

## Effect of Gender and Age on Vitamin B12 and Folate Levels in the Patients with Megaloblastic Anemia

Feride GÖK<sup>1</sup>, Ülkü ERGENE<sup>2</sup>, Hafize KURT<sup>1</sup>

1-Celal Bayar University Faculty of Medicine, Department of Internal Medicine, Manisa

2-Celal Bayar University Faculty of Medicine, Department of Hematology, Manisa

**Abstract:** Megaloblastic anemia (MA) usually occurs due to vitamin B12 and/or folic acid deficiency. Vitamin B12 and/or folic acid deficiency can be seen at any age and in both genders; however, it is likely to be more prevalent in old population because of inadequate dietary intake, malabsorption and drugs. The present study aimed to investigate effects of age and gender on vitamin B12 and folate concentrations in the patients with MA. 124 patients were included in the study. Patients with cardiovascular disease, diabetes mellitus, chronic renal failure, and chronic liver disease, as well as those who were pregnant or nursing, were excluded from the study. Of the patients, 74(59.7%) were female, 50(40.3%) were male; 40.3% were under the age of 40 years, and 59.7% were at or over the age of 40 years. Distribution of the age and laboratory parameters of the cases among genders is summarized in Table 1. Effect of gender on vitamin B12 and folate concentrations was not statistically significant. Grouping the cases according to an age threshold of 40 years, vitamin B12 and folate concentrations were found lower in the subjects over the age of 40 years; the difference was statistically significant ( $p=0.009$ ;  $p=0.036$ ). Table-2 summarizes the comparison of laboratory parameters according to the age threshold of 40 years. Grouping the cases according to an age threshold of 50 years, statistically significant difference was determined between those under and over the age of 50 years in terms of homocysteine and vitamin B12 levels ( $p=0.009$ ;  $p=0.043$  respectively). Table-3 summarizes the comparison of laboratory parameters according to the age threshold of 50 years. The present study demonstrated that vitamin B12 concentration decreases with age. When the ages 40 and 50 years were considered as the cut-off points, vitamin B12 was found lower in the patients at or over the age of 40 years and in those at or over the age of 50 years as compared to the patients under the age of 40 years and under the age of 50 years respectively ( $p=0.009$ ;  $p=0.043$ ).

**Table 1.** Distribution of age and laboratory parameters among genders

	Female Mean $\pm$ SD	Male Mean $\pm$ SD	P
Age	41.34 $\pm$ 15.18	45.58 $\pm$ 13.76	>0.05
Folate	5.78 $\pm$ 3.00	5.66 $\pm$ 2.55	>0.05
Vitamin B12	96.14 $\pm$ 26.06	90.36 $\pm$ 29.41	>0.05
Reticulocyte	0.95 $\pm$ 0.93	1.26 $\pm$ 1.18	>0.05
LDH	155.09 $\pm$ 26.02	265.48 $\pm$ 55.31	>0.05
Indirect bilirubin	0.52 $\pm$ 0.29	0.79 $\pm$ 0.65	>0.05

**Table 2. Laboratory parameters according to the age threshold of 40 years**

	<40 years Mean $\pm$ SD	$\geq$ 40 years Mean $\pm$ SD	P
Hemoglobin	12.89 $\pm$ 2.48	12.44 $\pm$ 2.68	>0.05
MCV	83.81 $\pm$ 10.65	85.68 $\pm$ 12.58	>0.05
Homocysteine	16.16 $\pm$ 9.49	19.81 $\pm$ 11.95	>0.05
Folate	5.09 $\pm$ 2.34	6.17 $\pm$ 3.04	0.036
Vitamin B12	101.58 $\pm$ 26.23	88.52 $\pm$ 27.24	0.009
Reticulocyte	1.01 $\pm$ 0.1	1.10 $\pm$ 0.8	>0.05
LDH	154.54 $\pm$ 68.30	230.04 $\pm$ 45.34	>0.05
Indirect bilirubin	0.60 $\pm$ 0.39	0.65 $\pm$ 0.54	>0.05

**Table 3. Laboratory parameters according to the age threshold of 50 years**

	<50 years Mean $\pm$ SD	$\geq$ 50 years Mean $\pm$ SD	P
Hemoglobin	12.78 $\pm$ 2.50	12.32 $\pm$ 2.78	>0.05
MCV	83.66 $\pm$ 10.66	87.31 $\pm$ 13.59	>0.05
Homocysteine	16.44 $\pm$ 10.27	21.91 $\pm$ 11.90	0.009
Folate	5.49 $\pm$ 2.74	6.19 $\pm$ 2.94	>0.05
Vitamin B12	97.43 $\pm$ 25.33	86.98 $\pm$ 30.29	0.043
Reticulocyte	1.19 $\pm$ 1.02	0.85 $\pm$ 0.51	>0.05
LDH	155.86 $\pm$ 56.99	282.00 $\pm$ 59.15	>0.05
Indirect bilirubin	0.60 $\pm$ 0.35	0.68 $\pm$ 0.67	>0.05