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Internal Evaluation of Health Conditions of Super-Elderly People Followed Up and Treated in Internal Medicine Clinics

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ABSTRACT

Objectives: A rise in the geriatric population has resulted from the extension of life expectancy in tandem with development. In this population, the super-elderly plays a significant role. In this study, it was aimed to internally evaluate the health status of super-elderly people who were followed up and treated at the Department of Internal Medicine of Recep Tayyip Erdoğan University.

Methods: The study included 393 patients, 246 women and 147 men, all of whom were over the age of 80. The patient files were scanned retrospectively. The patients' demographics, gender, chronic internal diseases, blood count, biochemical parameters, thyroid function tests, B12, and vitamin D levels were all documented. An appropriate statistical programme was used to analyse the collected data.

Results: In terms of chronic disease and drug use, there was no significant difference between the genders in the evaluation of the patients. There were no differences in blood hemogram values between men and women. Women had higher total cholesterol, low-density lipoprotein cholesterol and high-density lipoprotein cholesterol levels than men. Vitamin D levels were found to be 13.3 ± 9.83 ng/dl in males, 20.3 ± 24.1 g/dl in females and an average of 15.5 ± 16.0 ng/dl in all patients. Vitamin D levels were found to be low in both men and women.

Conclusion: The majority of patients over the age of 80 have vitamin D deficiency, according to these findings. Vitamin D deficiency, which has been linked to increased fragility, should be monitored in this patient group and supplemented if necessary.

Keywords: Chronic disease, Geriatrics, Super-Elderly

Life expectancy at birth has increased all over the world, including in Turkey, as a result of numerous important developments such as advances in disease treatment, successful combat against infectious diseases, and improved living conditions. As a result, the geriatric population has grown. The rise in the geriatric population has resulted in a rise in chronic diseases among this group. Chronic renal failure, hypertension, diabetes, and heart failure are the most common of these diseases.[1] Women make up the majority of the elderly population. This is due to the fact that women live longer than men.[4] The decrease in fertility, followed by the decrease in deaths, is the primary cause of the increase in the proportion of the elderly population.[5] Almost all organs and systems change as people age. The cardiovascular, gastrointestinal, renal, hormonal, immune, respiratory, and musculoskeletal systems all undergo changes. Many chronic diseases will emerge as a result of these changes.

In many countries, people who are 65 years old or older are considered elderly. According to many

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sources, people between the ages of 65 and 74 are considered pre-senile, while those over 75 are considered elderly.[2] As a general rule, anyone who is 80 years old or older is considered super-elderly.[3]

There are few studies on super-elderly people in the literature. The goal of this study was to look into chronic diseases that affect the elderly, the drugs that are used to treat them, and the changes that may occur in blood hemograms, biochemistry parameters, thyroid function tests, vitamin D, vitamin B12 levels and the differences between genders.

METHODS

Outpatients and inpatients aged 80 and up who applied to the General Internal Medicine Clinic of Recep Tayyip Erdogan University's Department of Internal Medicine between 2013 and 2018 were evaluated retrospectively in this study.

The study included a total of 393 patients, 246 women and 147 men. All patients' demographics (age, gender, chronic diseases) and medications, as well as hemograms, blood biochemistry values, vitamin D levels (if checked), and vitamin B12 levels, were recorded. The patients were categorised into two groups based on their gender.

The Recep Tayyip Erdoğan University Non-Interventional Clinical Research Ethics Committee gave their approval for this study, which was numbered 2018/103 and dated 01/06/2018.

Statistical Analysis

The SPSS 25.5 statistical programme was used to conduct the statistical analyses in this study. In the evaluation of the data, the Chi-square test was used to compare descriptive statistical methods (mean, standard deviation) and qualitative data. A statistically significant value of $p < 0.05$ was used.

RESULTS

The study looked at a total of 393 outpatients and inpatients aged 80 and up who were treated and followed up in our hospital's internal medicine clinic between 2013 and 2018. There were 147 (37.4%) males and 246 (62.5%) females among these patients. Among the total number of patients, 134 (34%) had diabetes, 302 (76.8%) had hypertension, 230 (58.5%) had chronic kidney disease, and 248 (63.1%) had congestive heart failure. (See Table 1)

In terms of the drugs used by the patients, it was discovered that 95 (70.8%) of diabetic patients used at least one oral antidiabetic drug and 83 (61.9%) of diabetic patients used at least one insulin. 48 (12.2%) patients took levothyroxine, 259 (65.9%) took an anticoagulant or at least one antithrombotic drug, and 332 (84.5%) took antihypertensive drugs (ACE inhibitor, ARB, beta blocker, calcium channel blocker, alpha blocker, diuretic) (Table 2).

Levothyroxine was found to be used by 7.5% of men and 15% of women among the patients in the study. Levothyroxine use was found to be statistically significantly higher in women than in men ($p = 0.027$) (Table 2).

