

Indicators of functional indices in assessing the effectiveness of treatment of arthrosis of large joints with Chondrolone and Objective T in a polyclinic

O. Yu. Maiko

(GOU VPO "Orenburg State Medical Academy" Roszdrav, g. Orenburg)

SUMMARY

Target. To study changes in dysfunction of the knee joints in patients predominantly stage I - II gonarthrosis using clinical tests and the WOMAC index to assess the effectiveness of treatment with Chondrolone and Objective T in an outpatient setting.

Material and methods. 70 patients, divided into two groups (I - 30 people; II - 40 people), aged 40 to 67 years with stages I and II of osteoarthritis (OA) according to Kellgren-Lawrence. Patients in group I were treated with Chondrolone, in group II - with Goal T. The effectiveness of treatment was assessed by changes in the WOMAC index, functional Lequesne index, pain according to VAS at rest, while walking, according to goniometry, walking time in a straight line at 30 m, on stairs.

Results. A positive effect was obtained for all indicators in both groups. The improvement was significant in terms of clinical indicators: pain syndrome according to VAS, functional tests, Lequesne index, indicators of the WOMAC questionnaire scales. The positive dynamics of clinical symptoms and tests during treatment, target T, increased somewhat more slowly, mainly after 12 weeks. therapy, and in the treatment of chondrolone - after 8 weeks. Treatment with both drugs resulted in improved joint function as measured by the WOMAC index, with chondrolone being more significant.

Conclusion. Chondrolone and Target T can be used to treat OAI - II stages with moderately pronounced dysfunction of the knee joints. The course of treatment with drugs should last at least 3 months. for Goal T and 2 months. - for Hondrolon.

Key words: osteoarthritis, chondroitin sulfate, Chondrolone, Target T, index WOMAC, quality of life, efficiency.

Treatment of patients with osteoarthritis (OA) is carried out, as a rule, on an outpatient basis. About 2/3 of patients who applied to the polyclinic with complaints of pain in the structures of the musculoskeletal system suffer from degenerative diseases, of which OA patients account for more than 70% [11]. OA affects more than 40% of older and elderly people, up to 80% of patients experience limited mobility of varying degrees, and 25% are unable to do the usual daily housework [11, 12]. The "price" that society pays for the increasing number of disabled patients with OA is becoming more and more high [11, 12, 13]. Thus, the payment of sick leave certificates for OA costs an average of 2.51 million rubles. per year, and the total cost is 13.9-25.5 million rubles. per year [9]. Patients with OA, especially those with gonarthrosis and coxarthrosis, have low quality of life (QOL) indicators, which is associated with a chronic, progressive course of the disease. Given the advanced age of patients, progressive joint damage, we can say that the disease has a negative impact on the patient's most important functions - physical, psychological, social functioning. In addition, the QOL study method allows monitoring the condition of patients and assessing the dynamics and effectiveness of treatment [17].

Measuring scales have been developed to assess specific symptoms and limitation of joint function, in particular, the WOMAC index and the Lequesne index for arthrosis of the knee and hip joints [22]. The WOMAC index (Western Ontario and McMaster Universities Arthrose index) for arthrosis is a generally accepted questionnaire designed to assess the symptoms of gonarthrosis (functionality) by the patient himself [21, 22, 27] using 24 questions, divided into three sections. The first subscale contains

5 questions, allows you to assess pain symptoms. The second subscale (2 questions) is the severity of joint stiffness. The third subscale (17 questions) concerns the manifestations of physical activity and limitation of the knee joints. The answers to these questions are given by the patient himself, using a visual analogue scale (VAS).

Since the main pathogenetic link in OA is the loss of proteoglycans, a number of drugs are proposed for its treatment, the mechanism of action of which is aimed at compensating for their loss or stimulating their synthesis [20, 25, 28]. One of these drugs that has appeared in the arsenal of doctors is chondroitin sulfate [1, 2, 20, 25, 28]. Experimental study *in vivo* and *in vitro* has shown its ability to inhibit the activity of enzymes that destroy cartilage [19, 20]. Noteworthy is the use of Russian chondroitin sulfate - the drug Chondrolone, which is more affordable in comparison with other drugs containing chondroitin sulfate. Literature data on its application are few [14].

