



UMEÅ UNIVERSITY

Umeå University Medical Dissertations, New Series No 1999

CONTROL OR ELIMINATION

Terms for public health interventions against
tungiasis and schistosomiasis haematobium

Per Nordin

Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för
avläggande av medicine doktorexamen framläggs till offentligt försvar
i Sal Tripel Helix, Samverkanshuset, Umeå universitet,
fredag den 25 januari 2019, kl. 09:00.
Avhandlingen kommer att försvaras på engelska.

Fakultetsopponent: Professor Andreas Ruppel,
Universitätsklinikum Heidelberg,
Institut für Public Health, Heidelberg, Tyskland.

Department of Public Health and Clinical Medicine

Organization

Umeå University
Department of Public Health
and Clinical Medicine,
Epidemiology and Global Health

Document type

Doctoral thesis

Date of publication

21 December 2018

Author

Per Nordin

Title

Control or Elimination
Terms for public health interventions against
tungiasis and schistosomiasis haematobium.

English Summary

The thesis revolves around diagnosis and treatment of tungiasis (sand flea disease) and schistosomiasis haematobium. The causing parasites, *Tunga penetrans* and *Schistosoma haematobium*, both have the ability to penetrate intact skin.

Tungiasis is a neglected parasitic skin disease, prevalent in resource-poor communities in sub-Saharan Africa, South America and the Caribbean. Its global prevalence has never been properly assessed. The prevalence may be as high as 60 percent in resource-poor urban settings. Repeated infections result in disfigurement and mutilations foremost of the feet, eventually leading to impaired mobility. Schistosomiasis haematobium, or urogenital schistosomiasis, is prevalent above all in Africa with around 100 million infected individuals. It causes damage to internal organs and could lead to serious sequelae in the urogenital tract.

The aim is to examine aspects and prerequisites for control and elimination of the two diseases in an east African context. Even if both diseases are caused by a parasite and associated with poverty, they exhibit distinct differences for public health interventions, especially considering control and elimination.

The thesis contains a dialectic comparison of diagnoses and treatments problematising possibilities and hindrances for public health interventions in rural locations in Uganda, Kenya and Tanzania, from where the empirical data are collected in the four encompassing studies. Two deal with treatment of tungiasis, where the idea is to use silicon-based oils in order to suffocate the parasite. Rigorous clinical treatment trials on humans are so far lacking. The conclusion is that the tested substance works much better than current treatments. It is also shown that an efficient, yet parsimonious treatment procedure can be successful, even in resource-poor settings.

WHO promotes a dose-pole for determining the number of praziquantel tablets in mass treatment campaigns of schistosomiasis. An alternative dosage procedure is proposed to avoid side-effects and promote compliance. Since mass treatment campaigns currently target children and adults at risk in endemic areas, the choice of diagnostic method will have consequences. Prevailing parasitological methods for field surveys are not sensitive enough, especially where the prevalence is seemingly low. The suggested more sensitive diagnostic method, that detects the level of urogenital schistosomiasis in population groups, is a both affordable and manageable approach in resource-poor settings.

Is control or elimination possible for tungiasis and urogenital schistosomiasis? The conclusion is that elimination cannot be achieved without environmental interventions, use of repellants, vaccines and ultimately a fight against poverty. A multidisciplinary approach is needed to understand and sustainably resolve the problems. Important disciplines for this public health endeavour are epidemiology, sociology and ethics.

Keywords: tungiasis, urogenital schistosomiasis, control, elimination, public health, intervention, diagnosis, treatment, neglected tropical diseases, praziquantel, mass treatment

Language

English

ISBN

978-91-7601-989-4

ISSN

0346-6612

Number of pages

42 + 4 papers