PREVALENCE OF VITAMIN D DEFICIENCY IN ADULT EGYPTIAN PATIENTS NEWLY DIAGNOSED WITH ACUTE MYELOID LEUKEMIA AND ITS PROGNOSTIC VALUE

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Introduction

Acute myeloid leukemia (AML) is a malignancy characterized by infiltration of the bone marrow, blood, and other tissues by proliferative, abnormally differentiated, clonal hematopoietic malignant cells.

Vitamin D is a steroid hormone, which is mostly synthesized in the skin following ultraviolet B (UVB) sunlight exposure and to a lesser extent from the diet. Vitamin D plays a central role in maintaining serum calcium and skeletal homeostasis as well as multiple other cellular effects including regulation of differentiation, proliferation, apoptosis, metastatic potential, and angiogenesis.

Vitamin D deficiency was defined as a 25(OH) D level of less than 20ng/ml (seriously deficient). A level of 21-30ng/ml was considered to indicate a relative insufficiency and a level of 30ng/ml or more was considered to indicate sufficient vitamin D (adequately supplied).

Observational studies have indicated that inadequate 25(OH) D levels are a risk factor for certain types of cancer. Far less is known about the relationship between vitamin D and the risk of hematologic malignancy.

Aim of the Work

The aim of this study was to evaluate the prevalence of vitamin D deficiency in adult Egyptian patients newly diagnosed with acute myeloid leukemia (AML) and its correlation with disease status and prognostic markers.

Patients and Methods

Patients: The study was conducted on forty Egyptian adult patients newly diagnosed with acute myeloid leukemia admitted to the Hematology Unit, Internal Medicine Department, Alexandria Main University Hospital. Fifteen healthy volunteers were recruited as a control group.

Methods:

1- Complete blood count.
2- Liver function tests.
3- Renal function tests.
4- Serum electrolytes (Na+, K+ and Ca+2).
5- Bone marrow aspiration and/or biopsy with Immunophenotyping.
6- Conventional Cytogenetics.
7- Serum 25(OH)D level.

Results

Table 1: Distribution of patients according to vitamin D level (n=40)

	No.	%
Vitamin D		
Deficient (<20)	29	72.5
Non deficient (≥20)	11	27.5
Min. – Max.	2.0 – 40.70	
Mean ± SD.	17.85 ± 11.05	
Median (IQR)	17.0 (8.40 – 23.90)	

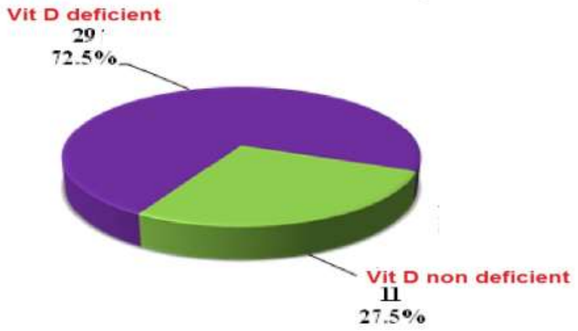

Figure 1: Distribution of the studied cases according to vitamin D in patients group (n = 40)

Table 2: Comparison between the two studied groups according to outcome

	Total Cases (n = 40)		Vitamin D				χ^2	MCp
			≥ 20 (n = 11) Vit D non deficient cases		< 20 (n = 29) Vit D deficient cases			
	No.	%	No.	%	No.	%		
Outcome								
Remission	14	35.0	7	63.6	7	24.1	7.881*	0.019*
Early Relapse	9	22.5	3	27.3	6	20.7		
Refractory	17	42.5	1	9.1	16	55.2		

χ^2: Chi square test MC: Monte Carlo
p: p value for comparing between the two studied groups
*: Statistically significant at p ≤ 0.05

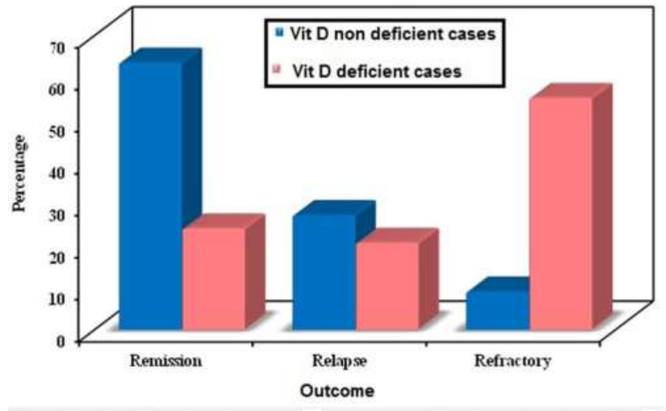

Figure 2: Comparison between the two studied groups according to outcome

Conclusion

1- Deficiency in serum 25(OH) D levels was highly prevalent in adult Egyptian patients newly diagnosed with acute myeloid leukemia and levels of vitamin D were significantly lower in AML patients than the normal adult persons.

2-Vitamin D levels were higher in patients achieving complete remission than refractory patiets, furthermore vitamin D level can be used as a prognostic biomarker for survival in AML patients.