SEASONAL DISEASES

Malaria
Odyssean malaria outbreak, Kempton Park

At an early stage of the southern African malaria season, two confirmed cases of malaria in residents without history of travel were reported in Kempton Park, Ekurhuleni Municipality, Gauteng Province, a non-endemic area for malaria.

The first case-patient was a 24-year-old woman who became ill on 24 September 2021 with symptoms of myalgia, headaches, fatigue, and chills. The initial clinical diagnosis was COVID-19 following an assessment by a general practitioner on 27 September, and a COVID-19 PCR was done. Malaria was finally diagnosed on 29 September, when she was admitted to ICU following progressive clinical deterioration. Malaria parasites (0.4% parasitaemia) were seen on routine examination of her peripheral blood smear and PCR confirmed the presence of *P. falciparum*. Laboratory results were compatible with malaria, showing thrombocytopenia (platelets 22 x 10^9 /L), raised inflammatory markers (CRP 263 mg/L), and deranged liver function tests (total bilirubin 79 µmol/L, GGT 67 U/L, AST 396 U/L, ALT 174 U/L). The patient was treated uneventfully with intravenous artesunate followed by oral artemether-lumefantrine (Coartem).

The second case was the 25-year-old husband of the first patient, who became symptomatic on 27 September 2021 with diarrhoea, vomiting, myalgia, and headaches. He was treated symptomatically and a COVID-19 PCR test was done following initial assessment by a general practitioner on 28 September. Malaria was diagnosed upon hospitalisation in the same unit as his wife when his symptoms worsened severely on 30 September. Shortly after admission he developed acute respiratory distress syndrome and was intubated, requiring mechanical ventilation, as well as renal dialysis. His laboratory results supported the diagnosis of malaria with multi-organ involvement. The blood film microscopy finding of *P. falciparum* (8.7%) was confirmed by PCR. He had thrombocytopenia (platelets 28 x 10^9 /L), raised inflammatory markers (CRP 262 mg/L), acute kidney injury (urea 14.6 mmol/L, creatinine 328 µmol/L and e-GFR 21 ml/min) and deranged liver function tests (total bilirubin 65 µmol/L, GGT 124 U/L, AST 184 U/L, ALT 134 U/L). The patient was successfully treated with intravenous artesunate, followed by oral Coartem once he became more clinically stable. He was discharged home but still requires renal care, blood transfusion, and nutritional support as well as rehabilitation following prolonged intubation and mechanical ventilation.

Neither patients nor their family members had significant travel histories, and none had had recent blood transfusions or injections. Inspection of the patient's house did not reveal any potential vectors or local vector breeding sites. Both patients were infected with the same *P. falciparum* genotype, implicating a single infected vector mosquito. The most likely explanation for this type of malaria transmission is the accidental importation by road transport of an infected mosquito from a malaria-endemic area. Healthcare workers are reminded again that malaria should be considered in all patients with an unexplained progressive febrile illness with thrombocytopenia, regardless of travel history, and that malaria tests should be repeated until either malaria or an alternative diagnosis is confirmed.

Malaria vaccine

The first malaria vaccine (RTS,S/AS01) to undergo large clinical trials has been recommended by the WHO for broad use among children in areas with moderate to high transmission of *P. falciparum* malaria. The recommendation followed compelling evidence from the ongoing WHO-coordinated pilot program in three African countries, where more than 800 000 children were reached since 2019. The vaccine requires a 4-dose regimen (dose 1 at 6 months of age, dose 2 at 7 months of age, dose 3 at 9 months of age, and the last dose at 24 months of age) and is administered to children from the age of 5 months. Currently, more than 2.3 million doses have been administered and the vaccine has shown evidence of favourable safety profile, feasibility, cost-effectiveness, and improved equity in access to malaria management. It reduces severe childhood malaria by more than 30% and does not negatively impact health-seeking behaviour and the use of insecticide-treated nets when used as an adjunct to traditional malaria public health measures. The way forward includes the need for funding from international stakeholders that will determine how widely available the vaccine will be as well as key country decision-making on whether to adopt it. This vaccine is not intended for use in low seasonal malaria incidence southern African countries like South Africa, Botswana, Namibia and Eswatini.

Source: District Communicable Disease Control, Ekurhuleni Metro; Division of Public Health Surveillance and Response; Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; johnf@nicd.ac.za