

Correlation between the Levels of Some Inflammatory Cytokines/Haematological Parameters and Khorana Scores of Newly Diagnosed Ambulatory Cancer Patients

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Abstract : Background: Cancer-associated thrombosis (CAT) is a cause of morbidity and mortality among cancer patients. Several risk factors for developing venous thromboembolism (VTE) also coexist with cancer patients, such as chemotherapy and immobilization, thus contributing to the higher risk of VTE in cancer patients when compared to non-cancer patients. This study aimed to determine if there is any correlation between levels of some inflammatory cytokines/haematological parameters and Khorana scores of newly diagnosed chemotherapy naïve ambulatory cancer patients (CNACP). Methods: This was a cross-sectional analytical study carried out from June 2021 to May 2022. Eligible newly diagnosed cancer patients 18 years and above (case group) were enrolled consecutively from the adult Oncology Clinics of the University of Nigeria Teaching Hospital, Ituku/Ozalla (UNTH). The control group was blood donors at UNTH Ituku/Ozalla, Enugu blood bank, and healthy members of the Medical and Dental Consultants Association of Nigeria (MDCAN), UNTH Chapter. Blood samples collected from the participants were assayed for IL-6, TNF-Alpha, and haematological parameters such as haemoglobin, white blood cell count (WBC), and platelet count. Data were entered into an Excel worksheet and were then analyzed using Statistical Package for Social Sciences (SPSS) computer software version 21.0 for windows. A P value of < 0.05 was considered statistically significant. Results: A total of 200 participants (100 cases and 100 controls) were included in the study. The overall mean age of the participants was 47.42 ± 15.1 (range 20-76). The sociodemographic characteristics of the two groups, including age, sex, educational level, body mass index (BMI), and occupation, were similar ($P > 0.05$). Following One Way ANOVA, there were significant differences between the mean levels of interleukin-6 (IL-6) ($p = 0.036$) and tumor necrotic factor- α (TNF- α) ($p = 0.001$) in the three Khorana score groups of the case group. Pearson's correlation analysis showed a significant positive correlation between the Khorana scores and IL-6 ($r=0.28$, $p = 0.031$), TNF- α ($r= 0.254$, $p= 0.011$), and PLR ($r= 0.240$, $p=0.016$). The mean serum levels of IL-6 were significantly higher in CNACP than in the healthy controls [8.98 (8-12) pg/ml vs. 8.43 (2-10) pg/ml, $P=0.0005$]. There were also significant differences in the mean levels of the haemoglobin (Hb) level ($P < 0.001$); white blood cell (WBC) count ($P < 0.001$), and platelet (PL) count ($P = 0.005$) between the two groups of participants. Conclusion: There is a significant positive correlation between the serum levels of IL-6, TNF- α , and PLR and the Khorana scores of CNACP. The mean serum levels of IL-6, TNF- α , PLR, WBC, and PL count were significantly higher in CNACP than in the healthy controls. Ambulatory cancer patients with high-risk Khorana scores may benefit from anti-inflammatory drugs because of the positive correlation with inflammatory cytokines. Recommendations: Ambulatory cancer patients with 2 Khorana scores may benefit from thromboprophylaxis since they have higher Khorana scores. A multicenter study with a heterogeneous population and larger sample size is recommended in the future to further elucidate the relationship between IL-6, TNF- α , PLR, and the Khorana scores among cancer patients in the Nigerian population.

Keywords : thromboprophylaxis, cancer, Khorana scores, inflammatory cytokines, haematological parameters

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