

The importance of the nutrition and of the body weight index in the recovery of the patients older diagnosed with coxarthrosis

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ABSTRACT

Introduction. Coxarthrosis is a degenerative health condition at the hip level, frequently occurred in adults, especially in 2 to 4 % of the persons who are 50 to 70 years old. Coxarthrosis reduces the joint mobility with consequences upon the walking perimeter and upon steadiness, with severe dysfunctions and negative effects upon the quality of life. It is very important for the patient to avoid putting on weight (possibly losing weight), to avoid using the orthostatism for too long and to avoid walking on rough grounds. Twenty to thirty per cent of the Romanian population are obese. Nutrition is very important for the elderly, that is why they must have an adequate weight by balanced nutrition and by physical activities adapted to the age and to pathology, which might ensure "a healthy and active old age". **Objectives.** The objectives of this paper are to point out the role of the body weight index and of the adjacent parameters as well as the role of the kinetic therapy in the recovery of the patients diagnosed with coxarthrosis. **Methodes.** The current trial was carried in the outpatient department throughout the year 2016 on a number of 74 patients with the age over 50. According to the medical guides, the recovery means were represented by the medication treatment, electrical therapy, decontracting massage, kinetic therapy. **Results.** The results for VAS scale were statistically significant for both groups and for all the evaluation moments. For the pain, rigidity and physical dysfunction parameters (WOMAC scale), the obtained results for both groups and for all the evaluation moments are statistically significant. **Conclusions.** The complex treatment enabled the increase in the joint mobility at the level of the knock knee joints, by providing with steadiness, balance and the recovery of the walk. The body weight index and the nutritional status are elements that might influence the recovery of the patients diagnosed with coxarthrosis; therefore, they are parameters that must be taken into account within the complex recovery programme.

Key words: coxarthrosis, body weight index, the quality of life, recovery.

Introduction

Coxarthrosis is a degenerative health condition at the hip level, frequently occurred in adults, especially in 2 to 4 % of the persons who are 50 to 70 years old [1]. From an etiological point of view, 40 % of the coxarthrosis cases are primitive [2], [3]. Other factors are also involved: heredity, the hormonal status, the nutritional status, the professional activity and the muscular hypotony [4].

Coxarthrosis reduces the joint mobility with consequences upon the walking perimeter and upon steadiness, with severe dysfunctions and negative effects upon the quality of life [2], [5], [6]. The evolution of this disease is very slow and progressive [5],

with moments of worsening and remission; this is why it is important to use a complex recovering treatment according to the pathology of every single patient [7].

The objectives of the recovery treatment in coxarthrosis are: to reduce the pain and the anti-inflammatory process, to recover the joint mobility at the knock knees, to recover the balance and the possibility to walk, to ensure steadiness of the hip [2], to prevent any disabilities from occurring and to increase the quality of life [4], [8], [9], [10].

It is very important for the patient to avoid putting on weight (possibly losing weight), to avoid using the orthostatism for too long and to avoid walking on rough grounds. According to World Health Organisation,

the aging is a physiological process and it consists of progressive irreversible modifications of the living substance [11]. At the same time, there is also a pathology characteristic to this age group: the coronarian disease, brain vascular diseases, atherosclerosis, deafness, osteoporosis, spondilosis and other degenerative diseases at the joint level. In relation to this age group, it is important to mention the issues related to disabilities, the social addiction with demographic, economic and social consequences and the medical care. Before 2010, the number of less than five-year-old children was higher than the number of the persons who were over 65 years old; however, this report is expected to be reversed in the following 10 years due to the increase in life expectancy and by the aging of the population. The number of the elderly is expected to rise from 524 million in 2010 to approximately 1.5 billion in 2050 [12].

The elderly go through physiological modifications that affect the biochemical indicators, the eating habits and the nutritional needs. Thus, there may be a lack of balance between the intake and the energy consumption, by exceeding the nutritional needs, an eating abuse that may lead to overweight and obesity. Twenty to thirty per cent of the Romanian population are obese [13]. The energy need for the elderly decreases by approximately 7 kcalories a year for women and 10 kcalories a year for men [14].

Nutrition is very important for the elderly, that is why they must have an adequate weight by balanced nutrition and by physical activities adapted to the age and to pathology, which might ensure "a healthy and active old age". Therefore, it is recommended that the kinetic therapy sessions should be held at home, too.

Obesity is a medical issue but also a social one because the medical costs represent approximately 1 to 3 % of the overall expenses in the health system. The prevalence of obesity is rising: over 18 % of the the world population was diagnosed with obesity in 2015.

