

Estimation of Vitamin D and some Hematological parameters among Women Refugees in Hawler Province

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Received: June 8 , 2017

Accepted: August 24, 2017

Online Published: September 1, 2017

doi: 10.23918/eajse.v3i1sip171

Abstract: This experiment aimed at determination of vitamin D along with some Hematological parameters among women refugees from different camps and apparently healthy individuals in Hawler province; Kurdistan region of Iraq. 50 women refugees and 45 controls individual were studied between April and June, 2015. The results showed a lower level ($p < 0.007$) in vitamins D of women refugees as compared with the control group. Hematological parameters were considered white blood cell count (WBCs), Erythrocytes (RBCs), lymphocytes, platelet count, packed cell volume (PCV) and Erythrocyte sedimentation rate (ESR). Tests were performed after storing samples in EDTA contained tubes. The level of WBCs, RBCs, platelets count, PCV and lymphocyte were significantly lower ($p < 0.05$) than control groups. The level of ESR was significantly higher ($p > 0.05$) among refugees. Present work states that Vitamin D status decreased significantly among women refugees that currently resettled in Erbil province; Kurdistan region where they are at higher risk to get further complications e.g musculoskeletal disorders and anemia. The paper suggests health facilities should be improved in the refugee camps of hawler province/Iraq.

Keywords: Vitamin D, Refugee Status, Hematological Parameters

1. Introduction

Vitamins are a group of organic nutrients with limited synthesizing by the body, essential must be purchased through good diets or cholecalciferol supplements because those nutrients contributes to variety of biochemical functions. They have role in the normal processes of metabolism, including growth and maintenance of health. Deficiency causes a specific disease, which is prevented only by restoring the vitamin to the diet. Refugee camps have become major sides of these deficiencies for the past decades which is mainly due to starvation and dietary deficiency (Banjong et al., 2003). The consequences to deficiencies of nutrients especially Vitamin D, may lead to dangerous outcomes as it has been observed in the studies performed on the refugees and dislocated people groups. Because body cannot make enough Vitamin D, unhealthy life style can lead to numerous and variety of disease including infections, cognitive disorders, skeletal disorders, problems of metabolism, heart disease, immunity dis-function and tumor formation (Erkal et al., 2006) .

For Sustained adequate plasma levels of calcium and bones calcification, Vitamin D is crucial (Bogen, Duggan, Dover & Wilson, 2000). Low level of Vitamin D, in severe cases may face adults

with osteomalacia and bone damages. While at younger ages, those deficiencies may lead to osteoporosis and rickets. The interests have been increasing regarding the relation between low level of Vitamin D vis diseases that usually occur (van Schoor & Lips, 2011). Several types of diseases can be prevented by taking Adequate amount of vitamin D like disorders of musculoskeletal, infectious and heart diseases, immunity disorders, brain damages, certain kind of tumors and abnormalities in blood sugar (Mithal et al., 2009a). Many Previous works have shown that refugees of civilized countries usually suffer from inadequate vitamin D and the rate was risen even more in the western communities (Rosen et al., 2012). International studies, are now addressing the issue of high frequency lack of Vitamin D (1,25-diOH D3), which become the greatest threat to our Salubrious. The factors like migrations, poor diets and decreased sunlight exposure are thought to be the main responsibilities for this dropdown of Vitamin D. Some type of cancer patients may suffer from anemia, resulting from continuous bleeding, nutrient deficiency and bone marrow infiltrations of tumor. Because of connection of tumor necrosis factor- α (TNF- α) and interleukin-1 (IL-1) with tumor synthesis process, they have the capability to reduce formation of erythrocytic progenitors (Holick et al., 2011). Hematological and biochemical parameters are deformed by any abnormalities or diseases either acute or sever. Direct blood tests for those parameters can predict future damages which may occur in those patients. Overall study sought to provide screening data for healthcare community, helping them to set a limit for further complications in those patients.

2. Equipment and Methods

Samples were collected from refugee camp of baharka/Erbil province. Blood collected from 50 women refugee aging from (30-54). Studied parameters of women refugees were compared with 45 healthy volunteers who were outside camp residence.

