

BENEFITS OF MEDICAL REHABILITATION IN HIP OSTEOARTHRITIS

MARIANA CEVEI¹, CARMEN CSEPPENTO², RAMONA SUCIU³, DORINA STOICĂNESCU⁴

^{1,2,3}University of Oradea, ⁴“Victor Babeș” University of Medicine and Pharmacy Timișoara

Keywords: hip osteoarthritis, physical-kinetic programme, pain, quality of life

Abstract: Aim: This study aimed at establishing the efficiency of rehabilitation programme on the quality of life in the patients with hip osteoarthritis. Methods: 144 patients hospitalized for hip osteoarthritis were included in the study. All patients followed a rehabilitation programme, repeated after 6 and 12 months. Four evaluations using VAS scale, Lequesne functional index, HAQ index were performed. SPSS statistics was used. Results: Quality of life indicators investigated with HAQ score were most strongly and very significantly correlated with pain. On short-term, the quality of life improved after rehabilitation, but on long term there was a continuous decrease. Conclusions: The correlation of pain with the loss of occupational abilities demonstrates the predictability of these instruments in clinical and functional assessment. Temporary relief of pain demonstrates the need for rehabilitation every 6 months. The kinetic-physical therapy improves the clinical and functional manifestations on short term and slows the evolution of the disease.

Cuvinte cheie: coxartroza, program fizical-kinetic, durere, calitatea vieții

Rezumat: Scop: Acest studiu a avut drept scop stabilirea eficienței programului de recuperare asupra calității vieții la pacienții cu coxartroză. Metode: 144 pacienți spitalizați pentru coxartroză au fost incluși în studiu. Toți pacienții au urmat un program de recuperare, repetat după 6 luni și după 12 luni. S-au efectuat patru evaluări utilizând scala VAS, indicele funcțional Lequesne și indicele HAQ. Pentru prelucrarea datelor statistice s-a folosit programul SPSS. Rezultate: Indicatorii de calitate a vieții investigați cu scorul HAQ au fost cel mai puternic și foarte semnificativ corelați cu durerea. Pe termen scurt, calitatea vieții s-a îmbunătățit după recuperarea medicală, dar pe termen lung a existat o scădere continuă. Concluzii: Corelarea durerii cu pierderea abilităților ocupaționale demonstrează predictibilitatea acestor instrumente în evaluarea clinică și funcțională. Ameliorarea temporară a durerii demonstrează necesitatea efectuării programului de recuperare la fiecare 6 luni. Terapia fizică-kinetică îmbunătățește manifestările clinice și funcționale pe termen scurt și încetinește evoluția bolii.

INTRODUCTION

Osteoarthritis is considered a disease of modern times, a common chronic disease, the second in frequency after cardiovascular diseases, representing a major public health problem.

Pathological picture includes focal destruction of joint cartilage, followed by subchondral bone changes, and the radiological appearance defines the disease severity, including pinching of space, osteophytes, subchondral sclerosis, cysts and abnormalities of the bone contour. Synovium and periarthral tissues are then involved, in evolution the disease is considered a global joint disease.(1) Osteoarthritis of the hip causes different clinical signs from pain that occurs during walking to the hip joint limitation of movement, vicious attitudes, muscle weakness and gait disturbances.(2) Non-pharmacological and pharmacological therapies are recommended in hip osteoarthritis. Complex therapy aims to combat musculoskeletal pain, joint function damage, disability which worsens with age and with the degenerative process involvement.(3)

A recent study estimated that one in four individuals will develop hip osteoarthritis by the age of 85 years.(4)

Considering the new perspectives on hip osteoarthritis, the identification of treatment strategies continues to be the subject of many research programmes, for improving the quality of life of these patients. Rehabilitation programmes, offered as

first line therapies, aim significantly at reducing pain and inflammation, restoring hip stability, improving the range of movement, preventing and combating vicious attitudes, correcting the position of the trunk and pelvis, increasing muscle tone in lumbar spine muscles and lower extremities muscles, educating patients about lifestyle rules that would allow the fullest possible social and professional independence, social-professional reintegration.(5)

PURPOSE

The objective of this prospective study was to establish the efficiency of the rehabilitation programme on the quality of life in the patients with hip osteoarthritis.

