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Diabetes infection and malaria immunity: A case in diabetic patients in the central region of Ghana

Paulina Ampomah, Quarme Amponsah Boahene and Harrison Tawiah Nfodwo
University of Cape Coast, Ghana


In Ghana, non-communicable diseases (diabetes and hypertension) contribute to about 86,000 deaths annually. NCDs and infectious diseases (malaria and HIV Aids) are among the top ten killers in Ghana. Both malaria and type 2 diabetes are immune compromised diseases that pose a major challenge to health and therefore require immediate attention. We recruited diabetic patients from 9 major hospitals across the central region of Ghana and obtained about 3milliliters of venous or finger prick blood after an informed consent form was signed. We determined fasting blood sugar (FBS) levels by glucometer and parasitemia by microscopy (n=260). Plasma was isolated and used to serologically measure specific antimalarial antibodies to 3 important Plasmodium falciparum antigens (MSP1; AMA1 and Crude Schizont antigens) and determined the proportions of white blood cells (WBC) of importance (neutrophils and lymphocytes) (n=46). Data was

compared healthy individuals (n=56). Anti-diabetic drug in use was retrieved from patient's folder to determine drug efficacy. Preliminary results show a marked increase in antimalarial specific antibodies to all three P. falciparum antigens and a moderate rise in WBC counts in diabetic patients compared to healthy and hypertensive individuals. Only 3.8% of the 260 had malaria parasite in their blood. Patients with high FBS (>7.0mmol/L) are at 4.2x risk of malaria infection. To conclude, we show that effective management of diabetes provides patients with enormous immune protection against the malaria parasite.

Speaker Biography

Paulina Ampomah graduated from University of Copenhagen, Denmark as a biomedical scientist with specialty in B cell immunity and lymphocyte exhaustion markers. She is a lecturer at the University of Cape Coast where she is continuing with her research work.

e: pampomah@ucc.edu.gh

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