In recent years, for the treatment of OA, the homeopathic drug Zel T, which is a multicomponent drug, has begun to be used [5, 6, 8, 10, 14]. Along with plant components, Objective T contains cartilage components. Experimental study *in vitro* demonstrated the ability of the drug to inhibit the destruction of cartilage [7]. Clinical efficacy of Objective T has been studied in numerous foreign studies [5, 6, 8, 10, 14, 26]. Domestic data on the study of the effectiveness of long-term use of the drug Target T in patients with OA of the knee and hip joints is clearly insufficient [10, 14]. Also, the efficacy of Chondrolone and Objective T has not been studied in a comparative aspect with long-term course use in patients with OA (mainly stages I-II) using the indexes for assessing joint function.

Objective of the study: to evaluate the comparative effectiveness of drug treatment Chondrolone and Objective T using clinical tests and the WOMAC index in patients with gonarthrosis and coxarthrosis stage I - III in a polyclinic.

Materials and methods

The study was carried out on the basis of two municipal polyclinics (No. 2 "Moscow City Clinical Hospital named after NI Pirogov" and MMUZ No. 5 in Orenburg). We observed 70 patients with gonarthrosis and coxarthrosis in the acute stage. The diagnosis of OA was established in accordance with the criteria proposed by the Institute of Rheumatology of the Russian Academy of Medical Sciences [3, 4], taking into account the criteria of Altman (1991) [18].

To assess the effectiveness of treatment, along with a clinical examination by a physician, the patient's assessment of the severity of pain at rest and movement was taken into account on a visual analogue scale (VAS) from 0 to 100 mm, the time to walk up the stairs by 10 steps (sec.), The time to walk in a straight line at a distance of 30 m (sec.). The volume of the knee joints was determined using a measuring tape in the middle third of the joint, the range of motion in the knee joints according to goniometry data, joint swelling, which was assessed in points (from 0 to 2 points), pain on palpation along the joint space (from 0 to 2 points), the Lequesne index for gonarthrosis and coxarthrosis, as well as the WOMAC index.

The exclusion criteria were the presence of other rheumatic diseases in the patient, severe diseases of internal organs leading to dysfunction, and an oncological history.

Patients, depending on the received treatment, were divided into 2 groups: I (n = 30 people), II (n = 40 people), comparable in age and sex composition, disease duration, severity of X-ray changes and functional disorders of the joints. According to the schemes accepted in Russian rheumatology, patients of group I were prescribed Hondrolone (Immunohimpreparat firm, Russia) at a dose of 100 mg intramuscularly (IM) every other day for 2 months. In group II, therapy was carried out with the drug Cel T (firm "Heel", Germany), 1 table. 3 times / day The course of treatment was 3 months. As an additional therapy, patients in both groups were prescribed a non-steroidal anti-inflammatory drug (NSAID) Nise

(nimesulide) (Dr. Reddy's Laboratories LTD, India) at a dose of 200 mg / day. within 14 days and a course of physiotherapy (10-14 days) [16]. The control over the effectiveness of treatment was carried out after 2, 4, 8 and 12 weeks. therapy.

Statistical data processing was carried out using the computer program "Statistica 5.5". Student's t-test, Mann-Whitney coefficient and 90% confidence interval were assessed.

results

The clinical characteristics of patients are presented in Table 1, from which it follows that the majority of patients were women (77%) over the age of 40 years. The most numerous was the group of patients from 51 to 60 years old. The duration of the disease ranged from 6 months. up to 15 years, the average duration of exacerbation was 6.5 ± 1.2 weeks. The majority of patients had stage I X-ray OA (50%) [23, 24] with functional joint failure of the II degree in 64%. Coxarthrosis was observed in 24 patients (34%). Gonarthrosis occurred in 46 patients (66%). Clinical signs of synovitis and periartthritis were found in 55 patients (79%). The majority of patients (89%) showed limited range of motion, mostly flexion, in the affected knee joints. The severity of pain during movement ranged from 40 to 100 mm (84.33 ± 2 , 76 mm and 64.8 ± 2.8 mm, respectively in groups I and II). The values of the Lequesne pain / functional index ranged from 5 to 17 points, its mean values for gonarthrosis were 16.2 ± 0.5 and 16.4 ± 0.6 points and for coxarthrosis 16.3 ± 0.4 and $16, 4 \pm 0.3$ points, respectively, in groups I and II.

Before treatment, the groups did not differ in the severity of pain and clinical and radiological manifestations of osteoarthritis (Tables 1 and 2), however, patients in group I had higher baseline pain severity values according to VAS in motion ($p < 0.01$). Starting from the 1st month. treatment, patients in both groups began to notice a decrease in pain and other clinical signs of the disease, but significantly more significant changes in indicators were observed in group I (Table 2).