METHODS

Between January 2010 and January 2011, we evaluated 144 patients, all Caucasians, with hip osteoarthritis treated in the Emergency Hospital “Avram Iancu”, from Oradea, Romania, who met the inclusion criteria. These were: diagnosis of hip osteoarthritis according to ACR criteria (6) and radiological criteria, age over 18 years, with no previous rehabilitation treatment for hip osteoarthritis, possibility of evaluating the patient at least twice a year - for one year, acceptance to perform a kinetic programme at home and to comply with the rules of self-management and life style changes. Exclusion criteria:

¹Corresponding author: Carmen Cseppento, P-ța 1 Decembrie, Nr. 10, Oradea, România, E-mail: delia_cseppento@yahoo.com, Tel: +40259 415680
Article received on 19.08.2012 and accepted for publication on 25.10.2012
ACTA MEDICA TRANSILVANICA December 2012;2(4):273-276

CLINICAL ASPECTS

existence of a joint arthroplasty, acute flare of associated disease, presence of disorders that contraindicate our rehabilitation centre procedures (cancer, depression, severe dementia, autoimmune diseases, heart failure NYHA class II to IV, severe kidney diseases, asthma that require oxygen continuously), patients who underwent rehabilitation treatment for other diseases, but had associated hip osteoarthritis (e.g. neurological diseases).

Data was collected according to medical ethics principles. All patients gave the written informed consent for being included in the study.

Demographic and clinical data included age, gender, height, weight, BMI, other affected joints. Mitchel and Cruess disease staging was used.(7) Hip radiographies were assessed using Kellgren-Lawrence grading system.(8)

All the patients followed a rehabilitation programme for 12 days, repeated after 6 months and took medication for osteoarthritis and for the associated disorders, as recommended by the specialist doctor. The intensive rehabilitation programme consisted of: electrotherapy, massage, paraffin application, kinetic therapy. Kinetotherapy consisted of individualized programmes, 6 times a week, 30 minutes, with assisted and passive range of motion exercises, movements against manual resistance, continued with exercise programmes at home 4 times a week, 30 minutes, with exercises that increase strength, endurance (weight bearing training) and coordination, reduce pain, active range of motion exercises. Paraffin heat treatment was used daily, 20 minutes for induction of muscular relaxation and antialgic effect. Antialgic electrotherapy (interferential current, TENS), ultrasound and massage aimed to reduce pain and induce muscle relaxation. Patients' education and self-management included lifestyle changes, such as reducing weight, avoiding prolonged orthostatism, reducing shock to the affected joint, avoiding walking on uneven ground, using canes or walkers when appropriate, using broad, low heels shoes, avoiding chairs that are too low, avoiding hip flexion greater than 90°. The rehabilitation programme was performed according to specific application rules, following the indications/contraindications for use of each procedure.

We performed four evaluations: at admission, before the patients started the rehabilitation programme, at discharge, after 6 months and after 1 year, using VAS pain scale, Lequesne functional index and HAQ index. Assessments at 6 months and 1 year were performed before the patients have started the rehabilitation programmes. Pain assessment was performed with VAS scale (length 100 mm, from absence of pain to very severe pain). Lequesne index was used to assess the severity of hip osteoarthritis. The questionnaire has 10 questions, maximum index score is 24.(9) For functional status assessment, we used Health Assessment Questionnaire (HAQ), consisting of 20 items grouped in 8 categories regarding the daily activities. For each of these, the score ranges from 0 (no difficulty) to 3 (unable to do that item).(10)

For the statistical processing of data, we used the SPSS (version 20.0) program. The significance threshold for comparisons was set at 5% ($p < 0.05$). For the analysis of the correlations between the linear parameters, Pearson coefficient has been calculated.

RESULTS

Demographic and clinical data of the patients are presented in table no. 1.

