THE ASSOCIATION BETWEEN VITAMIN D DEFICINECY AND URINARY TRACT INFECTIONS (UTI) IN POSTMENOPAUSAL WOMEN

VESNA COSIC[1], BLAZENKA MISKIC[2], KARLA MISKIC[3]

[1]Medical Faculty University of J. J. Strossmayer Osijek, Polyclinic Cosic, Slavonski Brod, Croatia, [2]Medical Faculty University of J. J. Strossmayer Osijek and Department of Endocrinology, Internal Medicine, General Hospital Slavonski Brod, Croatia, [3]Dental Medicine Rijeka, University of Rijeka, Croatia

Introduction: It is known that urinary tract inefctions are common at perimenopausal and postmenopausal women. Incidence increase under of 50th. Estrogen deficiency is one of the main reasons. Recent investigations recognised vitamin D insuficiency or deficiency as one of the most plausible factors. Decrease of autoimmunity which can appearin at this age can became a suitable background for urinary infection.

E. coli is the commonest provocative factor. The studies suggested its presence in more than 75% of all infections.

Although most infections are sypmtom free they must be treated on its own way. As it is considered that immunity can be slightly decreased in this age just like the vitamin D can be one of the most powerful factors in imunomodulation, we wanted to investigate if there is any association between low level of vitamin D and urinary tract infections.

Material and methods: We have measured white blood cell count (WBC), serum C- reactive protein (CRP) creatinin, level calcium (Ca), phosphorus (P), alkaline phospahatase (AF), parathormone (PTH) serum 25(OH) D3 levels and native urin speicements – (we used urin stics Urocomb and observed nitrate and protein); in 124 postmenopausal women on regular gynecological checking. 65 women had UTI and they were symptom free. Fifty-eight had normal urin.

Blood samples were taken at admission. Creatinin was determined colorimetrically in plasma, total cholesterol, HDL cholesterol, LDL cholesterol; triglycerides, glucose, total calcium in the AU 680 automated analyzer (Beckman Coulter, Fullerton, USA) and associated with the original reagent of the same manufacturer. Vitamin D in the plasma was determined by the method of electrochemiluminescence Elecys 2010, Cobas e 411 (Roche Diagnostics, Mannheim, Germany) and with the corresponding reagents.

The serum concentrations of vitamin D 25 hidroxy according Dietary Reference Intakes for Vitamin D of the Institute of Medicine, Food and Nutricion Board classified into normal ≥ 50 nmol/L (≥ 20 ng/mL), insufficient 30-50 nmol/L (12 -20 ng/ml) and the runaway deficit group serum concentration of ≤ 30nmol/L (≤12 ng/ml)

Statistical analysis

Numerical variables with normal distribution are shown by the average value and standard deviation, and the differences between groups were tested by Student's t-test. Differences numerical variables with normal distribution between more than two groups were analyzed by ANOVA. Correlations between continuous numerical variables with normal distribution were tested by Pearson correlation test and variables with abnormal distribution were tested Spearmann correlation test. Level of significance level was set at P <0.001. For the statistical analysis the statistical package SPSS for Windows 11.0.3. was used. (SPSS Inc., Chicago, IL, USA).

Results:

Table1. Women's characteristics

	the average value ± SD
Age :	53,4(± 2,7)
Postmenopausal period (years):	3,5 (± 1,2)
Body mass index (BMI)	33,5 (± 4,9)

Table3. Concentrations of vit D in patients with UTI and without

Women	Vit D3 ng/ml
UT I	11,7 (±3,1)*
no UTI	26,5 (±4,2)

*Statistical significance p < 0,001

Table 4. BMI and vitamin D

Women	Vit D3 ng/ml
BMI >30	11,9 (±3,7)
BMI < 29,9	14,7 (±4,8)

Table 2. Laboratory findings

Biochemical parameters,	the average value ± SD
Creatinin [umol/l]	89.01±8.65
WBC [x10^9/L]	6,67±1,2
CRP [mg/L]	3,1±1,4
Alkaline fosphatase [U/L]	50,8±1.34
Calcium [mmol/l]	2.29±0.15
Phosphate [mmol/l]	1.10±0.31
PTH [pg/ml]	36.28±12.46
25(OH)D_3, [nmol/l]	32.19±12.54
Urine- nitrits	65
proteins	12

Conclusions:

We found statisticaly significant diferences of serum levels of vitamin D in women with simptoms free UTI in comprison with women without UTI.

In both studied groups we found lower levels of vitamin D3 while women with present urinary infections without symptoms of UTI (free symptoms) had a statistically significant low serum levels of vitamin D3. Infection indicated positive for nitrite (N 65) and weakly positive urine protein. (N12).

All observed women were obese with average BMI of 35.5 kg/m^2. and had a low level of vitamin D3 in serum. Similar results were obtained in earlier studies- confirmed negative correlation of BMI with serum concentration of vitamin D3.

Although it is known that in women of greater body weight, for a number of reasons, there is a greater possibility of Urine infections, by doing a multivariate analysis we have not confirmed the correlation between BMI and the incidence of UTI.

This low level of vitamin D 3 measured in our patients suggests that vitamin D insufficiency may be one of the important risk factors for the presence of UTI in postmenopausal women.