Thus, in the patients of this group, there was a decrease in pain according to the VAS at rest, movement, functional tests improved (walking in a straight line for 30 m, on stairs, flexion of the knee joint) ($p < 0.01$), while in group II there was only significant reduction of pain at rest. Significant positive dynamics increased after 2 and 3 months. in both groups, but in group I, all clinical indicators improved at a faster rate. So, in the treatment of Chondrolon by 8 weeks. therapy, there was a significant reduction in pain, an improvement in functional tests, the Leken index. This trend continued after 12 weeks. In group II, a significant improvement in most clinical tests was also observed after 8 weeks of therapy. A statistically significant improvement in the functional Lequesne index was noted after 12 weeks. treatment Target T ($p < 0.01$).

Table 1

Clinical characteristics of patients with OA

Параметры	I группа Хондролон (n=30)		II группа Цель Т (n=40)		Всего больных (n=70)	
	Абс.	%	Абс.	%	Абс.	%
Пол:						
мужчины	7	23	9	22,5	16	22,8
женщины	23	77	31	77,5	54	77,2
Возраст (г):						
до 40	3	10	3	7,5	6	8,6
40-50	5	16,7	21	52,5	26	37,2
51-60	17	56,6	12	30	29	41,4
более 60	5	16,7	4	10	9	12,8
Средний возраст (г)	53,2±1,2		50,7±0,95		52,0±1,1	
Длительность ОА (г):						
до 1	5	16,7	4	10	9	12,8
1-5	17	56,6	16	40	33	47,2
6-10	5	16,7	10	25	15	21,4
более 10	3	10	10	25	13	18,6
Средняя длительность ОА (г)	5,4±0,9		6,6±1,05		6,0±	
Р-стадия ОА:						
I	14	46,7	21	52,5	35	50
II	12	40	15	37,5	27	38,6
III	4	13,3	4	10	8	11,4
ФНС, степень						
I	7	23,3	10	25	17	24,3
II	20	66,7	25	62,5	45	64,3
III	3	10	5	12,5	8	11,4
Число больных с гонартрозом	20	67	26	65	46	66
Число больных с коксартрозом	10	33	14	35	24	34

Against the background of this therapy, after 12 weeks of therapy, there was a complete disappearance of pain at rest in 84% and 78% of patients, during movement - in 80% and 75%, joint swelling - in 90% and 85% of patients (respectively, in groups I and II). Changed in a number of cases, acute phase laboratory parameters returned to normal. The functionality of the knee and hip joints according to the WOMAC index scales before treatment did not differ significantly in both groups: Group I - 51.0 ± 0.5 mm; Group II - 48.0 ± 0.4. A more significant improvement in joint function occurred during treatment with Chondrolone than Goal T, the effect was faster (after 4 weeks) and intensified after 8 and 12 weeks. (Table 3).

For the symptoms "going up or going down the stairs", "bending to the floor", "hard work at home", the severity of pain was the highest - from 60 to 100 mm (86.4 ± 0.5 mm and 75.6 ± 0, 6 mm, respectively, in groups I and II). Other mobility limitations were felt by patients in situations where good mobility and stable balance are required, namely "when getting in / out of the car" or "getting out of bed" (55 to 70 mm), (56.4 ± 0.4 mm and 52.6 ± 0.5 mm, respectively, by groups). In general, on all 17 points of the WOMAC scale within 3 months. treatment, patients of both groups noted a significant (p < 0.05) improvement in the mobility of the affected joints, and, starting from 8 weeks. therapy, the results of treatment were better with Chondrolone treatment, compared with Goal T (Table 3).

Registration of side effects showed that both drugs were well tolerated. While taking Target T, 1 patient had an allergic rash. During the treatment with Chondrolone, 1 patient also noted an exacerbation of chronic thrombophlebitis. Thus, as a result of long-term (2-3 months) treatment of patients mainly with stages I-II of OA of large joints with various drugs - Chondrolone and Target T parameters

the severity of pain according to the VAS changed quite clearly. There was also a positive dynamics of the indicators of the general functional state of the joints according to goniometry data, walking tests on a straight line and stairs, the Leken index and WOMAC index scales during treatment with both Chondrolone and the drug Target T. However, a more pronounced and rapid dynamics of all indicators was observed during treatment with Chondrolon ...