Comprehensive evaluation of patients' evolution requires reliable measurements regarding the functional status together with clinical, biological and radiological data. In our patients, the following parameters were followed: pain,

functional impact, quality of life. All the patients included in the study followed the rehabilitation programme described above. In the studied group, VAS scale values ranged between 35-80 mm. It was noticed that pain ameliorated statistically significantly at discharge, but after 1 year, it remained unchanged from the previous evaluation (table no. 2, figure no. 1).

Table no. 1. Baseline demographic and clinical characteristics of the hip osteoarthritis batch. Values are presented as means, standard deviations and percentages of the total batch

Characteristics	Overall group N=144
Age (years)	62.61±8.48
Range	25-82
<40	6 (4.16%)
41-50	16 (11.11%)
51-60	39 (27.08%)
61-70	49 (34.03%)
>71	34 (23.61%)
Stage: Early	16 (11.11%)
Evolved	114 (79.17%)
End	14 (9.72%)
Etiology: Primary	116 (80.55%)
Secondary	28 (19.44%)

Table no. 2. Statistical indicators of pain variation, assessment at admission, discharge, after 6 months and 12 months respectively, in the patients with hip osteoarthritis

VAS	Mean	Median	Standard deviation	Mean deviation	Dispersion	Coefficient of variation	P value
Admission	47.99	40.00	10.21	8.78	104.31	21.28	
Discharge	21.91	20.00	9.84	8.36	96.85	44.92	0.001 *
6 months	41.04	50.00	14.17	12.29	200.66	34.51	<0.05 †
12 months	41.01	50.00	14.11	12.26	199.2	34.33	>0.05 ‡ <0.001 §

*admission-discharge, †admission-6 months, ‡6 months-12 months, § admission-1 year

Figure no. 1. Pain variation: assessment at admission, discharge, after 6 months and 12 months

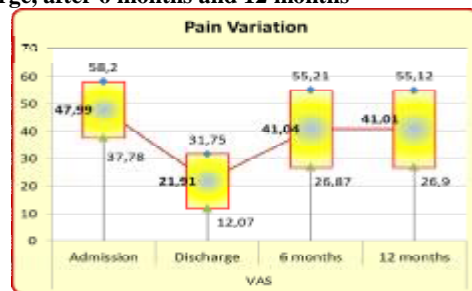
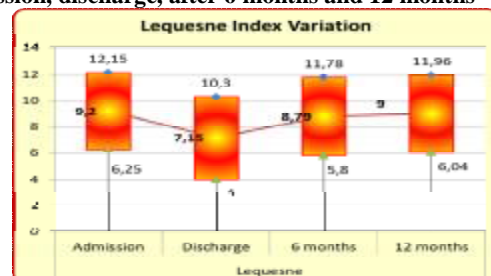


Figure no. 2. Lequesne index variation: assessment at admission, discharge, after 6 months and 12 months



CLINICAL ASPECTS

Table no. 3. Statistical indicators of Lequesne index variation, assessment at admission, discharge, after 6 months and 12 months respectively, in the patients with hip osteoarthritis

Lequesne	Mean	Median	Standard deviation	Mean deviation	Dispersion	Coefficient of variation	P value
Admission	9.20	9.50	2.95	2.22	8.70	32.06	
Discharge	7.15	7.00	3.15	2.31	9.89	43.97	0.02*
6 months	8.79	8.00	2.99	2.54	8.94	34.00	< 0.05†
12 months	9	9.00	2.96	2.22	8.7	32.80	0.2‡ 0.2§

*admission-discharge, †admission-6 months, ‡6 months-12 months, § admission-1 year

Table no. 4. Statistical indicators of HAQ score variation, assessment at admission, discharge, after 6 months and 12 months respectively, in patients with hip osteoarthritis

HAQ	Mean	Median	Standard deviation	Mean deviation	Dispersion	Coefficient of variation	P value
Admission	1.27	1.38	0.69	0.59	0.48	54.16	
Discharge	1.10	1.00	0.69	0.61	0.47	62.43	0.0001*
6 months	1.39	1.75	0.75	0.68	0.56	54.12	0.0001†
1 year	1.45	2.00	0.78	0.70	0.60	53.60	0.0001‡ 0.0001§

