

Hematological and Biochemical Changes In Pyrexia Subjects Attending Olabisi Onabanjo University Health Centre, Ago Iwoye, Ogun State, Nigeria

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Abstract: This study evaluated the hematological and biochemical indices of pyrexia subjects using standard techniques. Results obtained revealed no significant variation between the packed cell volume and the random blood sugar of both the pyrexia subjects and the control group ($P > 0.05$). However, an apparent statistical disparity was observed in the white blood cell counts of both the pyrexia and the control group with the pyrexia subjects having an approximately 20% percentage white blood cell reduction relative to the control group ($P < 0.05$). It can therefore be concluded based on our research findings that pyrexia of bacterial origin have a statistical significant relationship with the white blood cell count and not any other examined hematological and/biochemical parameters.

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1. Introduction

Pyrexia of undetermined origin otherwise known as hyperthermia according to Axelrod and Diringer [1], is characterized by an elevation of temperature above normal range of 36.5°C - 37.5°C due to an increase in body temperature regulatory set point [2]. This medical problem remain the leading cause of morbidity and mortality among the populace, especially in sub-saharan Africa [3].

The spectrum of diseases causing pyrexia of unknown origin not only seems to be determined by geography factors, but also to change with time [4]. The condition is a diagnostic challenge and as such constitutes a significant number of referrals to tertiary care centers. Previous studies have described the spectrum of the disease to be mainly secondary to infectious, neoplastic and inflammatory diseases [5]. The diagnostic work up for pyrexia of undetermined origin is well described [6]. But there is no 'gold standard' and it may be done differently depending on the clinical situation. In most cases, it begins by confirming the presence of fever in hospital. A minimal work up includes a complete history and physical examination including drug history, complete blood count with differential, blood film, routine blood chemistry, urinalysis and microscopy, blood and urine cultures, anti nuclear antibodies rheumatoid

factor, HIV antibodies, chest X-ray and hepatitis serology.

It is a prominent symptom of many diseases in human and animals with different microbial aetiologies including bacteria, viruses and protozoans. It is considered a medical emergency as it may indicate a serious underlying condition or lead to significant side effects [7]. Recent studies even suggest possible dysfunction in hematological and biochemical parameters of pyrexia subjects. This study was therefore undertaken to determine the frequency and severity of hematological and biochemical changes in pyrexia subjects attending Olabisi Onabanjo University Health Centre, Ago Iwoye, Ogun State, Nigeria.

2. Material and Methods

2.1 Ethical Issues and Study Subjects

Three hundred Subjects (138 male and 162 female), 16 years of age with clinical illness compatible with febrile (auxiliary temperature 38.3°C) or history of fever in the previous 3 weeks and with no history of antibiotics or anti-malarial administration in the previous week were recruited into this study based on satisfactory inclusion criteria and after due consent of the subject has been obtained. Subjects with history of treatment with antibiotics/anti malarial drugs in the past one week were excluded

from the study. All these were done after obtaining ethical approval from the Institutional Research Committee. The control group consisted of one hundred apparently healthy persons (50 males and 50 females) with no history of fever in the previous 3 weeks. The age range of test and control groups was 16 years and above.

2.2 Hematological and biochemical indices of pyrexia subjects

5mls of blood was collected from the test and control groups. A portion (2mls) was anticoagulated with EDTA and used for the haematological profiles while the remaining was allowed to clot and serum used for biochemical profiles. Haematological profiles were determined by the method of Bain (1997). The glucose was determined by glucose oxidase method of Trinder 1969.

2.3 Statistical Analysis

The mean results of tests and controls were analysed using students “t” test. The level of significance was set at $p < 0.05$

3.0 Results

The table below shows the hematological and biochemical indices of pyrexia subjects attending Olabisi Onabanjo University Health Centre, Ago Iwoye, Ogun State, Nigeria. The results revealed no significant variation between the packed cell volume and the random blood sugar of both the pyrexia subjects and the control group ($P > 0.05$). However, an apparent statistical disparity was observed in the white blood cell counts of both control groups and the pyrexia subjects. This is because the white blood cell of the pyrexia subjects reduced by approximately 20% relative to the control group.

