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CONSERVATIVE TREATMENT WITH ACTIVE EXERCISES IN OSTEOARTHRITIS OF THE HIP

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The literature concerning operative treatment of osteoarthritis of the hip is abundant. With regard to the conservative treatment of the same disease, this is not the case. Although many publications mention the different kinds of conservative treatment (e.g. Foss Hauge 1969, Golding 1969, Hollander 1957)), there are few real investigations which refer to the effect of these treatments.

In 1964 Danielsson compared patients with osteoarthritic hips treated by operation and by conservative methods. Seventy-one per cent both of those being treated conservatively and of those being operated were painless or had less severe pain at follow-up after 8-12 years. The types of conservative treatment given to these patients are unknown.

There are many kinds of conservative treatment for osteoarthritis of the hip. Corticosteroids have been widely used mostly as intra-articular injections. However, a good deal of publications during the last years have demonstrated the hazards of this treatment (Bently & Goodfellow 1969, Brånemark et al. 1967, Hagen 1971, Zachariae 1965). Phenylbutazone and indomethazin have a fair effect on pain in many cases, but like the steroids, these drugs may also lead to rapid degeneration of the joint (Arora 1968), and their myelotoxic effect may contraindicate long-term therapy. Lastly, glucosamine administration (Bohne 1969) has been introduced as a causal therapy of osteoarthritis. It is, however, too early to tell whether this is a valuable treatment or not.

Some authors find X-ray treatment useful, whereas others doubt its effect (Goldie et al. 1970). Physiotherapy is said to be a useful or even very useful form of treatment. The mode of action is not wholly

understood. Increased muscular activity may produce a more "normal" blood flow in the vicinity of the joint, and this may favor the regenerative processes. The intended restoration of weak muscles may improve the stability and sometimes improve the hip movements and this may reduce pain and contractures. In addition to active exercises, there are many other forms of physiotherapy, e.g. massage, heat, short-wave diathermy, infrared, radiant heat, etc. They all have their enthusiastic supporters, but they shall not be considered further here.

Clinical experience gives evidence of some cases of osteoarthritis being "self-limiting". At any point the pain may spontaneously reduce or disappear. Usually some stiffness will remain.

The aim of this investigation was to determine the effect of active exercises given to inpatients with osteoarthritis of the hip.

MATERIALS AND METHODS

The records of all patients with osteoarthritis of the hip who had been primarily treated with active exercises for at least 4 weeks during the years 1964–1968 in Martina Hansens Hospital, were reviewed. Altogether 95 patients had been treated in this way. Some in addition got indomethazine, phenylbutazone, acetylsalicylic acid or other analgesics. Nineteen patients had to be excluded because they had other complaints which could make it difficult or impossible to evaluate their answers in a questionnaire, e.g. osteoarthritis of the knee, osteochondritis in the lumbar spine, etc. A questionnaire was sent to 66 patients; 4 did not answer, 2 were dead and one filled out the questionnaire so incompletely that this patient had to be excluded. The remaining 10 patients were personally examined by the author or thoroughly evaluated from follow-up data in the records.

Table 1. Survey of the material

Total number of patients	95
Excluded	19
Dead	2
Answered the questionnaire too badly or not	5
Number of patients included in investigation	69

Forty-eight patients had bilateral and 21 unilateral joint affections. The osteoarthritis was considered to be primary in 57 and secondary in 12 patients.

For the grading of pain, I have used the classification of Judet & Judet (1952) (Table 2). The severity of radiographic changes has been estimated according to Heripert Danielsson (Danielsson et al. 1964). Conventional statistical methods have been applied by the analysis of the present material.

Table 2. Classification of pain (Judet & Judet 1952, Shephard 1954)

1 == severe - loss of sleep
2 == severe when walking - unable to work
3 == moderate - able to do light work
4 == pain after effort, relieved by rest
5 == slight and intermittent - able to do full work
6 == absent

RESULTS

The mean age at follow-up was somewhat lower for women than for men. The women also had had their symptoms a little longer (Table 3). However, none of these differences are statistically significant. Table 4 gives the situation at discharge from the hospital. Most of the patients were content. Eighty-one per cent felt improved from pain and/or stiffness, and of these six patients were free from pain. None were free from all symptoms, none got worse. Men had an insignificantly better result than women ($P > 0.05$).

