

Diabetes and obesity risk factors for severe malaria

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Infectious diseases doctor Katja Wyss's thesis is the product of many years' research on malaria in Sweden. With clinical data from almost 3,000 diagnosed cases over a twenty-year time span, Katja Wyss at

Karolinska Institutet's Department of Medicine in Solna presents risk factors for malaria and new links between malaria and lymphoma—results that are of potential significance to people in many parts of the world.

How did you first get interested in malaria?

"I've traveled a lot and have lived in different parts of the world, including in South Africa for seven months. The impressions I've got from my travels is one reason why I developed an interest in infectious diseases even before I studied medicine," says Katja Wyss, researcher at the Department of Medicine in Solna, Karolinska Institutet.

What's your thesis about?

"We've described the population of travelers and migrants diagnosed with [malaria](#) in Sweden, different [risk factors](#) for severe malaria and the long-term consequences of infection. 100 to 300 cases are diagnosed every year here, a number that has varied in the last years, with increasing migration and changes in traveling behavior. Our results are based on [clinical data](#) from all patients diagnosed with malaria in Sweden between 1995 and 2015. We've also linked the information to other registers, including the National Board of Health and Welfare's cancer registry."

Describe some of your results.

"Amongst other things, we've studied the complex field of immunity. No one is completely immune to malaria, but people living in countries where malaria is endemic often develop immunity to severe malaria. We're now seeing that people who grew up in Sub-Saharan Africa and who come to Sweden gradually lose this immunity so that after about 15

years they run the same risk for severe malaria as travelers born in Sweden."

"We've also looked at underlying [medical conditions](#) as a risk factor for severe malaria and have found that people with chronic diseases, especially with risk factors included in the metabolic syndrome such as obesity—which is defined as a BMI over 30, and diabetes, are at a higher risk of severe malaria. In addition we saw a higher risk of severe malaria in travelers over the age of 60 and newly arrived migrants.

"We've also conducted a large register study to examine the risk of developing lymphoma and cancer after malaria. Previous studies indicate a correlation between malaria and a certain type of childhood lymphoma in endemic areas in Africa, but no longitudinal study of malaria cases have been done to investigate the risk of other lymphomas and cancers.

We were able to show that individuals born in Sub-Saharan Africa and diagnosed with malaria in Sweden had an increased risk of developing lymphoid tumors during adulthood, however we observed no increase in risk for other cancers. Earlier repeated episodes of malaria before the individual moved to Sweden might contribute to the observed correlation but more studies are needed to explore this possibility."

How important is the malaria vaccine in this current situation?

"The vaccine currently available on the market only provides moderate protection. Besides, its efficacy wanes notably after a few years."

How can your research be used?

"Malaria is a rare diagnosis in Sweden, and it's important that healthcare

workers bear it in mind when managing fever after visits to tropical regions, since the patient can become seriously ill, and even die, if diagnosis and treatment are delayed. Our studies have shown that people who come from malaria-endemic areas and who often believe themselves to be immune can become just as sick as travelers. It's important that this patient group also is admitted for care, which is not always done."

"It's especially important for people with underlying conditions to take a malaria prophylactic when traveling to endemic areas and for health care staff managing with diagnosed cases to be aware that this patient group has a higher risk of severe manifestations. We would also like to see that certain groups of newly arrived migrants from malaria-endemic areas are offered screening on their arrival to Sweden, as is the case with many other infectious diseases. We're currently studying how common it is for newly arrived migrants from endemic areas to be carrying malaria parasites."

What next?

"We're now planning further studies in a malaria-endemic country. We have a collaboration under development in Cameroon, where diabetes is becoming increasingly common, and local doctors suspect that diabetes could be associated to [severe malaria](#) among adults. After the corona pandemic, we hope to be able to conduct studies there, which I will supervise from Sweden. Hopefully, the results will lead to preventive measures."

More information: Malaria in travelers and migrants : disease severity and long term effects. openarchive.ki.se/xmlui/handle/10616/47091

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