Obesity represents the increase in the body weight, especially because of the adipose tissue, so that the body weight index (IMC) is higher than 30 kg / m² [11], [12]. It is widely known that the obesity rate got doubled from 1980 to 2015 and it included about 200 million men and 300 million women [16]. Therefore, many countries implemented public policies to prevent the population from becoming obese [17].

The body weight index (IMC) is the most used formula in order to evaluate the weight excess. According to the World Health Organisation, the body weight index is calculated according to the formula weight / height² whereas the normal values are from 18.5 to 24.9 kg/m². The values from 25 to 29.9 kg/m² match the overweight persons whereas the values over 30 kg/m² match the obese population (the first group from 30 to 34.9 kg/m², the second group from 35 to 39.9 kg/m² and the third group over 40 kg/m² [15], [16], [18],[19].

Also, in order to evaluate the nutritional status, it is important to consider the abdomen circumference; the values over 102 cm for men and over 88 cm for women are associated to the risk of cardiovascular diseases [16], [18], [19], [20], [21].

Objectives

The objectives of this paper are to point out the role of the body weight index and of the adjacent parameters as well as the role of the kinetic therapy in the recovery of the patients diagnosed with coxarthrosis.

Material and method

The current trial was carried in the outpatient department throughout the year 2016 on a number of 74 patients. The inclusion criteria were: the age over 50, the x-ray and clinical diagnosis of coxarthrosis, patients who accepted to be included in the study. The exclusion criteria were: the age under 50 and over 80, chronic conditions, psychical conditions and the refusal of the patients to take part in this trial.

According to the medical guides, the recovery means were represented by the medication treatment (AINS, anti-algic and decontracting), electrical therapy (galvanic

power, interferential power and ultrasound), heat therapy (short waves), decontracting massage, kinetic therapy (exercises for the increase in the joint mobility, the improvement of the peri-joint muscular force and the improvement of the balance between agonists and antagonists). The 74 patients were divided into two groups which received a complex pharmacological treatment, electrical therapy and massage. In addition, the second group also made kinetic therapy.

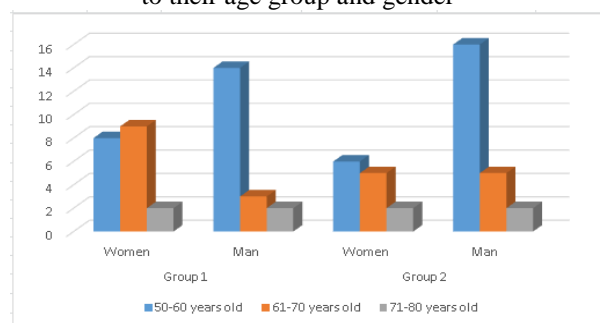
The evaluation of the patients was made at the beginning of the treatment, 20 twenty days after the treatment and at the control two months later. It included the visual analogue scale (VAS) of the pain, the WOMAC scale for the evaluation of the pain, of the rigidity and of the physical dysfunction, the joint balance for the knock knee joint, the abdomen circumference and the perimeter for the thighs.

Results

The first group included 38 patients (50 % men and 50 % women) whereas the second group included 34 patients (36.11 % women and 63.89 men), as it can be seen in Table no. 1 and Graph no. 1.

Group	Gender/Age	50-60 years old	61-70 years old	71-80 years old
Group 1	Women	8	9	2
	Man	14	3	2
Group 2	Women	6	5	2
	Man	16	5	2

Table no. 1: The distribution of the patients according to their age group and gender



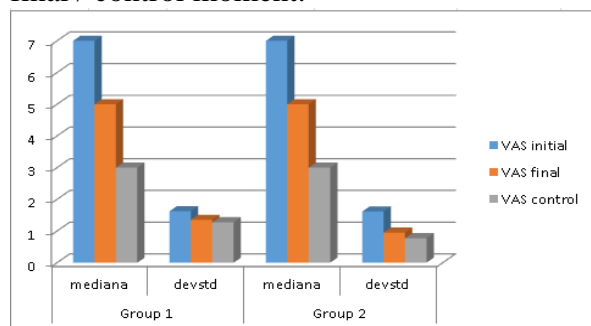
Graph no. 1: The distribution of the patients according to their age group and gender

The pain was evaluated according to the VAS scale whereas the results are shown in Table no. 2 and in Graph no. 2

Group	VAS initial	VAS initial	VAS final	VAS control
Group 1	mediana	7	5	3
	devstd	1,622214211	1,353831295	1,27705431
	test t-std	0,023271056	0,057699234	0,018292417
Group 2	mediana	7	5	3
	devstd	1,614419154	0,950772451	0,7740842
	test t-std	0,023218289	0,044464792	0,015157714

Table no. 2: The evolution of the data obtained for the VAS scale

The results were statistically significant for both groups and for all the evaluation moments except for the first group for the final / control moment.