*admission-discharge, †admission-6 months, ‡admission-1 year, § admission-1 year

Figure no. 3. HAQ score variation: assessment at admission, discharge, after 6 months and 12 months

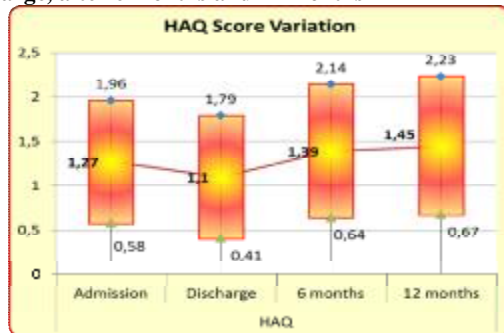
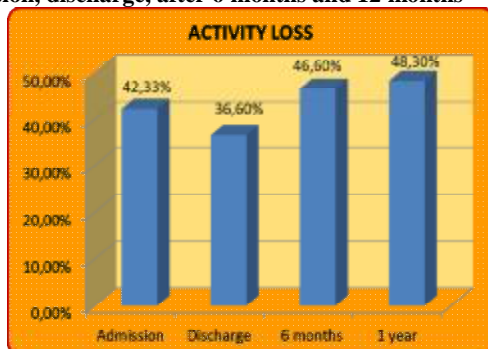


Figure no. 4. Activity loss variation: assessment at admission, discharge, after 6 months and 12 months



On short-term, the quality of life improved after rehabilitation, but on long term there was a deterioration (table no. 4, figure no. 3), HAQ score increased further compared to the second evaluation, which reflects a continuous decrease in the quality of life. The efficiency of the therapy was proved by the improvement of the functional capacity (HAQ score) from 42.33% loss, initially, to 36.6% loss after the treatment. But unfortunately, the assessment at 6 months revealed that the ability to perform activities decreased to 46.6% loss and after 12 months, it decreased to nearly half of the standard value (figure no. 4).

DISCUSSIONS

The present study highlights the importance of monitoring pain and loss of activity - Activities of Daily Living using clinical and functional scores. Clinical improvement of pain, on short-term, was obvious, as well as the functional improvement and, which is very important, the maintenance of occupational skills (residual functional) during one year of treatment.

It is known that disability has a certain impact on individuals, illness perception modifying the relation between disease and disability, health behaviour and outcome.(11)

An important clinical feature was the clinical stage of the disease. We noted that most patients were in the evolved stage of the disease, only 11.11% of patients were in the early stage. Responsible for some of the unsatisfactory results after treatment were the end-stage cases.

By monitoring pain, we noticed the descending trend in pain score after 2 weeks of medical rehabilitation, highly statistically significant, revealing the immediate favourable effect of the complex physical-kinetic treatment. At subsequent evaluations, the mean pain score increased linearly, maintaining at close values after 6 and 12 months.

The assessment of Lequesne index revealed a significant decrease only at the first discharge from hospital, then continued to increase. We did not plead for maintaining the patients in the rehabilitation programme as a unique treatment method, arthroplasty was recommended for those in end-stage, but for now, they refused surgery.

The influence of hip osteoarthritis on the daily activities and the quality of life is obvious, the global functional capacity is impaired for more than 2/5, to reach 1/2 when it progresses, an easily detected aspect when using the HAQ questionnaire.

In our study activity restriction became notable after 1 year of monitoring, but the majority of patients from this study were in moderate or end-stage when were hospitalized, thus our results are relevant for these specific groups of cases. Despite the appropriate treatment, the evolution of the disease cannot be stopped, it is progressive, chronic, disabling.(12) Optimizing management of the affected individuals, establishing the most efficient therapy for each case require knowledge of the course of activity limitations.(13,14) Beneficial effects of rehabilitation did not persist long-term. Moderate and long term improvement of pain and moderate but mid-term improvement of physical function were previously reported.(15) We can not appreciate the differences between the functional outcome in our patients, who underwent rehabilitation programmes, and other cases without these programmes, as we did not have a control group.

