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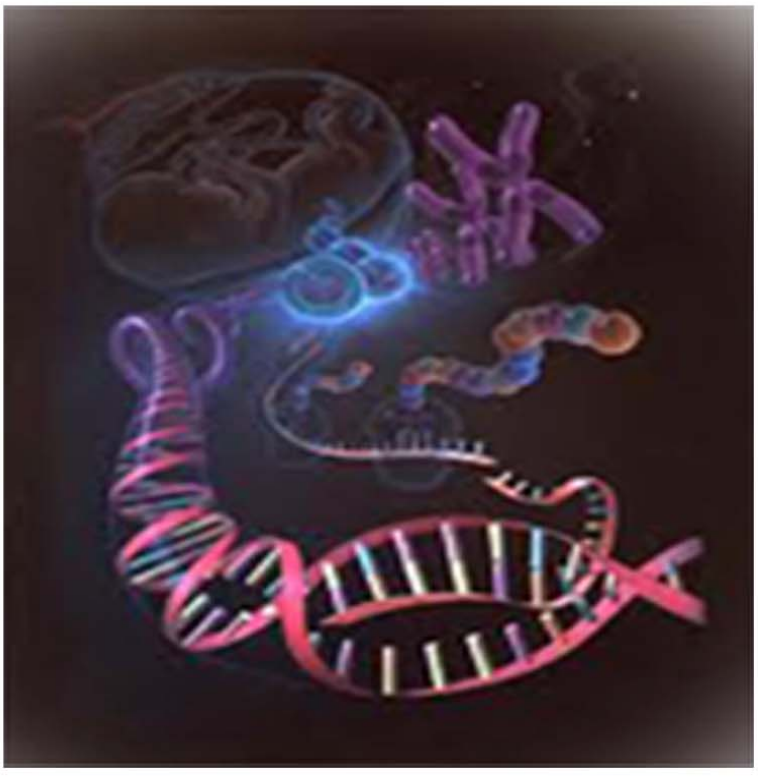

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Research Paper

SOME BIOCHEMICAL AND HAEMATOLOGICAL PARAMETERS IN UNCOMPLICATED MALARIA INFECTION IN MICHAEL OKPARA UNIVERSITY OF AGRICULTURE, UMUDIKE, ABIA STATE, NIGERIA

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Sixty (60) patients who visited the Diagnostic Laboratory of the University Health Services Department with malaria parasite test request and were diagnosed of uncomplicated malaria and thirty (30) non-malaria infected individuals were chosen for the study. Thirty two (32) patients were females and twenty eight (28) patients were females. Sixteen (16) of the non-infected were females and fourteen (14) were males. The study was aimed at assessing the renal function, liver function and haematological parameters of the patients and the non-infected subjects. The result showed no significant difference in renal function, liver function haematological parameters (P>0.05) between the mean values of the patients and non-infected. The data was analyzed by t-Test.

Keywords: Malaria, Renal Function, Haematological Parameters

INTRODUCTION

Malaria is a mosquito-borne infectious disease of human and other animals caused by parasitic protozoans of the genus plasmodium. Commonly, the disease is transmitted via a bite from an infected female anopheles mosquito, which introduces the organism from its saliva to the person's circulatory system. The World Health Organization has estimated that in 2010, there were 219 million documented cases of malaria (WHO, 2010). That year between 660,000 and 1.2 million people died from the disease, many of whom were children in Africa. The actual number of death is not known with certainty, as accurate data is unavailable in many rural areas and many cases are undocumented (WHO, 2010). Despite a need, no effective vaccine currently exists, although efforts to develop one is ongoing.

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Malaria is prevalent in tropical and sub-tropical regions because rainfall, warm temperature and stagnant waters provide habitats ideal for mosquito larvae. Disease transmission can be reduced by preventing mosquito bites by distribution of mosquito nets and insect repellers, spraying insecticides and draining sanding waters. Severe malaria is normally caused by Plasodium falciparum. Renal failure is a feature of blackwater fever, where haemoglobin from lysed red blood cells leaks into the urine (Bartobin and Zammarchi, 2012).