2.1. Determination of Vitamin D

Refugee blood samples were put into the dry tubes. Samples were centrifuged at (4000 xg) for (10 min.) after it has been clotted at room temperature competitive radioimmunoassay (RIA; Kit from DIA source) commercially purchased was used in the estimation of Vitamin D values.

2.2. Investigation of hematological Criterion

From both studied groups (women refugee and control), 5 ml of blood putted into 2 separate tubes, dispensing 3.0 ml into EDTA bottle for hematological tests including packed cell volume (PCV), White blood cell count, red cell count, platelet count, lymphocyte count using(Auto Hematology Analyzer-, Hungary2011). ESR determinations, 2.0 ml blood were put into the 0.5ml sodium citrate vials. (Westergren) method (kabat 2007) was performed for ESR determination.

3. Statistical Analysis

Expression of data was done by Mean \pm SD. All the statistical work performed on an SPSS program (version 11). T test for group comparison was conducted and the Consideration of Statistical significance was at $P < 0.05$.

4. Results and Discussion

Table 1 and Figure1 show the comparison of serum vitamin D levels of both, patient and healthy

group. Significant Decreased level of vitamin D in women refugees can be seen by the represented Data below.

Table 1: Mean serum vitamin D concentration in Women refugee and control subjects.

Subjects	Vitamin D (nmol/L)
Controls n = 45	65.401±1.011
Women refugee n = 50	21.33±5.154
P -Value	< 0.007

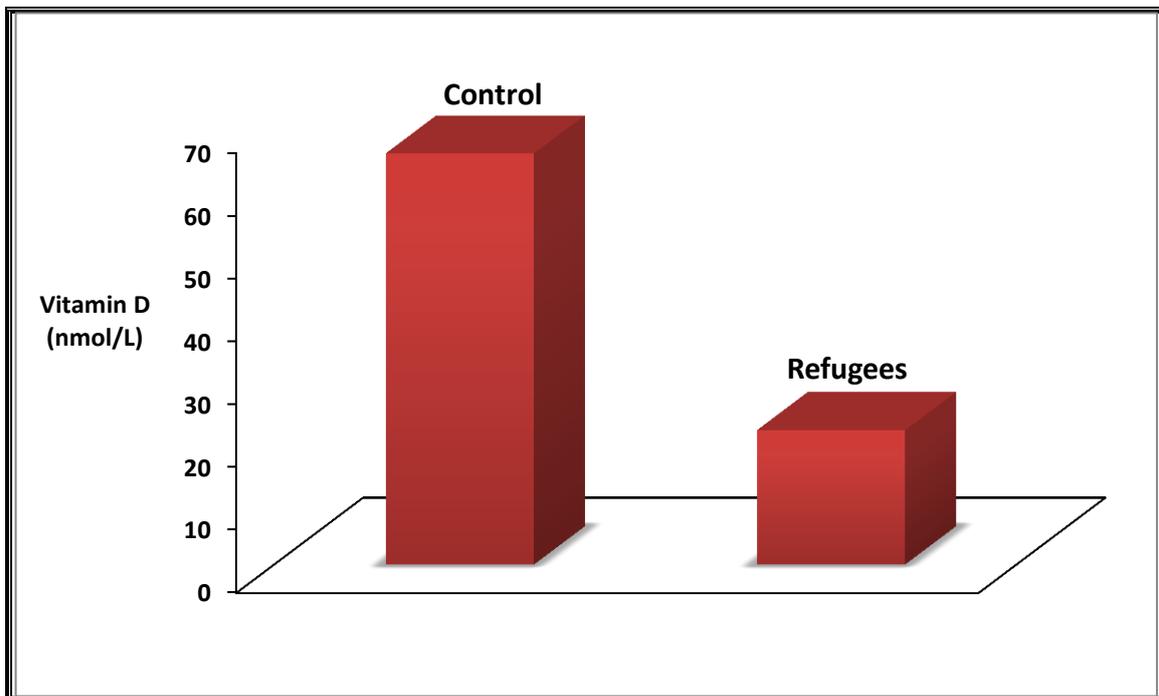


Figure 1: Vitamin D concentration in Women refugee and control subjects.

