Libyan International Medical University

Faculty of Pharmacy

Analysis of association of vitamin D3, hemoglobin and ferritin with special respect to Libyan patients

Presented by
Shatha alferjani 3402
Saif ashraf 3470
Mahammed gtat3230
Qabas salem 3696
Marwa nori 3315
Reham qasem 2514
Hend alferjani 3494

TABLE OF CONTENTS

01 Introduction

02 List The role of vitamin D

03 List Complication of vitamin D deficiency

04 Discuss How is at high risk to have vitamin D deficiency

05 Describe Ferritin

06 Discuss the relation between vitamin D, hemoglobin and Ferritin

07 CONCLUSIONS

INTRODUCTION

- Vitamin D is created under skin by ultraviolet(UV)light and turned into a hormone in the body.
- vitamin D was agreed to be regulating in calcium and phosphate absorption and bone metabolism and its deficiency is observed as a critical nutritional problem. And it is may affect the level of calcium that can affect central nervous system and also the cardiovascular system.
- The level of synthesis of vitamin D is influenced by a number of factors including:

season of the year, skin pigmentation, use of sunscreen, clothing and amount of skin exposed and Age

- Ferritin, is an iron storage protein, and it is critical in iron homeostasis.

Ferritin makes iron available for critical cellular processes while protecting lipids, DNA and proteins from the toxicity of the iron.

- Hemoglobin is a red protein responsible for transporting oxygen in the blood of vertebrates.

And in this study found that The most of the population who has low ferritin also has low vitamin D3 and variable hemoglobin, and until now the conclusion of this review is the vitamin D3 has no clear influence on hemoglobin and ferritin while positive effects on transferrin saturation and iron status.

The role of vitamin D:

- The major effects of vitamin D3 are to increase the active absorption of calcium from the proximal intestine and to bring about the mineralization of bone.
- Its effects on the prevention of such diseases like cardiovascular disease and anemia.
- its may play a role as an anticancer agent.

Complication of vitamin D deficiency:

1. Vitamin D deficiency causes muscle weakness affected children have difficulty standing and walking

2. old people will have increasing sway and more frequent falls, thereby increasing their risk of fracture.

schizophrenia and depression.

4.Infections as tuberculosis, urinary tract infection asthma and wheezing diseases.

5. High blood pressure and coronary heart disease, also, adult-onset diabetes mellitus.

How is at high risk?

There is an inverse binding of serum 25OHD

and body mass index greater than 30 kg per m2,

and thus, obesity it is binding-with vitamin D deficiency.

Patients on a wide different of medications,

so it is including anticonvulsants and medications to treat AIDS/HIV are at risk

because these drugs enhance the catabolism of 25OHD and 1,25(OH)2D.

What is Ferritin:

Is an iron storage protein, and is critical to iron homeostasis.
Ferritin makes iron available for critical cellular processes while protecting lipids, DNA and proteins from the potentially toxic effects of iron.
ferritin plays an important role in multitude of other conditions, including inflammatory, neurodegenerative and malignant diseases .

Ferritin serves as a critical component of iron homeostasis. Its primary role is in iron sequestration in which it functions as a ferroxidase, converting Fe(II) to Fe(III)
Iron is toxic in cellular systems because of its capacity to generate reactive species which can directly damage DNA and proteins. Ferritin captures and buffers the intracellular iron pool and thus is a key component in organism survival

The relation between vitamin D, hemoglobin and Ferritin

The first point is
That people who suffers from vitamin D deficiency are more than people who have enough vitamin D, and the reason is insufficient exposure to the sun.
Dark-skinned people have natural protection from the sun's rays.And to get enough vitamin D, you must be exposed to the sun for a longer period.
patients are often unable to absorb the fat-soluble vitamin D because of body fat .
Patients who take medications such as AIDS, HIV, are risk of vitamin D deficiency.

table 1: Vitamin D3 levels in Libyan subjects

Parameters		Mean	Number	Range
Concentration	Deficient	11.31	45	03.90 - 19.2
	Insufficient	24.93	10	02.00 - 29.3
	Sufficient	37.33	06	33.18 - 46.4
Gender	Male	14.75	17	07.0 - 29.3
	Female	21.15	44	11.0 - 46.4
Age	Child	12.46	06	08.0 - 27.8
	Adolescence	13.15	16	06.0 - 22.7
	Adult	17.22	39	03.9 - 46.4

mean value of hemoglobin in low group of is less within the WHO normal range and the mean value gender, male has high mean value of 55.0% and female group has a low mean of 45.0% which is in low mean value of 13.66 with 15.08 fo eulav naem tsehgih eht sah puorg ecnecseloda ,47.88%with 32.0% and the children group have mean value of concentration parameter has the low mean value of value of 72.371 and no high concentration values.

Table 2: Hemoglobin levels in Libyan subjects

Parameters		Mean	Frequency	Range
Concentration	Low	11.075	04	09.2 - 12.0
	Medium	13.46	13	12.3 - 15.6
	High	16.50	04	16.0 - 16.7
Gender	Male	14.85	11	12.0 - 16.0
	Female	12.90	10	09.2 - 13.9
Age	Children	11.64	05	09.2 - 12.7
	Adolescence	15.083	06	12.4 - 16.7
	Adults	13.66	10	11.5 - 16.7

low population number who has less normal range of hemoglobin than WHO normal range, thus, causes anemia which my contribute to physical (blood loss as trauma), diseases as acute or chronic gastrointestinal hemorrhage: secondary to ulcer, inflammatory bowel disease, tumor or infection. In addition, intraoperative blood loss and excessive phlebotomy, renal disease, erythropoietin deficiency, endocrine disorder (thyroid and pituitary disease) and chemical (toxicity by heavy metal).

Table 3: Total ferritin levels in Libyan subjects

Concentration	Low	8.513	09	02.4 - 10.6
	Medium	72.371	35	12.55 - 173.9
	High	/	/	/
Sex	Male	92.570	13	09.0 - 293
	Female	45|349	31	02.4 - 247
Age	Child	21.424	05	06 - 50
	Adolescence	53.547	11	10.6 - 119
	Adults	68.325	28	02.4 - 293

CONCLUSIONS

this review concludes that vitamin D3 has no clear influence on hemoglobin and ferritin while positive effects on transferrin saturation and iron status were reported. Thus, more studies are needed to determine the actual effect of this relation on hemoglobin levels.

Reference

Salsabil Ansari, Rana Boker, Mariam Alsaid, Roba Sherif and Fathi Sherif (2022) ‘Analysis of association of vitamin D3, hemoglobin and ferritin with special respect to Libyan patients’, *Mediterranean Journal of Pharmacy & Pharmaceutical Sciences*, 2(4), p.1-5.

Thank you for your attention<3""