At follow-up (Table 5) only 20 per cent of the patients still felt improved as compared to the condition before admission. The results were especially poor for women, although the differences from those of men are not statistically significant ($P > 0.05$). In Table 6, however, it is demonstrated with high significance ($P < 0.001$) that the women had an earlier relapse. Only 28 per cent of the women felt improved one year after departure as compared to 69 per cent of the men.

Table 3. Sex distribution, mean age and mean duration of symptoms at follow-up

Sex	Number of patients	%	C.L.	Age		Duration	
				Mean	S.E.	Mean	S.E.
Women	40	58	45.5 69.8	65.8 $\pm$ 2.45		14.0 $\pm$ 2.61	
Men	29	42	30.2 54.5	68.0 $\pm$ 2.53		12.1 $\pm$ 2.58	
Total	69	100		66.6 $\pm$ 1.69		13.3 $\pm$ 1.80	

C.L. = Confidence Limits ($P = 0.05$).

S.E. = Standard Error.

There were no demonstrable differences in findings between the medial, lateral or mixed types of osteoarthritis (Table 7). In severe osteoarthritis it is often difficult to say whether the disease is "primary" or "secondary". The decision may depend on the investigator. In this material all the cases that cannot with certainty be considered as secondary have been classified as primary. This may in part be the reason why there are so few cases of secondary osteoarthritis in this material. Meanwhile all of these had relapsed before follow-up.

Table 4. Condition at discharge from hospital

		Disap- appeared	Reduced	Unchanged	Worse
Pain		6 (9 %)	47 (68 %)	16 (23 %)	0
Stiffness		0	46 (67 %)	23 (33 %)	0
Pain	Women		30 (75 %)	10 (25 %)	0
and/or	Men		26 (90 %)	3 (10 %)	0
stiffness	Total		56 (81 %)	13 (19 %)	0

The difference between women and men is not significant ($P > 0.05$).

Table 5. Condition at follow-up compared to that before hospitalization

	Improved		Unchanged		Operated		Worse		Total No.
	No.	%	No.	%	No.	%	No.	%	
Women	5*	13	8	20	10	25	17	43	40
Men	9	31	8	28	6	21	6	21	29
Total	14	20	16	23	16	23	23	33	69

* One of these was not improved at discharge.

Table 6. Duration of improvement

	Number of patients improved		
	At discharge	One year	At follow-up
Women	30 (75 %)	11 (28 %)	5 (13 %)
Men	26 (90 %)	20 (69 %)	9 (31 %)
Total	56 (81 %)	31 (45 %)	14 (20 %)

*Table 7. Types of osteoarthritis compared to the results
(Improvement compared to the condition before hospitalization)*

Types of osteoarthritis	Improved	Operated	Unchanged and worse	Total
Medial	2 (17 %)	3 (25 %)	7 (58 %)	12
Lateral	6 (18 %)	8 (24 %)	20 (59 %)	34
Mixed	6 (26 %)	5 (22 %)	12 (52 %)	23
Secondary	0	4 (33 %)	8 (67 %)	12
Primary	14 (25 %)	12 (21 %)	31 (54 %)	57

Fifty-nine of the patients presented contractures of the hip at admission to the hospital. Those without contractures seem to have fared a little better, but the group is too small to attach any importance to this observation alone.

There was no demonstrable relationship between age and results at follow-up (Table 8). Those patients still improved at follow-up had a mean duration of symptoms of 9.1 years, while those who were worse had had their symptoms for an average of 15.1 years. The

Table 8. Findings at follow-up compared to age, observation time and duration of symptoms (mean $\pm$ S.E.)

