

Type 2 Diabetes Mellitus and Increased Risk for Malaria Infection

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[Karen Hunter] Hello, I'm Karen Hunter. With me today is Manoj Menon, a medical officer in the Division of Parasitic Diseases and Malaria at the Centers for Disease Control and Prevention. We're talking about a paper in the October 2010 issue of CDC's journal, Emerging Infectious Diseases. The article looks at a study in Ghana that found a possible increased risk for malaria among people with type 2 diabetes. Welcome, Manoj.

[Manoj Menon] Thanks, Karen. It's great to be here.

[Karen Hunter] Malaria and diabetes are two public health issues I wouldn't expect to see discussed at the same time. Can you first give us some background on malaria before we talk about how it relates to diabetes?

[Manoj Menon] Sure. Malaria is a disease caused by parasites carried by a specific genus of mosquitoes that feed on humans. These mosquitoes are common in regions of the world, like sub-Saharan Africa, where the environment tends to be warm and wet. Indeed, approximately half the world's population live in areas at risk of malaria transmission, such as Ghana, the site of this study, and it's long been recognized as a serious public health issue in that country. The African continent south of the Sahara accounts for ninety percent of the world's malaria burden. It's a debilitating infection which can result in fevers, chills, nausea, and vomiting, and left untreated it can result in severe complications, including death. Fortunately, malaria is both treatable and preventable.

[Karen Hunter] Is diabetes also a big problem in Ghana?

[Manoj Menon] Just as in many other regions of the world, the prevalence of type 2 diabetes, a form of the disease that typically develops among adults, has been rising in Ghana. One theory for the rise is that people's diets are changing as Ghanaians eat fewer traditional African foods, but whatever the reason, type 2 diabetes is becoming more common.

[Karen Hunter] Did the researchers find a relationship between diabetes and malaria?

[Manoj Menon] They found a correlation. Blood tests done on persons with type 2 diabetes found significantly more cases of asymptomatic malaria infection in those people than in persons who do not have diabetes. Because malaria is endemic in Ghana, finding that many people have asymptomatic infections is not surprising. What is intriguing is that the infection rate for persons with diabetes was higher.

[Karen Hunter] Why is that?

[Manoj Menon] In areas where malaria is endemic, people are repeatedly infected, beginning when they are very young children. Over time, infected persons develop semi-immunity – they might no longer have active symptoms, even though the parasite remains in their body. Finding that some adult Ghanaians have asymptomatic malaria infections is what we would expect. The question that this paper raises is why is the rate different for persons with diabetes?

[Karen Hunter] And do the authors have answer?

[Manoj Menon] Well, the paper suggests that persons with diabetes may be more susceptible to infection with malaria. Persons with diabetes are more susceptible to other types of infections and so this finding is consistent with that pattern. However, they note that their study had limitations that make it impossible to provide a definitive answer. There have also been studies done that show that persons with diabetes may actually smell different to mosquitoes than persons without diabetes, which could result in those persons being bitten more often. The researchers also noted malaria transmission is patchy in the area where they did the study, for example, so it may have been coincidence that more persons with diabetes lived in high transmission neighborhoods than persons without diabetes. There was also no way to determine exactly when participants in the study were originally infected, that is, whether the infections happened before or after their type 2 diabetes developed.

[Karen Hunter] Those are a lot of qualifiers for one paper.

[Manoj Menon] That's true, but every research project has its limitations. The authors did a nice job of explaining the ones they encountered in the study. This paper reminds us that even seemingly unconnected but important public health issues, like diabetes and malaria, may be connected in ways we didn't previously suspect. It also, of course, emphasizes the need for additional research to answer some of the very interesting questions this paper raises.

[Karen Hunter] Thanks, Manoj. I've been talking with CDC's Dr. Manoj Menon about a paper that appears in the October 2010 issue of CDC's journal, Emerging Infectious Diseases. You can see the entire article online at www.cdc.gov/eid.

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