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TABLE OF CONTENTS

GENERAL INFORMATION 1C
INFORMATION FOR AUTHORS 1F
EDITORIAL NOTES - Reducing the Risks of Nuclear War - The Role of Health Professionals 1009
ORIGINAL ARTICLES
The Iron Status of Children with and without Sickle Cell Disease at the University of Ilorin Teaching Hospital, Nigeria 1013
Missed opportunities for Intermittent Preventive Treatment of Malaria among pregnant women with the recommended number of antenatal care visits in Nigeria: Secondary Analysis of Malaria Indicator Survey 2021 1021
Evaluation of Forced Expiratory Volume in One Second and Forced Vital Capacity from Age and Height for Pulmonary Function Test 1029
Diagnostic Utility of EMA, Vimentin and CD117 Immunohistochemical Markers in Subtyping Renal Cell Carcinoma in a Nigerian Tertiary Hospital: A 10-year Retrospective Study 1035
Determination of Streptococcus Mutans and Lactobacillus Counts and their Association with Resting pH of Saliva and Dental Caries in Preschool Children in Lagos 1041
Preliminary Study on Open Labelled Randomized Controlled Trial of the Safety and Efficacy of Hydroxychloroquine and Chloroquine Phosphate for the Treatment of Persons Infected with 2019 Coronavirus Disease in Nigeria 1049
Assessment of Basic Knowledge on Orofacial Pain amongst Undergraduate Dental Students 1060
Climate change and Force Majeure on Childhood Oncology Services in a Low Resource Setting: Experience from a Tertiary Institution in Nigeria 1067
Physical Inactivity and Doctor-diagnosed Arthritis among Kitchen Workers in Jos 1072
Association between C-Reactive Protein and low-grade Inflammation among Nigerian women with Polycystic Ovarian Syndrome 1079
Predictive and Relative factors of Dental Anxiety among Third Molar Disimpaction Patients in a Northern Nigerian Hospital 1086
Burnout among Doctors and Nurses at the University of Uyo Teaching Hospital, South-South, Nigeria: A comparative study 1096
Development and Validation of Cannabis Use Disorder Scale among University Undergraduates in Nigeria 1107
REVIEW ARTICLE
A Review on the Health Impact of Self-medication for Malaria on Port Harcourt Residents 1118
CASE REPORT
Parathyroid hormone resistance: An uncommon cause of hypocalcaemia in an adult Ghanaian female 1131
INDEX TO VOLUME 40, NO 10, October, 2023
Author Index 1135
Subject Index 1136



Association between C-Reactive Protein and low-grade Inflammation among Nigerian women with Polycystic Ovarian Syndrome

Association entre la protéine C-réactive et l'inflammation de faible intensité chez les femmes nigérianes atteintes du syndrome des ovaires polykystiques.

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ABSTRACT

BACKGROUND: There is evidence of a low-grade chronic inflammation reflected by minor but significant increases in circulating levels of inflammatory mediators in polycystic ovary syndrome (PCOS). There is uncertainty about the causal relationship whether it is obesity, insulin resistance, or PCOS. There is a paucity of studies from the West African sub-region.

OBJECTIVES: The study investigated C-reactive protein (CRP) concentration in Nigerian women with PCOS, and determined the factors that affect their concentration.

METHODS: The study was conducted on 71 Nigerian women with PCOS and 76 normal ovulating women, recruited from the University of Benin Teaching Hospital and the Women's Health and Action Research Centre, in Nigeria. CRP levels were measured by the enzyme-linked immunosorbent assay (ELISA) method. Insulin resistance and insulin sensitivity were estimated using the Homeostatic Model Assessment Index and Quantitative Insulin-sensitivity Check Index respectively.

RESULTS: The CRP levels were significantly elevated in Nigerian women with PCOS compared to controls (9.93 ± 8.38 vs 5.54 ± 5.93 mg/L; $p=0.000$). It positively correlated with age ($r = 0.297$, $p = 0.012$), Weight ($r = 0.313$, $p = 0.008$) and BMI ($r = 0.339$, $p = 0.004$). Multiple linear regression analysis revealed that CRP values are positively associated with BMI ($\beta = 0.274$, $p = 0.001$) and PCOS ($\beta = 0.382$, $p = 0.001$). The CRP values were positively associated with BMI ($\beta = 0.372$, $p = 0.012$) and negatively associated with QUICKI ($\beta = -0.644$, $p = 0.073$).

CONCLUSIONS: Among Nigerian women with PCOS, inflammation may be mediated through adiposity since the main predicting factor for increased CRP is BMI. **WJMJ 2023; 40(10); 1079-1085.**

Keywords: C-reactive protein, chronic inflammation, polycystic ovary syndrome, quantitative insulin-sensitivity check index, homeostatic model assessment index.

RÉSUMÉ

CONTEXTE: Il existe des preuves d'une inflammation chronique de faible intensité, se manifestant par des augmentations mineures mais significatives des taux circulants de médiateurs inflammatoires, dans le syndrome des ovaires polykystiques (SOPK). Il existe une incertitude quant à la relation causale, qu'il s'agisse de l'obésité, de la résistance à l'insuline ou du SOPK. Les études de cette région d'Afrique de l'Ouest sont rares.

OBJECTIFS: L'étude a examiné la concentration de la protéine C-réactive (CRP) chez les femmes nigérianes atteintes du SOPK et a déterminé les facteurs qui influent sur leur concentration.

MÉTHODES: L'étude a été menée auprès de 71 femmes nigérianes atteintes du SOPK et de 76 femmes à ovulation normale, recrutées à l'hôpital universitaire de Benin et au Centre de recherche sur la santé des femmes et l'action (Women's Health and Action Research Centre) au Nigéria. Les niveaux de CRP ont été mesurés à l'aide de la méthode ELISA (dosage immuno-enzymatique). La résistance à l'insuline et la sensibilité à l'insuline ont été estimées à l'aide de l'indice du modèle homéostatique d'évaluation et de l'indice de vérification quantitative de la sensibilité à l'insuline.

RÉSULTATS: Les taux de CRP étaient significativement élevés chez les femmes nigérianes atteintes du SOPK par rapport aux témoins ($9,93 \pm 8,38$ contre $5,54 \pm 5,93$ mg/L ; $p = 0,000$). Ils étaient positivement corrélés à l'âge ($r = 0,297$, $p = 0,012$), au poids ($r = 0,313$, $p = 0,008$) et à l'IMC ($r = 0,339$, $p = 0,004$). L'analyse de régression linéaire multiple a révélé que les valeurs de la CRP sont positivement associées à l'IMC ($\beta = 0,274$, $p = 0,001$) et au SOPK ($\beta = 0,382$, $p = 0,001$). Les valeurs de la CRP étaient positivement associées à l'IMC ($\beta = 0,372$, $p = 0,012$) et négativement associées au QUICKI ($\beta = -0,644$, $p = 0,073$).

CONCLUSIONS: Chez les femmes nigérianes atteintes du SOPK, l'inflammation pourrait être médiée par l'adiposité, car le principal facteur prédictif d'une augmentation de la CRP est l'IMC.

Mots-clés: Protéine C-réactive, inflammation chronique, syndrome des ovaires polykystiques, indice de vérification quantitative de la sensibilité à l'insuline, indice du modèle homéostatique d'évaluation.

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