Malaria: a new treatment to slow down resistance

February 18 2015

Credit: IRD / J. Montmarché : Medical consultation in Benin

The appearance of malaria parasites resistant to medicines is one of the main obstacles in combating the disease. In order to slow down this phenomenon, it is essential to avoid exposing the pathogen to the same molecules. For this reason, researchers at the IRD and their partners in OCEAC in Cameroon are testing new treatments. They have recently demonstrated the efficacy of a "bi-therapy", which combines artesunate (a derivative of artemisinin, recommended by the WHO) with Malarone

(or Malanil). The latter has been administered up to now as a preventative treatment for travellers or as a treatment in the industrialised nations, because it is so expensive. The fact that its patent entered the public domain in 2013 has made it possible to envisage its use among populations living in regions where the disease is endemic.

Globally, the number of cases of malaria has been decreasing for several years now. Nonetheless, a spectre haunts the minds of the researchers: the resistance to drugs shown by the malaria parasites. These parasites, in particular Plasmodium falciparum, are in fact capable of developing resistance to all the treatments that currently exist. To slow down as much as possible the emergence and expansion of this resistance, it is necessary to use a variety of drugs and to rationalise their use. For the less the pathogens are exposed to the same molecules, the less resistance they will develop.

Proven efficacy

To do this, for more than 20 years researchers from the IRD and the Organisation for the Coordination of the Fight against Endemic Diseases in Central Africa (OCEAC) have been evaluating the efficacy of alternative therapies in Cameroon. At the present time, the treatment recommended by the WHO is based on the administration of a combination therapy, called "bi-therapy", using artemisinin. The research team has recently demonstrated the efficacy of the combination of artesunate, a derivative of artemisinin, with Malarone (or Malanil). This drug has been used up until now principally as a preventative treatment for travellers on temporary visits to a country where the disease is endemic, as well as being used therapeutically to treat malaria imported into the industrialised nations, because until now it has been prohibitively expensive.

A winning combination

When administered on its own, Malarone showed some therapeutic failures (10.3%) among the 340 young Cameroonian patients in the study, children of less than five years of age; for the most part these failures were due to re-infection during treatment. However, in combination with artesunate, this drug has proved even more effective than traditional bi-therapy and the number of cases of relapse within 28 days is less marked.

Strains of P. falciparum resistant to Malarone do exist. But systematically combining this drug with a derivative of artemisinin guarantees the patient a certain efficacy of treatment. In fact it is not very probable at the present time that a strain resistant to both of these drugs at once will be encountered.

The patent for Malarone entered the public domain in 2013. Generic drugs began to be manufactured, bringing down the price of the drug. Its use in therapeutic combination with a derivative of artemisinin can therefore now be envisaged for the populations living in the countries where the disease is endemic.

More information: "Randomized trial of artesunate-amodiaquine, atovaquone-proguanil, and artesunate-atovaquone-proguanil for the treatment of uncomplicated falciparum malaria in children." *Journal of Infectious Diseases*, 2014: 1962–1971. DOI: 10.1093/infdis/jiu341

Provided by Institut de Recherche pour le Développement (IRD)