	Improved	Unchanged	Operated	Worse	Total
Age	66.6 $\pm$ 2.92	68.0 $\pm$ 4.09	66.6 $\pm$ 3.33	65.7 $\pm$ 3.77	66.6 $\pm$ 1.69
Duration	9.1 $\pm$ 1.72	13.1 $\pm$ 3.73	14.4 $\pm$ 4.67	15.1 $\pm$ 3.40	13.3 $\pm$ 1.80
Observation time	3.5 $\pm$ 0.50	3.5 $\pm$ 0.66	—	3.8 $\pm$ 0.52	3.7 $\pm$ 0.31*

* Operated patients excluded.
S.E. = Standard Error.

Table 9. Pain index (mean $\pm$ S.E.)

	Improved	Unchanged	Operated	Worse
At admission	2.3 $\pm$ 0.47	2.4 $\pm$ 0.45	2.1 $\pm$ 0.43	2.3 $\pm$ 0.31
At discharge	3.8 $\pm$ 0.56	3.0 $\pm$ 0.75	3.2 $\pm$ 0.62	3.4 $\pm$ 0.45
At follow-up	3.7 $\pm$ 0.62	2.4 $\pm$ 0.46	—	1.4 $\pm$ 0.22

S.E. = Standard Error.

difference is significant. There was no significant difference in observation time between the clinical groups.

*Table 10. Severity of radiographic changes at admission to hospital
(mean $\pm$ S.E.)*

Improved	6.6 $\pm$ 0.36
Unchanged	7.6 $\pm$ 0.35
Operated	6.6 $\pm$ 0.52
Worse	7.6 $\pm$ 0.25
Total	7.2 $\pm$ 0.15

The severity of pain on admission to hospital does not differ significantly between the groups of results (Table 9, cf. Table 2). It may be noted that those who are still improved also had had the greatest improvement at discharge, but the difference is not significant.

Table 10 shows the severity of radiographic changes at admission to the hospital. The radiographic index is very high on the average, but the variance is great and only the difference between "Improved" and "Worse" is significant ($P < 0.05$).

DISCUSSION

This material is not comparable to that of Danielson (1964). We have, of course, a selected material since it is a study only upon patients who have been hospitalized. Many results seem to make it probable that most of our patients had an advanced form of osteoarthritis. The mean pain index was high, 2.3, there were many bilateral cases, 70 per cent, the mean radiographic index was high, 7.2 (Danielsson 4.8–6.2), especially high in the patients being worse or unchanged at follow-up (7.6) and most of the patients had contractures (86 per cent).

A few things seem to denote that the most severe forms of osteoarthritis of the hip are those which responded most unsatisfactorily to this therapy. Although the differences are not highly significant, those patients being worse had the highest radiographic index at hospitalization and they had a significantly longer duration of symptoms. Pointing in the same direction is the observation that the few patients without contractures had done a little better than those

with contractures. The pain, however, was approximately the same in all the groups on admission.

These things may explain most of the different findings between this material and that of Danielsson (1964). Altogether there is reason to believe that the patients in this material had on the average a more advanced form of osteoarthritis. Therefore, the results in this paper should not be considered conclusive for the milder types of osteoarthritis of the hip, but since the follow-up results in this material are so very poor, it is an essential question whether or not the patients who are still improving are doing so because they received this treatment. It may be that the results would have been the same either way.

SUMMARY AND CONCLUSION

The results of treatment of osteoarthritis of the hip with hospitalization and active exercises have been studied, partly by a questionnaire and partly by personal examination. The material comprises 69 patients. The observation time has been 1½–6½ years. At the end of treatment 81 per cent of the patients felt improved, six of them were free from pain, none free from all symptoms.

At follow-up only 20 per cent (13 per cent of the women and 31 per cent of the men) were still improved, 23 per cent had the same complaints as before hospitalization, 23 per cent had been operated and 33 per cent had become worse. Women had an earlier relapse. Short duration of symptoms and probably milder forms of osteoarthritis seemed to make the prognosis a little better.

Active exercises as the main treatment of osteoarthritis of the hip seem to reduce symptoms in most cases, but the duration of improvement is short in advanced osteoarthritis. However, this treatment may be of benefit in the slightest forms, and as the immediate results are good, it may also be recommended to patients with advanced osteoarthritis who cannot be operated upon because of serious contraindications.

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