table 2

Dynamics of clinical indicators after treatment in groups I and II

Показатель	Сроки наблюдения				
	До лечения	2 недели лечения	4 недели лечения	8 недель лечения	12 недель лечения
1. ВАШ, боль в покое (мм)					
I	37,2±2,13	34,2±2,73	26,4±2,24*	15,4±2,46**	11,3±1,36**
II	34,6±2,42	31,4±2,41	26,2±2,43*	18,6±2,52**	16,4±2,42**
2. ВАШ, боль при движении (мм)					
I	84,3±2,76+	74,6±2,46	43,4±2,41**	40,2±2,62**	40,68±3,12**
II	64,8±2,82	59,8±2,21	54,2±3,42	46,4±2,46*	44,32±3,8**
3. Индекс Лекена (баллы)					
I	17,25±0,54	14,4±0,64	10,4±0,64	8,2±0,72**	8,4±0,77**
II	17,31±0,64	16,2±0,52	14,3±0,72	13,6±0,78	10,3±0,62**
Время ходьбы по прямой 30 м (сек.)					
I	80,38±2,23	76,62±1,85	65,60±1,72*	56,54±0,81***	46,37±0,82***
II	73,76±1,97	70,14±1,78	68,62±1,2	60,24±1,72**	56,13±0,62***
Время ходьбы по лестнице (сек.)					
I	24,5±0,93	24,35±0,74	21,35±0,65*	18,24±0,62**	17,62±0,32**
II	25,3±0,82	23,2±0,62	21,3±0,86	20,15±0,86**	19,2±0,72**
Болезненность при движении сустава (баллы)					
I	1,48±0,04	1,24±0,07	0,75±0,04**	0,26±0,08**	0,21±0,04**
II	1,43±0,11	1,34±0,09	1,1±0,08	0,38±0,09*	0,32±0,07**
Объем коленных суставов (см)					
I	44,65±0,80	44,1±0,78	43,1±0,78	42,28±0,52*	42,34±0,56*
II	44,92±0,75	44,3±0,76	43,0±0,64	42,0±0,54*	42,1±0,54*
Сгибание в коленном суставе (в градусах)					
I	162,14±2,64	162,28±2,32	154,34±1,86*	140,1±2,32**	136,24±2,34**
II	156,24±2,64	152,34±2,44	150,24±1,76	148,2±1,67*	140,24±1,64**

Note:

* p < 0.05; ** p < 0.01; *** p < 0.001; Group I - patients who received Chondrolone (n = 30); Group II - patients who received Target T (n = 40).

Discussion

OA - the most common rheumatic disease leads to a deterioration in the patient's physical condition, and a chronic, progressive course and disability cause problems of a psychological nature and limitation of the social activity of a sick person [12, 13, 15, 17]. OA treatment is still an urgent problem in rheumatology. Most often, NSAIDs are used for the treatment of OA, which, along with relieving pain and improving joint mobility, have side effects, primarily from the gastrointestinal tract, especially in older patients [9]. In this regard, therapy with so-called chondroprotective drugs with a "structural-modifying effect on cartilage", in particular chondroitin sulfate, is of particular importance [1, 2, 20, 25, 28]. This type of therapy allows you to reduce the pain syndrome, to return the patient's mobility, i.e. habitual way of life, improve its quality [1, 2]. The study of the effectiveness of various methods of treating OA includes the use of subjective assessments of the patient as criteria, according to which the dynamics of pain sensations and the overall effect on the pathological process are determined [1].

In our study, data were obtained that testify to the effectiveness of the domestic drug Chondrolone in OA of large joints in terms of its effect on pain syndrome and the Leken index. Its good tolerance and the rapid onset of the effect were noted (at the end of the 1st month of the total two-month course of treatment), which is consistent with the data of other works [14].

Our study also showed that, although Goal T does not apply to drugs with a "structural-modifying effect on cartilage", it is quite effective in patients with OA of the knee and hip joints of stages I-II with mild to moderate joint dysfunction. ... Our results are consistent with data from other studies. It was shown that the use of Target T in patients with OA of the knee joints for 1–2 months led to a decrease or complete disappearance of pain syndrome and an improvement in joint function [14, 29]. It should be noted that the effectiveness of the drug has been proven in a number of predominantly foreign studies, including multicenter and placebo-controlled [5, 6, 7, 14, 26]. In our study, it was noted

