Evaluation of BID® plasmodium lactate dehydrogenase (pLDH) rapid diagnostic test (RDT) for detection of malaria parasite in Calabar, Nigeria

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Objectives

To evaluate the diagnostic sensitivity and specificity of a rapid diagnostic test kit against traditional slide microscopy for malaria.

Methods (1)

- The study was nested in a therapeutic efficacy clinical trial of antimalarials (Coartem vrs Artesunate+ Amodiauine)
- Ethical approval was obtained from the University of Calabar Teaching Hospital Ethics Committee
- Eligible participants were consecutively screened by the study clinician and nurse
- Inclusion Criteria: Signs of uncomplicated malaria
  Absence of severe malaria or malnutrition
  Axillary temp $\geq$37.5^{o}C or Hx of fever in the past 24 hrs
  Informed consent of participants and/or parent

Methods (2)

- The rapid diagnostic test was done with blood sample from a finger prick with a sterile lancet.
- Sample was dropped on the RDT test cassette per protocol and read over 20 mins as negative, p.falciparium, mixed parasitaemia or non-falciparium infection.
- Thick and thin blood smears were prepared on slides, stained with Giemsa for 30 mins and read to 100 fields with quantification of p. falciparium parasitaemia.
- Laboratory investigators were blinded to the result of either investigation to reduce bias.
- Other variables assessed were packed cell volume, temperature, weight and height.

Results

- 248 patients with suspected uncomplicated malaria were recruited.
- RDT was assessed as positive or negative while slide microscopy was also assessed as positive or negative with significant level based on blood parasitaemia of 100/µl.
- The RDT used (**BID®**) showed sensitivity of 90.6% (68/75) and specificity of 95.9% (166/173).
- Positive and negative predictive values were 90.6% (68/75) and 95.9% (166/173) respectively

Discussion

- Timely, efficient and cost effective methods of malaria diagnosis are needed in the present global efforts at control.
- RDTs easily fill this gap as it saves time and costs wasted on presumptive treatments for malaria, especially with the high cost of ACTs
- BID® RDT kits have demonstrated high sensitivity and specificity compared to slide microscopy.

Conclusion

- RDTs is important for individual case management for malaria, moreso in rural settings with limited equipments and skills.
- National malaria control programs should view RDTs as effective tools in malaria control and incorporate them into their national programs.
- There is need to standardize storage and transportation systems for these RDTs to optimize and maintain its results.

Future perspectives

- Need for evaluation of RDTs in multi-centre & multi-country trials to assess their effectiveness in different locations and climates.
- Need to explore conditions under which sensitivities of a particular RDT could vary to pave way to liberalising its use in home/self treatment for malaria.
- To encourage manufactures to produce candidate RDTs suited to specific countries and locations.