Table 1: Hematological and biochemical indices of pyrexia subjects

Parameters	PCV	WBC	RBS
Pyrexia subjects	37.80±0.48	5557.25±1148±88	94.57±7.40
Control group	38.71±0.00	6671.00±0.00	96.64±0.00
P value	>0.05	<0.05	>0.05

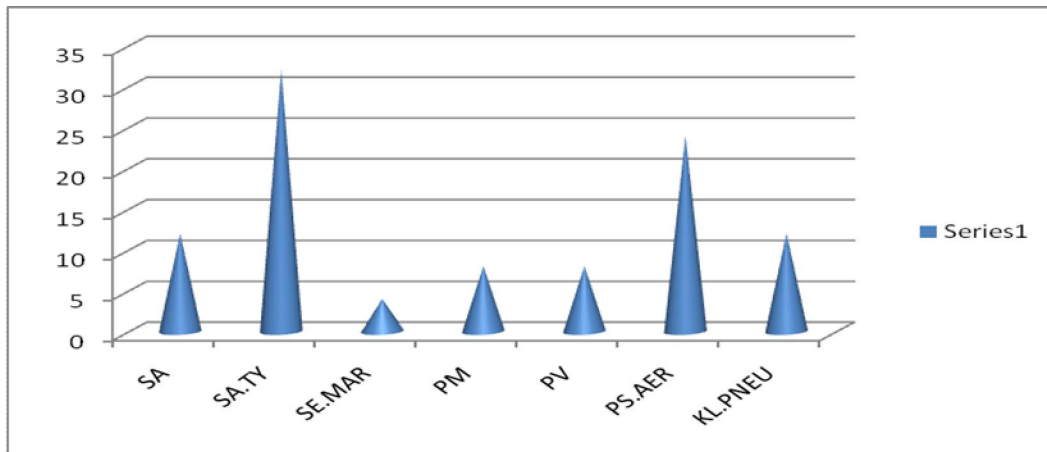


Figure 1: Prevalence of Bacteria in the examined pyrexia subjects

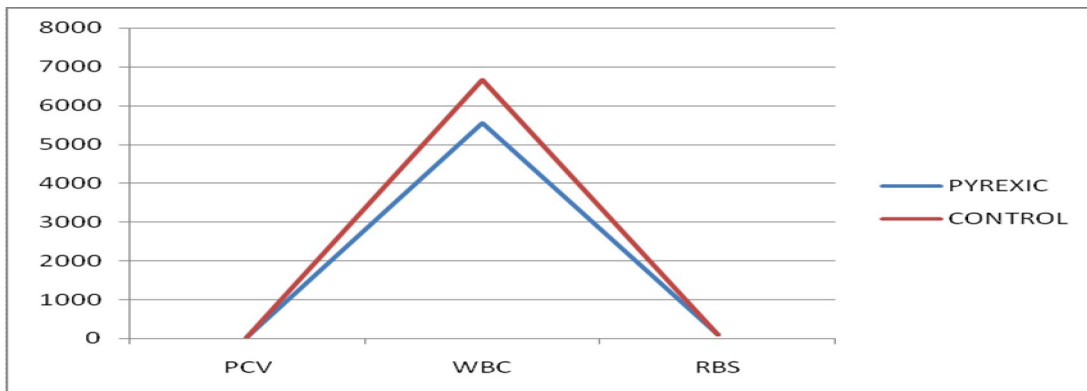


Figure 2: Relative measurement of hematological and biochemical parameters of pyrexia and control groups

4.0. Discussion and Conclusion

Pyrexia of undetermined origin remain the leading cause of morbidity and mortality among the populace, especially in sub-saharan Africa [3] while the spectrum of diseases causing this infection not only seems to be determined by geography factors, but also to change with time [4]. In this study, no correlation was found between change in PCV level and onset of pyrexia. This observation is an indication that pyrexia does not cause anaemia, thus vindicating the pyrexia subjects as being free of polycythaemic vera [11]. Significant difference occur in the mean total WBC of the control and the pyrexia subjects as apparent reduction in white blood cell of the infected subjects (leucopenia) was observed. This findings may be due largely to ineffective or depressed granulopoiesis in the bone marrow [12]. The lack of apparent difference observed between the control group and the infected group in terms of the RBS level means that the pyrexia may not affect blood sugar level for Our findings however suggest a possible relationship between white blood cell and pyrexia of undetermined origin. However, in order to delineate the pathogenesis of pyrexia of undetermined origin, further studies are necessary to completely elucidate the involvement of this infection in the alteration of hematological and biochemical system of subjects using larger sample size. It can therefore be concluded based on our research findings that no significant relationship exist between PCV and FBS rather strong correlation exist between pyrexia and white blood cell.

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