PREDICTORS OF *PLASMODIUM FALCIPARUM* TREATMENT OUTCOMES AMONG CHILDREN IN ARUA, UGANDA

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Introduction and background

☐ Malaria is a leading cause of morbidity and mortality in developing countries and remains a major public health concern in the endemic regions.

☐ The disease continues to spread in part due to the development of drug resistant *Plasmodium falciparum* strains, which have become unresponsive to almost all available drugs.

☐ The major control strategy is adequate treatment of malaria at its earliest diagnostic stage, but effective treatment has been severely compromised by resistant *P.falciparum* strains

Objective

The objective of this study was to establish the predictors of treatment outcomes for *p. falciparum*   for each of the three treatment arms; (Chloroquine+Fansidar, Amodiaquine+Fansidar, and Amodiaquine+Artesunate).

Materials and methods

❑ The materials used in this study were from secondary data source previously collected during a clinical trial conducted to establish the efficacy of various anti-malarial treatment combinations.

❑ A total of 497 Children below 5years of age with clinical malaria were randomized to receive Chloroquine+Fansidar , Amodiaquine+Fansidar or Amodiaquine + Artesunate treatment regimens and followed up for 28 days to determine the treatment outcome.

Methods

❑ We used a retrospective cohort study design to answer our objective.

❑ The treatment outcome was defined as the complete efficacy assessment following therapy for uncomplicated malaria and was categorized into treatment success and failure.

❑Independent variables included host and parasite factors

Methods cont'd

❑ Data were analyzed using STATA version 9.0 statistical software package.

❑ Descriptive analysis was performed to explore the data.

❑ Parasite strains were categorized according to the number of parasite strains i.e. (none= zero, single=1, multiple=2).

❑ Frequency and percentages were computed for categorical variables (sex, parasite strains and treatment outcomes).

❑ For continuous variables (age, body temperature at presentation and parasite density) descriptive statistics were computed. These included mean, standard deviation and range.

Results

Table 1: Baseline demographic and clinical characteristics of children

Variable	Chloroquine+Fansidar % (n=169)	Amodiaquine+Fansidar % (n=164)	Amodiaquine+Artesunate % (n=164)
Sex			
Male	48.52	52.44	54.88
Female	51.48	47.56	45.12
Strain marker1 (ic3d7)			
None	19.53	14.63	18.29
Single infection	61.54	65.85	57.32
Multiple infections	18.93	19.51	24.39
Strain marker2 (fc27)			
None	20.71	21.95	20.12
Single infection	53.25	55.49	53.66
Multiple infection	26.04	22.56	26.22
Treatment outcome			
Success	25.44	56.10	62.20
Failure	74.56	43.90	37.80
Continuous variables	**Mean (range)**		
Age	21.1 (6-60)	20.6 (6-60)	21.5 (6-60)
Temperature	37.4(35.1-40.7)	37.2(35.2-39.5)	37.3(35.2-39.5)
Parasite density	37,144 (2,000-196,800)	40,876 (2,000-199,680)	39,647 (2,000-199,680)

Results cont'd

Table 2: Logistic regression results stratified by treatment

Variable	Chloroquine+Fansidar		Amodiaquine+Fansidar		Amodiaquine+Artesunate	
	Odds ratio	p-value	Odds ratio	p-value	Odds ratio	p-value
Age	0.96	0.007*			0.97	0.016*
Ic3d7 multiple infection	4.91	0.000*	1.91	0.056		
Log parasite density	1.56	0.020*	1.42	0.028*		
Fc27 single infection	5.85	0.013*	2.07	0.08		
Temperature					1.64	0.004*

*Significant p-values

Conclusions and Recommendations

☐ predictors of treatment outcome among children on Chloroquine+Fansidar combination are age, parasite density, single infection fc27 of subtype malaria parasites and multiple infection ic3d7 of subtype malaria parasites

☐ The predictors of treatment outcome among children on Amodiaquine+Fansidar were parasite density and multiple infections of ic3d7 malaria parasites.

☐ In the Amodiaquine+Artesunate treatment combination, the main predictors were age of the child and body temperature at presentation

Conclusions and recommendations

❑ Multiple infections of ic3d7 subtype of malaria and single infections of fc27 subtype of malaria are indicators for treatment failure for children on Chloroquine+Fansidar treatment combination.

❑ The Amodiaquine+Artesunate treatment combination could thus be a good first line treatment for children with uncomplicated malaria, which is commonly associated with low baseline temperatures

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