Men's mean total cholesterol levels were found to be 180.43 ± 51.2 mg/dl, while women's mean total

Table 1. Evaluation of Chronic Disease Presence in Patients by Gender

		GENDER		Total	*P*
		MEN	WOMEN		
		n (%)	n (%)	n (%)	
Diabetes					
	No	100 (68.0)	159(64.6)	259(65.9)	0.492
	Yes	47(32.0)	87(35.4)	134(34.1)	
Hypertension					
	No	36(24.5)	55(22.4)	91(23.2)	0.628
	Yes	111(75.5)	191(77.6)	302(76.8)	
CKD					
	No	59(40.1)	104(42.3)	163(41.5)	0.677
	Yes	88(59.9)	142(57.7)	230(58.5)	
CHF					
	No	60(40.8)	85(34.6)	145(36.9)	0.213
	Yes	87(59.2)	161(65.4)	248(63.1)	

CKD: Chronic kidney disease, CHF: Congestive heart failure

Table 2. Evaluation of Drug Use in Patients by Gender

		GENDER		Total	*p*
		MEN	WOMEN		
		n (%)	n (%)	n (%)	
Oral antidiabetic drug	Not Using	112(76.2)	186(75.6)	298(75.8)	0.896
	Using	35(23.8)	60(24.4)	95(24.2)	
Insulin	Not Using	123(83.7)	187(76.0)	310(78.9)	0.072
	Using	24(16.3)	59(24.0)	83(21.1)	
Antihypertensive	Not Using Any	21(14.3)	40(16.3)	61(15.5)	0.601
	Using at Least One	126(85.7)	206(83.7)	332(84.5)	
Anticoagulant Antithrombotic	Not Using Any	57(38.8)	77(31.3)	134(34.1)	0.13
	Using at Least One	90(61.2)	169(68.7)	259(65.9)	
Levothyroxine	Not Using	136(92.5)	209(85.0)	345(87.8)	0.027
	Using	11(7.5)	37(15.0)	48(12.2)	

cholesterol levels were found to be 204.2 ± 54.8 mg/dl. Women have higher mean total cholesterol levels than men, and there is a statistical difference ($p = 0$). The mean low-density lipoprotein (LDL) cholesterol levels in all patients were 130.62 ± 43.5 mg/dl, while high-density lipoprotein (HDL) cholesterol levels were 42.90 ± 14.7 mg/dl. Mean LDL levels were found to be 122.1 ± 38.8 mg/dl in men and 135.6 ± 45.5 mg/dl in women. Men's mean HDL levels were found to be 40.4 ± 12.1 mg/dl, while women's levels were 44.3 ± 15.8 mg/dl.Women had higher LDL and HDL levels than men, and the differences were statistically significant ($p = 0.011$ and $p = 0.027$, respectively).

In our study, vitamin D deficiency was defined as a level of less than 20 ng/ml. The mean vitamin D levels in the patients were 15.5 ± 16.0 ng/ml, which was lower than the recommended level. Vitamin D levels in men were found to be 20.3 ± 24.1 ng/ml, while in women they were 13.3 ± 9.83 ng/ml, which is below the optimal value. Men had a higher level of vitamin D than women, and there was a statistical difference ($p = 0.011$). 81.8% of women, 66.6% of men, and 77% of all patients had vitamin D deficiency.

DISCUSSION

There is a scarcity of information on the impact of ageing on HDL composition and function. Early research has discovered that HDL in elderly people has a lower ability to increase cholesterol efflux and inhibit LDL oxidation.6 Total cholesterol and LDL cholesterol levels have been reported to decrease with age in studies conducted in the literature with participants aged 65 and up. Although HDL cholesterol levels do not change with age in cross-sectional studies, it has been reported that it decreases with age in both men and women in most prospective studies.[7,8] When 369 patients aged 70 and up were evaluated as part of the TEKHARF study in our country, metabolic syndrome was found in 59.3% (63.5% of women, 42% of men), with women having a higher rate than men.[9] In our study, dyslipidaemia was found in 51% of men, 57.3% of women, and 54.9% of all patients. The levels of HDL, LDL, and total cholesterol in women were found to be higher than in men. This situation was discovered to be consistent with previous research.

Vitamin D deficiency is common among the elderly and nursing home residents. Reduced ultraviolet light exposure, disorders in the skin's vitamin D synthesis capacity, inadequate dietary vitamin D intake, renal dysfunction, and malabsorption all contribute to an increase in vitamin D deficiency in the elderly.[10] Vitamin D deficiency was found in 47% of women and 36% of men in the multicentre SENECA study, which looked at people aged 71 to 76 in European countries. The prevalence of vitamin D deficiency in people over the age of 50 was found to be 32% in a study of 13432 people in the United States.[11] In a study conducted by Yıldız *et al*. with 213 patients aged 65 and over, the prevalence of vitamin D deficiency was found to be 49.8% (55.2% for females and 37.9% for males) in the Turkish population. Women were found to have significantly higher levels of vitamin D deficiency than

