Co-Infection of Malaria and COVID-19: A Systematic Review

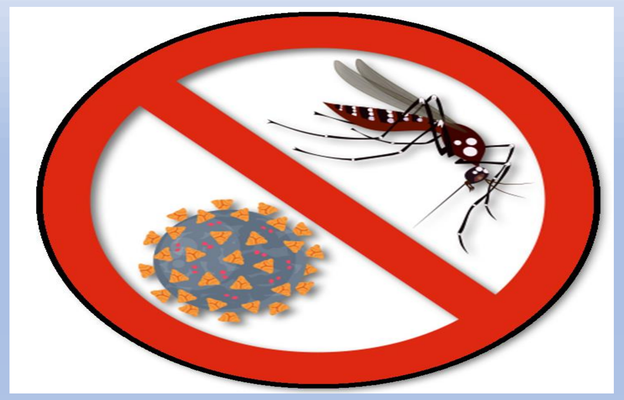
Karan Varshney, MPH[1,2], Beverly I. Anaele, MPH[1]

1. Thomas Jefferson University, College of Population Health, Philadelphia, PA, USA
2. Deakin University, School of Medicine, Geelong, VIC, Australia

References available upon request. Contact us at kvarshney@deakin.edu.au

Background

Malaria is amongst the deadliest infectious diseases in the world. The COVID-19 pandemic has posed major challenges to efforts at malaria control, as now, individuals are at risk of both infections. Despite the enormity of the potential risk that this poses, characteristics of malaria-COVID-19 co-infection are not currently well understood. ***Hence, we systematically reviewed the literature to describe the risk factors and clinical characteristics of malaria-COVID-19 co-infection***



Methods

- Searches were conducted, as per PRISMA guidelines, in PubMed, Scopus, ScienceDirect, CINAHL, Medline, and Proquest (Coronavirus Research Database).
- **A total of 2883 articles were retrieved, and of those, a total of 6 studies were eligible for this review**

Central Conclusion

There is an urgent need for more research on malaria-COVID-19 co-infection. This is of critical importance for:

1) Developing effective treatment regimens

2) Understanding which populations are most vulnerable to severe complications

3) Better recognizing long-term health outcomes of patients

4) Reducing major global health inequities that have been exacerbated by COVID-19

Findings & Implications

- There is some evidence that pregnancy, and recent travel, may serve as risk factors for co-infection
- Many symptoms of co-infection are similar to those of patients with only COVID-19
- No patients died in any of the studies

It is difficult to make any meaningful generalizations due to the very small number of eligible patients and studies. The findings hence highlight a need for more screening in malaria-endemic settings, and a need for more research on this topic

Results: Demographics & Clinical Characteristics of Patients

Author, Year	# of Patients	Age	Sex	Location	Parasite type	Travel History	Signs & Symptoms	Outcome
Kishore et al., 2020	1	10	Male	India	P. vivax	Not reported	Fever, chills, rigors, headache, cold, cough, abdominal pain	Recovered
Nlandu et al., 2020	1	48	Male	Democratic Republic of the Congo	P. falciparum	No	Fever, dry cough, vomiting, myalgia, generalized weakness, anuria, dyspneic, severe kidney dysfunction	Recovered, with minor lingering issues
Ray, Vazifdar & Shivaprakash, 2020	1	67	Male	India	P. vivax	No	Fever, exertional breathlessness, thrombocytopenia	Recovered
Mahajan et al., 2020	3	28 (mean)	Women (pregnant)	India	P. vivax	Not reported	Abdominal pain, headache, blurry vision, fever with chills (n=1); breathing difficulty (n=2); fever no chills (n=2)	1st had fetal demise, 2nd had minor pregnancy complications, and 3rd had recovered
Sardar et al., 2020	1	34	Male	Qatar	P. vivax	Yes	Fever, myalgia, vomiting, right upper quadrant abdominal pain	Recovered
Zhu, Zhu, Zhang & Liu, 2020	1	65	Male	China	P. falciparum	No	Fever, headache, fatigue, pale, lack of energy, 'other symptoms' (not identified)	Recovered