complex interplay between host, wildlife, and environment, as hypothesised in the causal web.

Conclusions

Further studies in under-represented geographical regions warranted to investigate risk factors for exposure, and the influence of wildlife, environmental and socioeconomic factors

References

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