Evaluation of Artimisinin Resistance in hospitalized patients with severe malaria in Maputo, Mozambique

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Summary

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- Background project
- Objective
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- Results and discussion
- Conclusion

Background of the fellow

- Degree in Biological Sciences- Federal University of Santa Catarina- Brazil
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Background

- Malaria infection continues to be a public health problem with significant morbidity and mortality.
- An estimated 300-500 million people are infected annually worldwide with 1-2 million deaths.
- In Mozambique, estimates show that approximately 2.5 million deaths were attributable to malaria and/or HIV-1 infection.
- Resistance to artemisinin based therapies has been reported in Thailand and Cambodja.
- A retrospective study of ICU patients with severe malaria in Maputo Central Hospital demonstrated increased mortality from 2012-13 to 2013-14 raising the possibility of artemisinin resistance development (unpublished).

Objectives

- To determine whether malaria treatment outcomes in hospitalized adult patients differ by HIV status.
- To determine whether there is a difference in resistance rates to artemisinin based regimens amongst adult HIV^+ patients compared to HIV^- patients.
- To determine the extent of pathogen genetic diversity within patients with and without artemisinin resistance.

Methods

Type of Study

- Cross Sectional Study

Inclusion Criteria

- Adult ≥ 18 years
- Admission to the ICU or medicine wards
- Confirmed complicated malarial infection

Recruited From October 2016-April 2017

Complicated Malaria Criteria- WHO

- Glasgow Coma Scale: 9 or less
- Anemia (hemaglobin: 5 g/dl) or less
- Pulmonary edema
- Acidosis (serum bicarbonate:15 mmol/l)
- Glucose < 40 mg/dl
- Abnormal bleeding.
- At least 3 seizures /24h
- Temperature >40
- Macroscopic hemoglobinuria.

Methods

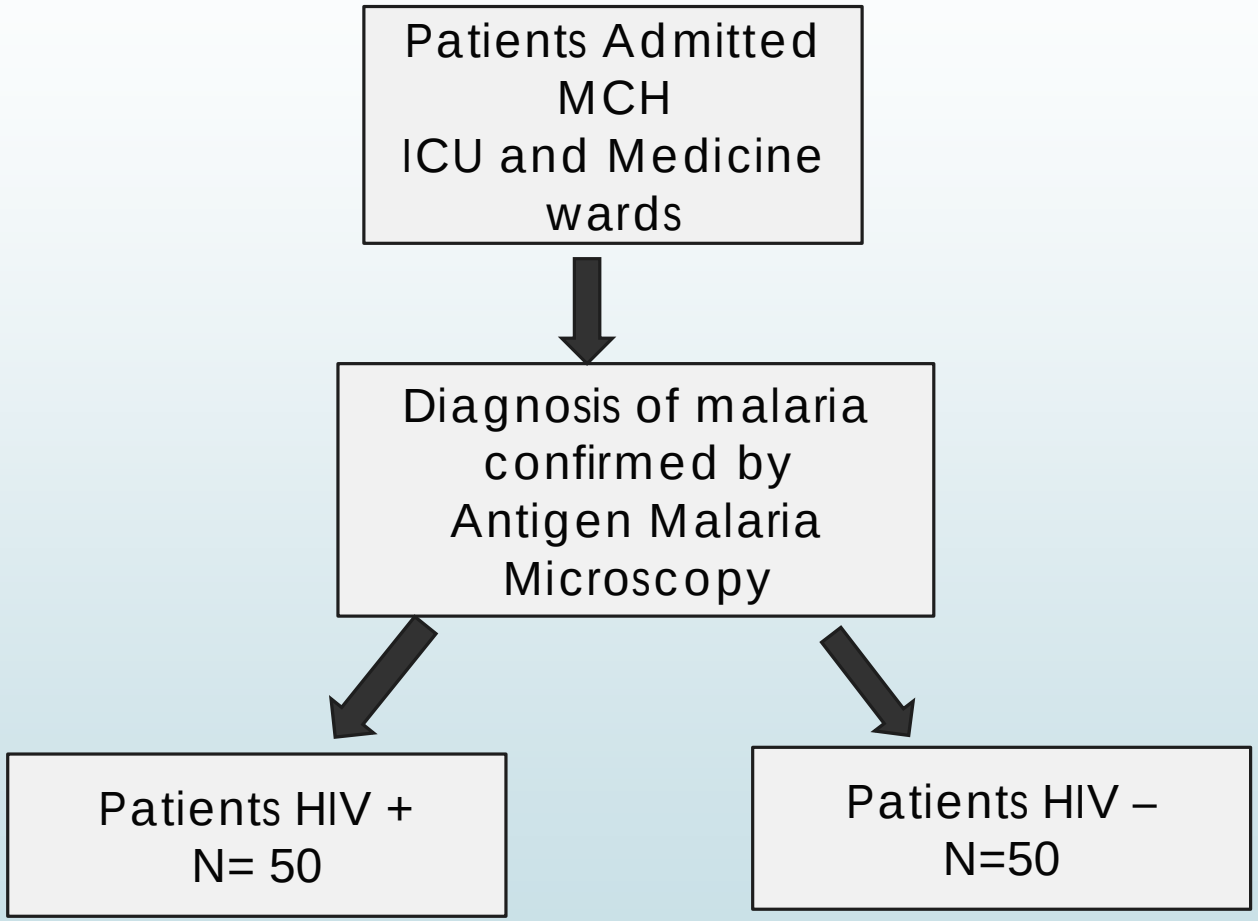

Figure1. Study design overview.

Results and Discussion

	HIV+ N=56	HIV- N=63	Total 119
Gender			
Female	25(44.6%)	33(52.4)	58
Male	31(55.6%)	30(47.6)	61
Race			
Black	54(96.4%)	59(93.6%)	113
Mixed	2(3.6%)	2(3.2%)	4
Other	0	2(3.2%)	2
Age			
Minimum	18	19	--
Maximum	70	86	--
Mean	41.7	42.83	--

Table 1. Demographic Data

Results and Discussion

Characteristics Admission	HIV+ N=56	HIV- N=63	P-Value
Glasgow Scale <9	15(26.8%)	10(15.9%)	0.145
Hemoglobin <5g/dL	19(33.9%)	8(12.7%)	0.006
Convulsion at leat 3	14(25%)	14(22.2%)	0.721
Temperature >40	20(35.7%)	23(36.5%)	0.928
Malaria Smear			
++++	15(26.8%)	18(28.6%)	--
+++	30(53.6%)	20(31.7%)	--
++	6(10.7%)	20(31.7%)	--
+	4(7.1%)	5(7.9%)	--

Table 2. Clinical and laboratory fundungs

Results and Discussion

Clinical Characteristics	HIV+ N=56	HIV- N=63	P-Value
Glasgow Scale	12.85(6-16)	13.58(5-16)	0.205
Hemoglobin	7.79(2.7-16)	9.36(4.3-16.3)	0.009
Temperature	39.08(36-41)	38.6(38-41)	0.471
CD4 Count	!87(44-546)		

	HIV+ N=56	HIV- N=63	P-Value
Mortality	13(23.2%)	7(11.1%)	0.078
Persistent Parasitemia	2(3.5%)	1(1.6%)	0.068

Conclusions

- There was no statistically significant difference in mortality between HIV+ and HIV- individuals admitted with complicated malaria
- The delay on parasite clearance could be also possible due to the fact that those patients were severely ill and immunodepressed.
- Further parasite DNA genome sequencing and analyze for mutations associated with artemisin resistance such as K13 will than determine whether there is a delay in parasite clearance in HIV+ co infected patients.

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