Study of Malaria Disease In Northern Darfur Area

Thesis BY

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List of Abbreviations

Title	Abbreviation
ACT	Artemisine combination therapy
AQ	Amodiaquine
AS	Artsunate
ATSDR	Agency for toxic substances and disease registry
B	Bacillius
BCS	Blantyre coma scale
Bti	Bacilliusthuringiensisisraelensis
CFR	Case fatality rate
CNS	Central nervous system
CQ	Chloroquine
DPL	Duffy binding ligand
EPA	Environmental protection agency
FDC	Fixed dose combination
G6PD	Glucose 6 phosphate dehydogenase
GSC	Galscow coma scale
GUP	General use pesticide
GIT	Gartrointestinal tract
HRP	Histidine rich protein
IARC	International agency for research cancer
IDP	Internally displaced persons
IFNG	Interferon gama
IL	Interleukin
IPT	Intermittent preventive treatment
IRS	Indoor residual spraying
ITN	Insecticide treated net
ITPS	Insecticide treated plastic sheeting
IVM	Integrated vector management
MBL	Mannose binding protein

MRDD	Malaria rapid diagnostic devices
P	Plasmodium
P. falciparum	Plasmodium falciparum
PfEMP1	Plasmodium falciparum erythrocyte membrane
P. knowlesi	Plasmodium knowlesi
P. malaria	Plasmodium malaria
P. ovale	Plasmodium ovale
P. vivax	Plasmodium vivax
P LDH	Parasite lactate dehydrogenase
PCR	Polymerase chain reaction
PEA	Programmatic environmental assessment
Pf ATPase	Plasmodium falciparum adenosine tri phosphatase
QA	Quality assurance
RBM	Roll back malaria
RDT	Rapid diagnostic test
RUP	Restricted use pesticide
SP	Sulphadoxine + pyrimethamine
TCA	Tricarboxylic acid
TNF	Tumor necrosis factor
TRAP	Thrombospondin related anonymous protein
ULV	Ultra low volume
USAID	United states agency for international development
WHO	World health organization

INTRODUCTION

Malaria is an acute systemic illness caused by infection with *Plasmodium,* all of which are transmitted to humans by female *Anopheles* species mosquitoes. There are an estimated 300 to 800 million clinical cases of malaria and 1 to 3 million deaths due to malaria annually in the tropics and subtropics ***(Breman et al., 2001)***.

The majority of the infections and deaths are caused by P.falciparuminfection of children in sub-Saharan Africa. In fact, P . falciparum is responsible for more deaths in children less than 5 years of age than any other single infectious agent***(Malaneyand Sachs, 2002)***.

AIM OF THE WORK

The aim of this work is to study malaria disease among people who live in El Fasher town (the capital of northern state in Darfur).

HISTORY

Malaria was linked with poisonous vapours of swamps or stagnant water on the ground since time immemorial. The term malaria from theItalian mala “bad” and aria "air" was used by the Italians to describe the cause of intermittent fevers associated with exposure to marsh air. The word was introduced to English by Horace Walpole, who wrote in 1740 about a “horrid thing called mal’aria, which comes to Rome every summer and kills people.” The term malaria, without the apostrophe, evolved into the name of the disease only in the 20th century ***(European alliance against malaria working for malaria free world).***

History of Malaria Parasite and Its Global Spread

It is believed that most, if not all, of today's populations of human malaria may have had their origin in West Africa and West and Central Africa. From its origin in the West and Central Africa,the parasites spread to other areas through the journey of man, following the humanmigrations.

Malaria was known in China form almost 5000 years. Sumerian and Egyptian texts dating from 3,500 to 4,000 years agomention about fevers and splenomegaly suggestive of malaria. Malariareached the shores of the Mediterranean Sea between 2,500 and 2,000 years ago andnorthern Europe probably mainly between 1,000 and 500 years ago ***(European alliance against malaria working for malaria free world).***

AGENT

Malaria is caused by protozoa of the genus Plasmodium. Of the over 200 known species of Plasmodium, at least 10 species infect humans. Other species infect animals, including monkeys, rodents, birds, andreptiles ***(Chavatte et al., 2007)***. Only five species areknown to consistently infect humans: P. falciparum, P. vivax,P. malariae, P. ovale and P. knowlesi, a simian malaria parasite,has intermittently been reported to cause human disease ***(Singh et al., 2004)***.

Vector

(Wikipedia, the free encyclopedia)

Anopheles is a genus of mosquito. There are approximately 460 recognized species while over 100 can transmit human malaria, only 30-40 commonly transmit parasites of the genus Plasmodium, which cause malaria in humans in endemic areas. Anopheles gambiae is one of the best known. Like all mosquitoes, anophelines go through four stages in their life cycle. The first three stages are aquatic and last 5–14 days, depending on the species and the ambient temperature. The adult stage is when the female Anopheles mosquito acts as malariavector. The adult females can live up to a month but most probably do not live more than 1–2 weeks in nature.

Life stages

- **Eggs:** Adult females lay 50-200 eggs per oviposition. The eggs are ~ (0.5 x 0.2 mm). Eggs are laid singly and directly on water. They have floats on eitherside. Eggs are not resistant to drying and hatch within 2–