Malaria and malnutrition

Young children suffer disproportionately from displacement and food shortage. The resulting malnutrition substantially increases their risk of death from infectious diseases, including malaria. Children with severe malnutrition (<70% normal weight/height) have a markedly increased risk of mortality. This mortality is often due to infections, of which malaria is a very important one. Severely malnourished children may have a high parasitaemia while showing few or none of the classic signs of malaria. Fever may be absent. These children are very vulnerable to developing severe malaria disease that can be rapidly fatal.

Diagnosis

Severely malnourished children with malaria infection may have no fever, or be hypothermic. Symptoms of the infection will often show up once the child regains weight. Proactive screening for malaria in severely malnourished children is needed even if the child has no symptoms of malaria. As a routine, all such children must be tested for the presence of malaria parasites (I) at the time they are diagnosed with severe malnutrition and admitted to a therapeutic feeding programme, and (II) weekly thereafter until discharge. Weekly routine testing can be skipped once in the week after a patient has just received artemisinin-based combination therapy (ACT) treatment.

Initial diagnosis can be made using either a rapid diagnostic test (RDT) or microscopy. However, once a patient has tested positive, follow up screening in subsequent weeks (or when malaria symptoms appear) must be made with microscopy to avoid false-positive RDT test results. Therapeutic feeding centres need (easy access to) good malaria microscopy.

Case Management

A severely malnourished child with a positive malaria laboratory test must be treated. Clinical signs and symptoms are often absent. Treatment follows the same guidelines as for other patients. Coartem® is not yet licensed for use in children weighing less than 5 kg. The other ACT options can be used below 5 kg bodyweight. Absorption may be impaired in some of these children. If necessary, treatment can be started with artemether i.m., changing to standard oral ACT treatment later. Coartem® must always be given with some milk or fatty food to improve drug absorption.

Folic acid is one of the standard medical interventions in severe malnutrition. In countries where artemesunate plus sulfadoxine/pyrimethamine (AS-SP) is the ACT of choice, care must be taken as SP is an antifolate drug. If AS-SP is used, administration of folic acid should be delayed for 7 days. Alternatively, if the folic acid is already given, delay the use of SP for the first 2 days of ACT treatment, and give it only with the 3rd dose of AS. Folic acid is metabolised more quickly than SP, hence the different time intervals recommended.

Prevention

Protect all patients in therapeutic feeding centres from dusk till dawn with insecticide-treated mosquito nets (ITN), and make ITN available to take home on discharge. In addition, equip the centre itself with mosquito-proof screening for windows and doors, and use insecticide-impregnated curtains. Indoor residual spraying, although effective for community-wide protection, is of limited usefulness for protecting patients inside the facility.

Supplementary feeding programmes

Children with moderate malnutrition will have symptoms of malaria in the same way as patients whose nutritional status is normal. There is thus no need to test pro-actively for malaria in asymptomatic children. Supplementary feeding programmes provide an opportunity for distribution of ITN (preferably long lasting variety) to the household.

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1 WHO/RBM Consultation - Best practices and lessons learnt from implementing malaria control in complex emergencies in Africa 2000–04
2 RDT based on detection of HRP-II antigens remain positive for 2–3 weeks after parasites have been cleared from the patient's bloodstream
3 Although there are many reasons why drug kinetics may be different in malnourished patients as compared with those who are well nourished, there is insufficient evidence to change current dosing recommendations.