Liver dysfunction as a result of malaria is uncommon and is usually a result of a co-existing liver condition such as viral hepatitis or chronic liver disease. The syndrome is sometimes called malaria hepatitis (Bhalla *et al.*, 2006). While it has been considered a rare occurrence, malaria hepathopathy has seen an increase, particularly in Southeast Asia and India. Liver compromise in people with malaria correlates with a greater likelihood of complications and death (Bhalla *et al*., 2006).

Malaria is classified into either severe or uncomplicated by the World Health Organization (WHO, 2010). It is deemed severe when any of the following criteria are present, otherwise it is considered uncomplicated (WHO, 2010).

Decreased consciousness, significant weakness such that the person is unable to walk, inability to feed two or more convulsions, low blood pressure breathing problems, circulatory shock, kidney failure or haemoglobin in the urine, bleeding problems, or haemoglobin less than 5 g/dl, pulmonary edema, blood glucose less than 2.2 mmol/l, acidosis, lactate >5 mmol/l, a parasite level in the blood >100,000/ul in low intensity transmission areas, or 250,000/ul in high intensity transmission areas (WHO, 2010). In this study, the patients have uncomplicated malaria infection which is more common here. The study assessed the implication of uncomplicated malaria to renal function, liver function and haematological parameters in the patients.

METHOD

Subjects and Methods

Sixty patients (60) and thirty (30) who visited the diagnostic laboratory of University Health Services Department with malaria parasite test requests and were diagnosed with malaria infection using thick film microscopy but were mild (uncomplicated) cases.

Study Area

Michael Okpara University of Agriculture Umudike, Abia State, Nigeria.

Statistical Analysis

Data were analyzed by t-Test with the significance level set at $P<0.05$

Ethics

Oral consent from the subjects was used before collecting their samples.

RESULTS AND DISCUSSION

From the study Table 1 showed no significant difference ($p>0.05$) in the renal indicators such as serum urea and creatinine and liver function indicators such as TB, CB, liver enzymes (ALP, AST and ALT). This shows that renal and liver dysfunction occur in severe (complicated) malaria infections. Renal and liver dysfunction are rare as opined by Bhalla *et al.* (2006) and Ogbadoyi *et al*. (2009).

Table 1: Mean Values of Renal Function and Liver Function of the Patients and Non-infected Individuals

	TB(mg/dl)	CB(mg/dl)	UREA(mg/dl)	CREAT(mg/dl)	ALP(IU/L)	AST(IU/L)	ALT(IU/L)
TEST(60)	0.9	0.6	37.5	0.9	108.6	2.2	1.4
CONTROL(30)	1.1	0.4	31.1	1.2	101.7	1.7	2.2

Note: P>0.05.

Keys: TB = Total bilirubin, CREAT = Creatinine, ALT = Alanine aminotransferase; CB = Conjugated bilirubin, ALP = Alkaline phosphatase, AST = Aspartate aminotranferase.

Table 2: Mean Values of Haematological Parameters of the Patients and Non-infected Individuals

	WBC(*109/L)	N(%)	L(%)	M(%)	E(%)	B(%)	PCV(%)
TEST(60)	5.6	57	39	4	2	0	40
CONTROL(30)	4.8	61	35	2	1	0	48

Note: P>0.05.

Keys: N = Neutrophil, L = Lymphocyte, M = Monocyte, E = Eosinophil, B = Basophil, PCV = Packed Cell Volume.

Table 2 equally showed no-significant difference (p>0.05) between the mean values of some haematological parameters of those infected with uncomplicated malaria and the non-infected (controls). Renal and liver dysfunction can only be a diagnostic of malaria infection in severe cases and not in uncomplicated malaria infection (Yadav *et al.,* 2012).

CONCLUSION

Renal dysfunction, liver dysfunction and haematological parameters are not diagnostic features in uncomplicated malaria infection as seen in our area of study. Mild cases of malaria infections here could result from improvement to health, high percentage of blood group O, and other genetic resistant advantage to malaria infection.

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