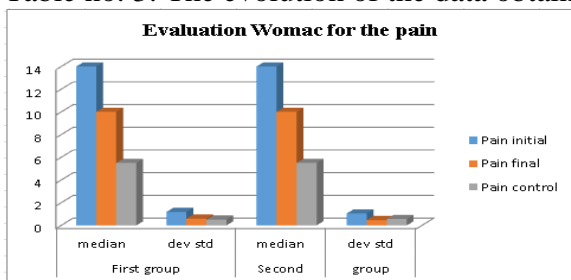
Graph no. 2: The evolution of the data obtained for the VAS scale

The WOMAC scale enabled the evaluation of the pain, of the rigidity and of the physical dysfunction whereas the results are shown in Table no. 3 and Graph no. 3-5.

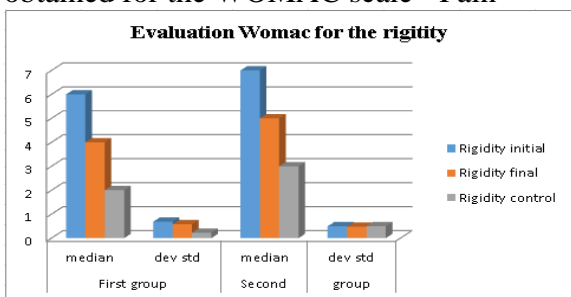
For the pain, rigidity and physical dysfunction parameters, the obtained results for both groups and for all the evaluation moments are statistically significant, except for the first group. For the rigidity parameter, the result is statistically insignificant for the final / control moment. For the same parameter, it is statistically insignificant for the second group for the initial / control moment.

Group	WOMAC/ Statistics	Pain			Rigidity			Physical dysfunctions		
		initial	final	control	initial	final	control	initial	final	control
First group	median	14	10	5,5	6	4	2	46	27	15
	dev std	1,178578	0,589742	0,506712	0,687213	0,577556	0,226294	9,290017	3,100039	1,166447
	test t-std	0,015759	0,042665	0,010577	0,024383	0,062385	0,019738	0,046838	0,044989	0,028384
Second group	median	14	10	5,5	7	5	3	30	22,5	15
	dev std	1,046157	0,467177	0,559904	0,494413	0,478091	0,494413	11,54618	7,228032	2,527782
	test t-std	0,01541	0,04231	0,010293	0,015678	0,036162	0,008722	0,029992	0,044239	0,019058

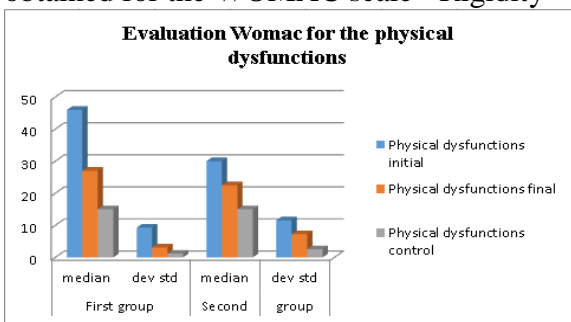
Table no. 3: The evolution of the data obtained for the WOMAC scale - Pain



Graph no. 3: The evolution of the data obtained for the WOMAC scale - Pain



Graph no. 4: The evolution of the data obtained for the WOMAC scale - Rigidity



Graph no. 5: The evolution of the data obtained for the WOMAC scale - Physical dysfunctions. After measuring the perimeters at the thigh level, the obtained values are shown in Table no. 4-5.

Group	perimeter thigh/ statistic elements	right		
		initial	final	control
First group	median	28	30	32
	dev std	18,90988	18,59807293	20,28747
	test t-student	0,004808	0,006293481	0,00053
Second group	median	46	46,5	44,5
	dev std	5,838904	5,692570346	6,176938
	test t-student	2,07E-05	0,000337797	1,75E-07

Table no. 4: The evolution of the data obtained for the thigh perimeter -right

Group	perimeter thigh/ statistic elements	left		
		initial	final	control
First group	median	40	45	30
	dev std	18,62695	18,52709001	17,14352
	test t-student	0,005375	0,060353232	0,005162
Second group	median	48	43,5	42
	dev std	5,099652	5,110427404	4,985588
	test t-student	0,001525	0,000199114	1,29E-05

