

Concurrent Dengue and Malaria Infection: A Double Trouble

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Dear Editor,

Malaria and dengue are common mosquito-borne diseases and global health problems due to their high morbidity and mortality worldwide [1]. Pakistan is considered a malaria-endemic country, with an estimated 177 million people still at risk of contracting the disease. 60% of Pakistan's population lives in malaria-endemic areas especially Sindh, KPK and Balochistan, and most infections are caused by *P. vivax* and *P. falciparum* [2, 3]. Dengue outbreak occurs every year in Pakistan, and despite the government's efforts, the severity and mortality of the disease are on the rise [4]. Climate change, inadequate vector control and natural disasters have all contributed to the increase of malaria and dengue. Countries like Pakistan with warm temperatures, rainfall, and high humidity are ideal for mosquito breeding, lifespan, and growth [3].

Malaria occurs when the parasite is transmitted to the host by the female *Anopheles* mosquito [5]. *Aedes aegypti* and *albopictus* are important vectors for the transmission of positive-strand enveloped RNA viruses (DENV) [6]. There are four serotypes of dengue virus (DENV-1, DENV-2, DENV-3 and DENV-4). The signs and symptoms of both infections are similar such as high-grade fever with chills, fatigue, nausea and vomiting. They may not be clinically distinguishable, but the treatment of these two illnesses is different. Co-infection with malaria and dengue can cause serious outcomes with a greater risk of anemia, thrombocytopenia and prolonged hospital stay [7]. A study conducted in Karachi on one hundred and fourteen patients with fever of less than or equal to 10 days duration, severe body aches, rash and bleeding manifestations showed that the frequency of dual dengue and malaria infection was 23.21% [8].

Current efforts to contain the spread of infectious diseases such as malaria and dengue are inadequate. Pakistanis are highly susceptible to malaria and dengue. Climate change, urbanization, and lack of public awareness persist despite collective efforts by the stakeholders, healthcare workers and policymakers. Tackling these issues demands a variety of strategies. Spreading awareness and guidance through telephone

and SMS services, as well as electronic media advertisements can also help less affected areas where people have access to the internet. Pakistan suffers from a paucity of several pharmaceutical prophylactic solutions for malaria and dengue. Health education programs should encompass preventive measures such as applying mosquito repellents with diethyltoluamide over exposed skin and wearing long pants and sleeves to cover maximum skin. Draping mosquito netting over beds and putting screens on windows and doors is also effective. Also, treating clothes, mosquito nets, and tents with insect repellent such as permethrin is an effective method for prevention.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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