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Dihydroartemisinin-piperaquine effective in treating malaria in pregnant women

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Pregnant women can be protected from malaria, a major cause of prematurity, low birth weight and death in infants in Africa, with dihydroartemisinin-piperaquine (DP), an artemisinin combination therapy that is already widely used to treat malaria in adults, according to a study by researchers at UC San Francisco and in Uganda.

The study, published March 10, 2016, in the New England Journal of Medicine, is among the first to show that artemisinin combination therapies like DP, which are effective against drug-resistant parasites, can be used to prevent malaria in pregnancy.

Most Africans develop immunity to malaria by the time they reach adulthood, and they are rarely treated for it or given drugs to prevent them from becoming infected. But women lose some of this protection during pregnancy, and malaria can be fatal to them and their babies, so they are given drugs to prevent infection.

The malaria parasite common in Africa, Plasmodium falciparum, also has a special ability to fasten on to the placenta and impair its ability to nourish the fetus. Malaria kills more than 100,000 African infants each year and is responsible for about 20 percent of those born underweight.

The researchers studied 300 women in Tororo, Uganda, where malaria transmission is so high that residents get about 300 infectious mosquito bites a year. The study compared the effectiveness of DP to sulfadoxine-pyrimethamine (SP), which is still the recommended preventive drug for pregnant women across Africa, although resistance has become widespread. Beginning in the 16th week of pregnancy, a third of the women were given three doses of SP, a third received three doses of DP and a third received monthly doses of DP.

The results showed that the burden of malaria was high among women given SP, while DP, especially when given monthly, was much more effective. Half the women who received SP had evidence of malaria infection in their placentas, compared to 34 percent of those receiving three doses of DP and 27 percent of those receiving monthly doses of DP; 40 percent of the women on SP had malaria parasites in their blood, compared to 17 percent on three-dose DP and 5 percent on monthly DP. Moreover, none of the women on monthly DP became ill with malaria, while there were 41 episodes of malaria among the 106 women receiving SP.

Although the study was not designed to test resistance to SP, the high number of women who became ill and had evidence of parasites in their placentas and in their blood indicate the drug is losing its effectiveness.

"The malaria parasite's resistance to SP is widespread, especially in Sub-Saharan Africa," said Abel Kakuru, MD, an epidemiologist with the Infectious Diseases Research Collaboration in Kampala, Uganda, and first author of the paper. "But we are still using the same drugs, because we have no better alternatives."

Although DP is generally considered to be safe to give to adults, the study was not large enough to firmly establish that it does not harm pregnant women or improves birth outcomes. Both would be important for the World Health Organization to change its guidelines and recommend using DP instead of SP.

"People are very cautious about giving drugs during pregnancy," said Grant Dorsey, MD, PhD, a professor of Medicine at UCSF and senior author of the paper. "You don't want to take any chances that it's going to do something bad to the fetus or to the mother."

Source:
University of California, San Francisco (UCSF)