Table no. 5: The evolution of the data obtained for the thigh perimeter -left

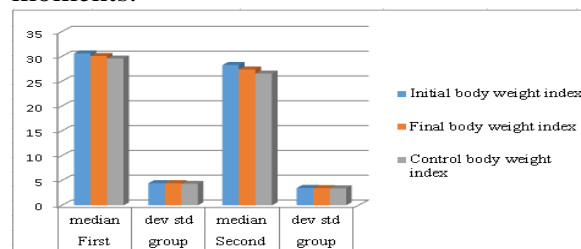
For all the moments of the right thigh in comparison to the left thigh, the results for both groups are statistically significant, except for the first group. For the left thigh, the obtained result is statistically insignificant.

The values for the body weight index for the two groups are shown in Table no. 6 and in Graph no. 6

Group	Statistic elements	Initial body weight index	Final body weight index	Control body weight index
First group	median	30,615	30,09	29,575
	dev std	4,447001	4,445679	4,318996
	test t-student	5,13E-05	5,43E-05	5,82E-08
Second group	median	28,27	27,38	26,525
	dev std	3,493262	3,456532	3,41445
	test t-student	0,000167	0,000166	5,89E-07

Table no. 6: The evolution of the data obtained for the values of the body weight index

The results obtained for the evaluation of the body weight index are statistically significant for both groups and for the evaluation moments.



Graph no. 6: The evolution of the data obtained for the values of the body weight index

As for the nutritional status, the data are shown in Table no. 7.

Group	Evaluation moment/ status	Initial		Final		Control	
		women	man	women	man	women	man
First group	Normal weight	0	1	0	1	0	1
	Overweight	10	7	10	7	10	7
	First degree obesity	6	10	6	10	6	10
	Second degree obesity	0	0	0	0	0	0
Second Group	Third degree obesity	2	2	2	2	2	2
	Normal weight	4	1	8	1	10	5
	Overweight	11	10	9	11	10	8
	First degree obesity	5	3	5	2	2	1
	Second degree obesity	2	0	0	0	0	0
	Third degree obesity	0	0	0	0	0	0

Table no. 7: The evolution of the data obtained for the nutritional status

The patients' evaluated nutritional status shows that the persons with the third degree obesity who have a decreased value of the body weight index need to follow a long term kinetic therapy programme whereas the daily menu should be correlated to the daily activity and to the rate of the basal metabolism. For the women in the second group, it is found that the body weight index is gradually reduced, which is obvious in the low number of the persons with the second degree obesity as well as in the corresponding increase in the number of the overweight persons and of the normal weight persons, in comparison to the women in the first group whose reduction is limited. It is found in the second group that the number of the male patients with the first degree obesity is low. After making the joint balance for the flexion of the thigh on both sides, the results are shown in Table no. 8 .

Group	Thigh flexion/ Statistical elements	right			left		
		initial	final	control	initial	final	control
First group	median	60	67,5	80	58	66	70
	dev std	28,872	30,575	33,394	27,655	26,566	27,17
	test t-std	0,0063	0,0114	0,0015	0,0412	0,01314	0,005
Second group	median	63	77,5	90	65,5	76,5	89,5
	dev std	30,529	29,418	28,519	26,58	26,2825	26,56
	test t-std	0,0155	0,0064	0,0019	0,0074	0,00647	9E-04

Table no. 8: The evolution of the data obtained for the joint mobility thigh – flexion

The results obtained for the first group for the evaluation of the joint mobility measured in the flexion of the thigh show statistically significant values at the right thigh for the final / control moment as well as at the left one for the initial / final moment and for the final / control moment. They are extremely significant for the initial / final moment and for the initial / control moment at the right thigh and for the initial / control moment at the left thigh.

The results obtained for the second group are extremely significant for both thighs except for the initial / final moment at the right thigh where the result is statistically significant.

Conclusions

- The complex treatment enabled the increase in the joint mobility at the level of the knock knee joints, by providing with steadiness, balance and the recovery of the walk;
- The evaluation according to the WOMAC scale enabled the emphasis of the decrease in the pain and rigidity parameter and it improved the joint mobility;
- The complex recovery treatment may reduce the length of the recovery treatment; if it is correlated to the reduction of the body weight index, it may lead to the increase in the quality of these patients' lives;
- The kinetic programme adapted to the pathology of each patient enables a continuous mobility of the joints and it provides with an adequate nutritional status.

The body weight index and the nutritional status are elements that may influence the recovery of the patients diagnosed with coxarthrosis; this is why they are parameters that must be taken into account within the complex recovery programme.

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