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***Plasmodium falciparum* hyperparasitaemia in Nigerian children: epidemiology, clinical characteristics, and therapeutic responses to oral artemisinin-based combination treatments**

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Abstract

Objective

To evaluate the epidemiology, clinical characteristics and response to oral artemisinin-based combination treatments (ACTs) of children with *Plasmodium falciparum* hyperparasitaemia (PfHP).

Methods

All children with febrile or history of febrile illness who were suspected to be malaria were evaluated for the presence of PfHP and their parasitological and clinical characteristics at presentation and follow-up for four weeks were recorded during a 3-year period. Patients were treated with oral artemisinin-based combination drugs.

Results

PfHP was present in 3% (97/3 338) of parasite-positive children, and with no seasonal variation. The proportion of children with *PfHP* increased significantly over the years ($P = 0.001$). Compared with non-hyperparasitaemic children, hyperparasitaemic children were younger, had significantly shorter duration of illness, and higher core temperature on presentation ($P = 0.04, 0.04, < 0.0001$, respectively). Parasite clearance and half-lives of parasitaemia were similar in both groups of children following treatment with artemether-lumefantrine or artesunate-amodiaquine but half-life of parasitaemia increased significantly as parasite clearance time increased ($P < 0.0001$). The proportions of children in which there was no change in haematocrit following treatment with these drugs were similar (65% vs 76%, $P = 0.09$), but fall in haematocrit/1 000 parasites cleared from peripheral blood was 10-fold higher in patients without hyperparasitaemia suggesting that artemether-lumefantrine or artesunate-amodiaquine may conserve haematocrit in children with hyperparasitaemia. Recrudescence of infections were significantly more common in hyperparasitaemic children ($P = 0.014$).

Conclusions

PfHP is common in young malarious Nigerian children, and severe malaria which is in the absence of other features responds promptly to oral ACTs.

Keywords

- Malaria;
- Hyperparasitaemia;
- Epidemiology;
- Artemisinin-based combination Treatments;
- Children;
- Nigeria;
- *Plasmodium falciparum*;
- Clinical characteristics;
- Therapeutic reponse;
- Seasonal variation;
- Haematocrit;
- Recrudescence infection;
- ACTs

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