

Ranges of Eosinophil Percentage in Maternal and Placental Blood among Women Residing in Warri South Local Government area of Delta State, Nigeria

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The purpose of this study was to determine the eosinophil count in placental and maternal blood in order to assess the prevalence of eosinophilia and establish reference values for pregnant women residing in Warri South Local Government Area of Delta State, Nigeria. One hundred consenting pregnant women in apparent good health and between the ages of 17 and 41 years were selected from Central Hospital, Warri for the study. The placental and maternal samples collected were prepared for counting using documented method. Result showed no case of eosinophilia, indicating that the prevalence rate of eosinophilic diseases are rare in Warri South L.G.A. The reference ranges for eosinophils obtained for both placental and maternal blood are within 0-2%.

Key words: Eosinophils, Placental blood, Warri, Pregnancy.

Eosinophils are a type of white blood cells generally known to be involved in the mechanism of body defense. Their numbers increase in blood stream during infection and certain disease state, a condition known as eosinophilia (Adamko *et al.*, 2002). Along with mast cells, they also control mechanisms associated with allergy and asthma (Schmekel *et al.*, 2001; Rothenberg and Hogan, 2006). Eosinophils fight helminthes colonization, and are also involved in many biological processes including neoplasia (Fletcher and Bain, 2007).

The interpretation of any laboratory test for eosinophilia diagnosis requires that the normal range of eosinophil count be established for the population in which the test result is being used. Reference ranges used for blood cell counts in many laboratories, including those in West African countries are based on data obtained from Caucasian populations (Hoffman, *et al.*, 2005).

Reed, *et al.* (1991) noted that persons of African origin had lower white blood cell counts than Caucasians.

Reference values obtained from their geographical locations therefore, cannot be assumed to be directly applicable to our population. Various environmental factors, including endemic infections as well as social factors may impact on the results obtained (Cheesbrough, 2006).

It is thus, necessary to obtain reference values from the population in our native habitat for a more accurate and reliable interpretation of what is normal and abnormal. Hence, this study aims at determining the percentage of eosinophil in placental and maternal blood.

MATERIAL AND METHODS

Subjects

The study group consisted of one hundred pregnant women selected from the Labour Ward, Central Hospital, Warri, Delta State,

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Table 1. Total white blood cell (WBC) count and percentage eosinophils in maternal and placental blood

Cell count	Mean±SD (n=100)
Total WBC count in maternal blood (/L)	13953.5±2368.3
Total WBC count in placental blood (/L)	19452.5±3142.6
Eosinophi count in maternal blood (%)	1.17±0.31
Eosinophil count in placental blood (%)	0.00

Nigeria. The subjects were within the ages of 17 and 41 years, and were inclusive of individuals in apparent good health, who had safe and uncomplicated deliveries at term.

The Management of Central Hospital, Warri, gave the ethical approval, and informed consent was obtained from each volunteer. Information concerning the subjects were obtained by questionnaire and personal interview.

Collection of maternal blood

One milliliter (1.0ml) of whole blood was collected from each subject from the median cubital vein, under aseptic conditions. The collected blood was immediately transferred into a specimen bottle with EDTA anticoagulant and labelled M1 to M100.

Collection of placental blood

One milliliter (1.0ml) of while blood was collected from the placental vein after normal delivery. This was immediately transferred into specimen bottles with EDTA anticoagulant, and labelled F1 to F100, corresponding with the maternal blood in M1 to M100.

Determination of eosinophil count

The eosinophil count in the maternal and placental blood were determined as previously described (McPherson and Pincus, 2007).

Statistical Analysis

The Student's *t*-Test was used to analyze data and $P < 0.05$ was regarded significant. All statistical calculations were performed using the SPSS-PC programme package (version 16).

RESULTS AND DISCUSSION

The results obtained are presented in Table 1, which shows the total white blood cell (WBC) count and percentage eosinophils in maternal and placental blood.

The data obtained (Table 1) show that

the percentage range of eosinophils in the maternal total WBC (differential) count is 0.86-1.48% (0-2%). This result agrees with that of Ezeilo (1972) earlier established for Africans.

No case of eosinophilia (increased eosinophil percentage) was observed when judged with ranges documented for Africans and Caucasians.

These values (0-2%) could serve as a reference point for the assessment of normal or abnormal eosinophil count in placental and maternal blood.

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