Table 3. Comparison of Hemogram and Biochemistry Values by Gender

	MEN		WOMEN		TOTAL		*p*
	n	Median ± std	n	Median ± std	n	Median ± std	
WBC	147	12.4 ± 8.72	246	9.1 ± 4.76	393	10.3 ± 20.9	0.126
HB	147	10.8 ± 2.57	245	10.58 ± 2.29	392	10.6 ± 2.40	0.257
HTC	147	33.8 ± 6.88	246	33.2 ± 7.90	393	33.5 ± 7.53	0.433
MCV	147	87.4 ± 11.1	246	86.9 ± 8.36	393	87.1 ± 9.49	0.662
Glucose	147	125.9 ± 53.9	245	131.4 ± 64.8	392	129.3 ± 60.9	0.385
Urea	147	82.2 ± 56.9	245	72.7 ± 50.2	392	76.2 ± 53.0	0.086
Creatine	147	1.7 ± 1.13	245	1.6 ± 3.83	392	1.6 ± 3.11	0.793
eGFR	147	50.08 ± 25.4	245	50.6 ± 24.5	392	50.4 ± 24.8	0.836
Sodium	146	138.6 ± 6.49	245	137.7 ± 7.42	391	138.0 ± 97.09	0.252
Potassium	146	4.4 ± 0.78	245	4.2 ± 0.76	391	4.28 ± 0.74	0.088
Calcium	145	8.56 ± 0.90	245	8.9 ± 5.15	390	8.8 ± 4.12	0.320
ALT	143	29.18 ± 23.5	244	27.7 ± 26.3	387	28.2 ± 7.25	0.876
AST	143	39.30 ± 29.1	243	35.9 ± 70.2	386	37.1 ± 6.20	0.741
Iron	100	60.5 ± 43.3	162	55.0 ± 40.7	262	57.1 ± 41.8	0.301
TIBC	99	214.3 ± 87.0	160	225.5 ± 90.9	259	221.2 ± 89.5	0.327
Ferritin	96	188.93 ± 58.9	156	145.51 ± 63.8	252	162.1 ± 89.5	0.095
Total protein	142	6.4 ± 0.9	242	6.3 ± 0.8	384	6.37 ± 0.87	0.438
Albumin	142	3.60 ± 4.38	242	3.35 ± 1.21	384	3.4 ± 2.83	0.391
Total cholesterol	123	180.43 ± 51.2	203	204.2 ± 54.8	326	195.2 ± 54.6	0.000
Triglyceride	122	122.6 ± 105.4	202	138.6 ± 77.5	324	132.6 ± 89.2	0.119
LDL	107	122.1 ± 38.8	180	135.6 ± 45.5	287	130.6 ± 43.5	0.011
HDL	108	40.4 ± 12.1	181	44.3 ± 15.8	289	42.9 ± 14.7	0.027
TSH	121	1.09 ± 1.10	204	1.26 ± 1.22	325	1.19±1.81	0.209
Vitamin B12	100	436.8 ± 309.3	170	465.9 ± 456.9	270	455.1 ± 408.1	0.572
Vitamin D	51	20.3 ± 24.1	110	13.3 ± 9.83	161	15.5 ± 16.0	0.011

WBC: White blood cell count HB: Hemoglobin, HTC: Hematocrit, MCV: Mean corpuscular volume, eGFR: Estimated glomerular filtration rate, ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, TIBC: Transferrin and iron-binding capacity, LDL: Low-density lipoprotein cholesterol, HDL: High-density lipoproteins, TSH: Thyroid-stimulating hormone

men.[12] Total vitamin D deficiency was found to be 33.4% in 225 elderly people living in nursing homes and 195 elderly people living in their own homes in a study by Atlı *et al*.[13] Vitamin D deficiency was found in 77% of the people in our study (81.8% in women and 66.6% in men), with women having more vitamin D deficiency. In our study, 7.8% of male patients, 6.3% of female patients, and 6.8% of all patients had vitamin D levels that were within the recommended range (> 30 ng/dl). In our study, the elderly had a higher prevalence of vitamin D deficiency than the rest of the population. Women had higher levels of vitamin D deficiency, which is consistent with previous research.

CONCLUSION

According to the findings of this study, in which the health status of super-elderly people followed and treated in Internal Medicine clinics were evaluated internally, women have higher total cholesterol, LDL, and HDL levels than men, and there is a significant difference between the two genders. Men have higher mean vitamin D levels than women. Vitamin D deficiency was found to be high in both genders. The goal of this study is to raise awareness about low vitamin D levels, which may be linked to increased fragility, especially in the elderly, and to encourage researchers to

investigate the causes and emphasise the importance of supplementation. These laboratory tests should be controlled in this age group.

Authors' Contribution

Study Conception: EY, TA,; Study Design: EY, TA,; Supervision: TA,; Materials: EY,; Data Collection and/or Processing: EY,; Statistical Analysis and/or Data Interpretation: EY, TA,; Literature Review: EY,; Manuscript Preparation: EY, TA and Critical Review: EY, TA.

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