Current work has showed decreased amount of vitamin D among women refugees, which was supported by past reports (Mithal et al., 2009a) regarding the same issue. Despite the age differences, women refugees have shown below than normal levels of vitamin D, putting them at much higher risky situation for getting further complications (Yalçın, Onbaşilar, Şehu, & Yalçın, 2007).

Although the main causes of low level of Vitamin D was mentioned above but there are also additional contributors observed during the experiment, such as bad economical status and dressing cultural clothes. The findings were similar to those of a previous study done in Africa (Skull, Ngeow,

Biggs, Street, & Ebeling, 2003).

Recovering from deficiencies of Vitamin D may not be as challenging as before. There are lots of paths for a clinicians can set for their patients in order to get fully regain all the Vitamin D that their body needs. Including prescribing prepared supplementations of Vitamin D and having enough sun lights daily with more consult advices helping them in overcoming the situations (Van Der Meer, Middelkoop, Boeke, & Lips, 2011) (Benson & Skull, 2007). In addition to that having those supplements by elder ages aids in decreasing fractures and fallings due to osteoporosis as their muscles becomes stronger (Mithal et al., 2009b).

The hematologic data are summarized In (Tables2) where hematological parameters of both groups were compared in (Mean±SD). Significant decrease ($P < 0.05$) of packed cells, red blood cell count, volume, lymphocytes, platelets count and white blood cell count can be seen in women refugees when compared with the control group. Significant increase ($p < 0.05$) of ESR levels indicated in patients with breast cancer as compared with healthy volunteers.

Table 2: women refugees and control subjects were compared based on the some hematological tests.

Hematological parameters	Refugee women n = 50	Control n = 40	P value
ESR mm/hr	18.411±5.154	7.610±1.150	< 0.05
WBC X103/μL	3.504±0.8839	5.527±1.0211	< 0.05
RBC x106/μL	3.381±0.8191	4.614±0.6110	< 0.05
Packed cell volume (%)	31.205±4.102	41.601±1.1331	< 0.05
Platelets X103/μL	174.28±31.158	194.52±7.303	< 0.05
Lymphocytes (%)	40.009±4.6399	56.408±9.807	< 0.05

Clinicians and professionals in health areas are able to understand and diagnose any sort of disease like acute infections, hemorrhagic states, anemia's, allergic disorders, and immunodeficiency. Leucopenia and thrombocytopenia and low level of hematocrit have been shown by the present study (Table 2), which agreed with previous study done in Enugu in Nigeria. (United States Centre for Disease Control and Prevention, 2004) (Karimi, Kadivar, & Yarmohammadi, 2002). There is still a chance that decreased level in various hematological parameters may be due to pro- inflammatory cytokines, as its increased level enhances iron retention by the reticulo-endothelial system, liver and GI tract (Stoltzfus et al., 1997). Significant decrease ($p < 0.05$) of red cells count and hematocrit level in women refugees above 40 years as shown in our study may be related to age difference, as those parameters decline after fifth decade (Shears et al., 1987) or may be due to immunodeficiency and bone marrow damages. While malignancies thought to be main cause of thrombocytopenia (Hassan,

Sullivan, Yip, & Woodruff, 1997).

Also data work presents low blood counts and lymphocyte count in women refugees, which is agreed by previous works (Looker et al., 1997). In addition, increased ESR level of patient group, despite their disease may be affected by age and sex. Other factors affecting ESR levels includes increase fibrinogen levels as result of tobacco and alcohol intake (Barry, Craft, Coleman, Coulter, & Horwitz, 1983; Hjern et al., 1991).

5. Conclusion

Most refugees that are currently are resettled are suffering from low levels of Cholecalciferol (Vitamin D) and facing major risky disorders. The issue need to be addressed locally, by Hawler government and Iraqi authorities to provide more essential health facilities inside the camps and Internationally, by health centers to discover new paths to minimize unhealthy diets and designing new programs of education and consultation for refugees and immigrants aiding them to persuade more salubrious life style.

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