Table 3

Change in WOMAC index during treatment, points

WOMAC	Сроки наблюдения				
	До лечения	2 недели терапии	4 недели терапии	8 недель терапии	12 недель терапии
Общий индекс					
I группа (n = 30)	5,1	-0,9	-1,3	-1,6	-2,0
II группа (n = 40)	4,8	-0,4	-0,8	-1,2	-1,6
CB-MW		0,38	0,42	0,44	0,46
90% ДИ		0,27	0,35	0,37	0,39
Индекс боли					
I группа	4,8	-0,8	-1,4	-1,2	-2,1
II группа	4,4	-0,2	-0,8	-1,0	-1,3
CB-MW		0,38	0,46	0,48	0,45
90% ДИ		0,31	0,37	0,40	0,38
Индекс rigidity					
I группа	5,3	-1,0	-1,5	-2,0	-2,1
II группа	5,0	-0,5	-0,9	-1,4	-1,5
CB-MW		0,45	0,42	0,45	0,48
90% ДИ		0,32	0,35	0,40	0,41
Индекс функциональности					
I группа	6,5	-1,2	-1,7	-1,7	-2,1
II группа	6,4	-0,7	-1,2	-1,4	-2,0
CB-MW		0,38	0,42	0,43	0,48
90% ДИ		0,34	0,36	0,38	0,42

Note:

CB-MW - Mann - Whitney - value, CI = range of valid values (lower bound)

Group I - Chondrolone (n = 30);

Group II - Objective T (n = 40).

It is known that the WOMAC scale serves as a tool for evaluating the effectiveness of therapy in OA to determine the dynamics of pain symptoms and impaired mobility in the knee joints [21, 27]. Based on previous studies [21, 27] evaluating the WOMAC index in arthrosis, it was found that there is also its relationship with psychosocial aspects of the disease, such as, for example, impaired patient activity in everyday life, a decrease in his professional activity, as well as deterioration of family relations and narrowing the circle of acquaintances, i.e. all aspects of the quality of life of a patient with OA. The use of the WOMAC questionnaire in our study confirmed a significant impairment of various joint functions in patients with gonarthrosis and coxarthrosis. Moreover, therapy with Chondrolone and Target T significantly improved the clinical symptoms of OA and the functional state of patients.

conclusions

1. Preparation of chondroitin sulfate Chondrolone and biological complex preparation Goal T showed a sufficiently high therapeutic efficacy in patients with OA of the knee and hip joints, mainly stages I and II, in outpatient treatment.
2. During the treatment with Chondrolone, a more rapid onset of analgesic effect in comparison with the drug Goal T and more pronounced improvements in functional parameters and the Leeken index after 8 weeks of therapy. In the treatment with the drug Target T, the clinical effect was manifested after 12 weeks of therapy.

Literature

1. Alekseeva L.I., Arkhangelskaya G.S., Davydova A.F. and others. Long-term results the use of structure (based on the materials of a multicenter study). *Ter. archive*, 2003, 9, 82–86.
2. Alekseeva L.I., Benevolenskaya L.I., Nasonov E.L. et al. Structum (chondroitin sulfate) - a new agent for the treatment of osteoarthritis. *Ter. archive*, 1999, 13, 119–122.
3. Benevolenskaya L.I., Alekseeva L.I. Diagnostic criteria for osteoarthritis. *Modern problems of rheumatology // Abstracts. report I Congress of rheumatologists of Russia. Orenburg, 1993, 191-192.*
4. Bunchuk N.V. Diagnostic criteria for osteoarthritis of the knee joints. *Consilium medicum*, 2002, 8, 396-399.
5. Weiser M., Metelmann H. Therapy of gonarthrosis with injection solution Purpose T - results of multicentric research // *Biol. medicine*, 1996, 1, 29–36.
6. Vodik R., Steininger K., Zenner S. Therapy of degenerative joint diseases ointment Goal T - the results of a multicentric examination of 498 patients. // *Biol. Medicine*, 1995, 1, 27–35.
7. Vee L., Freshle G. The effect of incubation with the drug Tsel T on cartilage mechanics - biomechanical research // *Biol. medicine*, 1997, 2, 16–20.
8. Lashinski K. Osteoarthritis of the peripheral joints. *Biol. medicine*, 1996, 1, 47-50.
9. Leela A.M., Karpov O.I. Osteoarthritis: socio-economic importance and pharmaco-economic aspects of pathogenetic therapy // *Russ. honey. zhur.*, 2003, 28, 1558-1562.
10. Maryanovsky A.A. Results of clinical testing of injectable forms complex biological preparations produced by the Heel firm // *Biol. medicine*, 1996, 2, 45–52.
11. Nasonova V.A., Khaltaev N.T. International Decade of Bones and Joints (The Bone and Joint Decade 2000–2010) is a multidisciplinary action. *Ter. archive*, 2001, 5, 5-7.
12. Nasonova V.A., Folomeeva O.M., Amirdzhanova V.N. and others. Diseases of the musculoskeletal systems and connective tissue in Russia: dynamics of statistical indicators for 5 years (1994–1998) // *Scientific and practical. rheumatol.*, 2000, 2, 4-12.
13. Nasonova V.A., Folomeeva O.M. Medical and social problems of chronic

