History of Malaria Treatment in Madagascar

Milijaona RANDRI ANARI VELOJ OSI A, PhD, HDR
Origin of malaria in Madagascar: linked to the human population settlement

Origin of the human population in the south-western part of the Indian Ocean

On the basis of
- laguage
- agricultural practice
- archeological data
- genetic study
- traditional habit

Source: Biodiversité du paludisme dans le monde
“Malaria” known by Malagasy

TAZO : Fièvre.
TAZOINA : Fiévreux.
TAZOTAZOINA : Sujet à de petites fièvres.
TAZONDindrina : La fièvre de l’Imerina.
TAZON-KENIHENY : Paludisme.
TAZON’ AVARADRANO : L’Épidémie de 1878.
Voir : FANAVIANA, MANAVY, MARARY ;
MAFANAFANA, MANETSETRA, MANGOVHOVY, MAIA-
MAY, MANGOTRAKOTRAKA ;
MIAFANA, MANARITRA.
ATODIN- TAZO.

(page 73)

Tazo (fever, chill, headache, fatigue …) is not only malaria
Malaria history in Madagascar: myth, legend and reality

In the past

Oral tradition prior to the European arrival

For a tribe from the southern highland: “Man is the one who survives tazo (fever) in the coastal areas”

A powerful Queen said: “Hazo (trees) and tazo (fever) are the protection of the kingdom. Do not open the road”

Madagascar, cemetery for Europeans in the past

Fever as killer in the coastal areas as in XVI century
Fever as killer during the French military campaign in 1895

Since the XX century: much more modern tools to combat malaria in Madagascar
People naturally live with malaria in Madagascar

Prevention

Traditional method: *burn aromatic plant*
Modern method: *bed nets, drugs, repellent, indoor spraying of insecticide, modern house*

Treatment

Traditional medicine: *plants, exorcism, prayers*
Modern drug in: *self medication at home, recommended in-home management of fever, mass treatment, health facilities, intermittent preventive treatments, …*
Madagascar prior to the XX century: far away
Evolution of history of malaria treatment in Madagascar: linked to natural and political history of the Island

Source: Portuguese Nautical Atlas (1519)
Evolution of the malaria treatment in Madagascar

Traditional medicine (plants)

Remedies and drugs

Treat empirically

Time line

1 1900 1945 1980 2005 2011
Traditional medicine (plants)

To treat fever
Single plant or mixture of plants
In the village, at the supermarket
Self medication or prescribed

Combined with standard drugs
*Strychnos myrtoides + CQ*

Malagashanine
*CQ-R reserser*

Available for research on any fever related pathologies
Evolution of the malaria treatment in Madagascar

Traditional medicine (plants)

Quinine and *Cinchona* plantation

Remedies and drugs

- Treat empirically
- Selective cure

Time line

1  1900  1945  1980  2005  2011
Cinchona sp: neglected plantations?

Northern site
2006

Eastern foothill area
2009
Evolution of the malaria treatment in Madagascar

- Traditional medicine (plants)
- Quinine and *Cinchona* plantation
- CQ followed by synthetic drugs

Remedies and drugs:
- Treat empirically
- Selective cure
- Cure and prevent

Time line:
- 1900
- 1945
- 1980
- 2005
- 2011
Evolution of Malagasy population between 1900 and 2005 (X1000)

DDT and Chloroquine massive use

1980s: last malaria outbreak in Madagascar

Why did it happen?

Since 1945: **CQ** to treat and to prevent malaria
+ large scale **DDT** indoor spraying (1949)

1952 – 1971: **CQ** for chemoprophylaxis in children

   Interruption of DDT indoor spraying
   Collapse of the economy
   Erosion of the health system
   Lack of chloroquine *(lack of funding)*

1980s: malaria outbreaks (increasing malaria cases throughout the country, with more fatal cases in the highland)
Evolution of the malaria treatment in Madagascar

Traditional medicine (plants)
- Quinine and *Cinchona* plantation
- CQ followed by synthetic drugs
- Generic CQ

Remedies and drugs
- Treat empirically
- Selective cure
- Cure and prevent
- Epidemy control

Time line:
- 1
- 1900
- 1945
- 1980
- 2005
- 2011
1980s: last malaria outbreak in Madagascar

How was organized the repost against it?

Chloroquinisation campaign (intensive in 1988/89) and DDT
Sign attached to announce the sale of chloroquine during the chloroquinisation campaign to respond to the last malaria epidemic in Madagascar. (Milijaona & Donatien, 2005)
Recent use of chloroquine in Madagascar

Marketing social (0.025 USD)

Free of charge

Massive distribution of chloroquine for in-home management of fever in children since 2003
Low prevalence of \textit{pfcr\textit{t}} mutant \textit{P. falciparum}

Randrianarivelosia M et al.  
Evolution of the malaria treatment in Madagascar

- Traditional medicine (plants)
- Quinine and Cinchona plantation
- CQ followed by synthetic drugs
- Generic CQ
- ACTs and AA

Remedies and drugs

- Treat empirically
- Selective cure
- Cure and prevent
- Epidemy control
- Malaria elimination

Time line

1900 | 1945 | 1980 | 2005 | 2011
ACT: first steps since Dec 2005

First line treatment
Artesunate + amodiaquine (ASAQ)

What is done?
Progressive introduction with co-blister in 2006
Full coverage today with ASAQ FDC
ACT efficacy confirmed

Questions: Availability of ACT? for how long?
History of Malaria Treatment in Madagascar:

What is next?
Key for malaria elimination in Madagascar

Environment

Vector
Nets (LLIN) Indoor spraying

Malaria endemicity

Parasite
Autochthonous or imported

ACTs Diagnosis

Human
It is time for artemisinin

Bionexx banner promoting *Artemisia annua* cultivation with a special focus on outgrowers
I dedicate this talk to

Mrs Marcelline Razanamparany
(former president of the Red Cross)

for the successful chloroquine campaign
she led in rural areas (1950 – 1971)

she saved life for millions of children

93 yrs in 2005
History of Malaria Treatment in Madagascar

Milijaona RANDRI ANARI VELOJ OSI A, PhD, HDR