CONCLUSIONS

1. Temporary relief of pain demonstrates the need for rehabilitation every 6 months.
2. Physical-kinetic therapy improves clinical and functional manifestations on short term, slows the evolution of the disease, but pain, comorbidities, restrictions of occupational

CLINICAL ASPECTS

activities lead to impairment of life quality and orthopedic surgery.

3. Quality of life assessment in the patients with hip osteoarthritis with HAQ score at different stages of the rehabilitation therapy revealed improvement at each process of rehabilitation.
4. Activity deficit already present in the patients with hip osteoarthritis upon the initiation of the rehabilitation therapy is responsible for the poor outcome of the medical rehabilitation.
5. Placing the occupational activity deficit around 45, reveals that these patients have a marked limitation of global functional capacity, affecting their ability to perform the basic daily activities.
6. The presented data allow us to draw a warning on the usefulness of the early initiation of the drug therapy and medical rehabilitation in all patients with osteoarthritis of the lower limbs.

15. Weigl M, Angst F, Lehmann S, Stucki G. Predictors for response to rehabilitation in patients with hip or knee osteoarthritis: a comparison of logistic regression models with three different definitions of responder. *Osteoarthritis Cartilage*. 2006;14:641-651.

REFERENCES

1. Felson DT. Developments in the clinical understanding of osteoarthritis. *Arthritis Res Ther*. 2009;11(1):203.
2. Lane NE. Clinical practice. Osteoarthritis of the hip. *N Engl J Med*. 2007;357:1413-1421.
3. Seed SM, Dunican KC, Lynch AM. Treatment options for osteoarthritis: considerations for older adults. *Hosp Pract (Minneap)*. 2011;39(1):62-73.
4. Murphy LB, Helmick CG, Schwartz TA, Renner JB, Tudor G, Koch GG et al. One in four people may develop symptomatic hip osteoarthritis in his or her lifetime. *Osteoarthritis Cartilage*. 2010;18(11):1372-1379.
5. Bjordal JM, Lopes-Martins RA, Bogen B, Johnson M. Physical treatments have valuable role in osteoarthritis. *BMJ*. 2006;332(7545):853.
6. Altman R, Alarcón G, Appelrouth D, Bloch D, Borenstein D, Brandt K, et al. The American College of Rheumatology criteria for the classification and reporting of osteoarthritis of the hip. *Arthritis Rheum*. 1991;34:505-514.
7. Mitchel MS, Cruess RL. Classification of degenerative arthritis. *Can Med Assoc J*. 1977;117:763-765.
8. Kellgren JH, Lawrence JS: Radiological assessment of osteo-arthritis. *Ann Rheum Dis*. 1957;16:494-502.
9. Lequesne M. The algofunctional indices for hip and knee osteoarthritis. *J Rheumatol*. 1997;24:779-781.
10. Bruce B, Fries JF. The Stanford Health Assessment Questionnaire: a review of its history, issues, progress, and documentation. *J Rheumatol*. 2003;30:167-178. Medline: 12508408.
11. Bijsterbosch J, Scharloo M, Visser AW, Watt I, Meulenbelt I, Huizinga TW, et al. Illness Perceptions in Patients With Osteoarthritis: Change Over Time and Association With Disability. *Arthritis Rheum*. 2009;61:1054-1061.
12. Ackerman IN, Bennell KL, Osborne RH. Decline in Health-Related Quality of Life reported by more than half of those waiting for joint replacement surgery: a prospective cohort study. *BMC Musculoskelet Disord*. 2011;23:108.
13. Van Dijk GM, Dekker J, Veenhof C, van den Ende CH. Course of functional status and pain in osteoarthritis of the hip or knee: a systematic review of the literature. *Arthritis Rheum*. 2006;55:779-85.
14. Weigl M, Angst F, Stucki G, Lehmann S, Aeschlimann A. Inpatient rehabilitation for hip or knee osteoarthritis: 2 year follow up study. *Ann Rheum Dis*. 2004;63:360-368.