diseases of the joints and spine. Ter. archive, 2000, 5, 5-8.

14. Sizova L.V. Influence of different treatment methods on indicators of quality of life patients with osteoarthritis. Abstract of the thesis. diss. Ph.D., Orenburg, 2004, 24.
15. Folomeeva O.M., Amirdzhanova V.N., Yakusheva E.O. and others. Disability of the population Russia due to rheumatic diseases // Ros. rheumatol., 1999, 3, 70-79.
16. Chichasova N.V., Imametdinova G.R. The drug nimesulide in the treatment of diseases joints // Scientific and practical. rheumatol., 2004, 3, 34-36.
17. Tsapina T.N., Erdes Sh.F., Slizkova K.Sh. The quality of life of patients with osteoarthritis. // Scientific and practical rheumatol., 2004, 2, 20-22.
18. Altman RD Criteria for classification of clinical osteoarthritis. J. Rheumatol. 1991, 18 (27), 10-12.
19. Baici A., Bradamante P. Interaction between human leucocyte elastase and chondroitin sulfate. Chem. Biol. Interact. 1984, 51, 1-11.
20. Bahous I. Prevention et traitement des maladies articularis degeneratives. Swiss. Med., 1991, 3.
21. Bellamy N., Kean WF, Buchanan WW. et al. The blind randomized controlled trial of sodium meclofenamate (Meclomen) and diclofenac sodium (Voltaren): past Validation reapplication - The WOMAC Osteoarthritis Index. J. Rheumatol. 1992, 19, 153-9.
22. Bellamy N., Buchanan WW, Goldsmith CH et al. Validation study of WOMAC. A health status instrument for measuring clinically important patient relevant outcomes to antirheumatic drug therapy in patients with osteoarthritis of the hip or knee. J. Rheumatol., 1988, 15, 1833-1840.
23. Kellgren JH, Lawrence JS Radiological assessment of osteoarthritis. Ann. Rheum. Diss., 1957, 16, 494-501.
24. Lequesne M. Klinische und rontgenologische Verlauf beobachtung bei Huft - ud Kniearthrosen Methoden und Ergebnisse. Z. Rheumatol. 1994, 53, 243-249.
25. Michel B., Stucki G., Frey D. et al. Chondroitin 4 and 6 sulfate in osteoarthritis of the knee: a randomized, controlled trial. Arthr. Rheum., 2005, 52, 3, 779-786.
26. Nahler H., Metelmann H., Sperber H. Behandlung der Gonarthrose mit Zeel comp. Ergebnisse einer randomisierten, kontrollierten klinischen Rufung in Vergleich zu Hyaluronsaure. Orthopad. Praxis 1996, 32, 354-359.
27. Stucki G., Meier D., Stucki S. et al. Evaluation einer deutschen Version des WOMAC (Western Ontario and McMaster Universities Arthroseindex). Z. Rheumatol. 1996, 55, 40-49.
28. Uebelhart D., Malaise M., Marcolongo R. et al. Intermittent treatment of knee osteoarthritis with oral chondroitin-sulfate: one-year, randomized, doubleblind, placebo-controlled, multicentrestudy versus placebo. Osteoarthr. Cartil. 2004, 12, 4, 269-276.
29. Strosser W., Weiser M. Patienten mit Gonarthrose gewinnen ihre Mobilitat zuruck: Homoopathikum im Doppelblind -Vergleich. Biol. Med., 2000, 29 (6), 295-299.

Maiko, O. Yu. Indicators of functional indices in assessing the effectiveness of the treatment of arthrosis of large joints with Chondrolone and Target T in a polyclinic / O.Yu. Maiko // Traditional Medicine. - 2008. - No. 2 (13). - P.9-15.

[To favorites](#)