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# CLINIC AND TREATMENT OF BECHTEREW'S DISEASE

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**ABSTRACT:**

**We monitored 135 patients with Bechterew's disease of rhizomic form. There were 25 patients of the 1-2 degree and 110 patients of the 3-4 degree. There were 85 men and 50 women. At the initial stage, patients were treated as outpatients by a general practitioner and received conservative treatment. After surgical treatment in the control group of 75 patients, very good result was obtained in 28 (40%) patients, good in 29 (41.5%) patients, average in 15 (17%) patients, unsatisfactory in 3 (1.5%) patients. The average score in the distant period after HJR was 8-9 points. In the main group of 35 patients: very good result was obtained in 12 (34.5%) patients, good in 20 (57%) patients, average in 2 (6%) patients, unsatisfactory in 1 (2.5%) patient. The average score in the distant period after HJR was 9-10. The mean value in both groups was 9-10. In the patients' treatment with Bechterew's disease, the use of cementless endoprostheses provides opportunities for the widespread introduction of HJR. In BD patients with severe osteoporosis, protrusion coxitis, and acetabular wall defects, THJR with bone cement is a justified method.**

**Keywords: ankylosing spondyloarthritis, Bechterew's disease, sacroileitis-joints, clinical forms, treatment, endoprosthesis.**

**RELEVANCE:**

Bechterew's disease (ankylosing spondylitis) is a chronic volumetric inflammation of the joints, predominantly affects the spine and with the presence of limitation of its mobility due to the apophysial joints ankylosis, a and syndesmophytes formation and spinal ligaments calcification.

According to many authors [2,3,8] Bechterew's disease (BD) develops at the age of 15-30, however, according to some authors [1,4,6] 8.5% of patients fall ill at the age of 10-15. These figures indicate that the disease is detected less frequently at an early age due to an inconspicuous onset and course, difficulties of radiological diagnosis of sacroileitis. After the age of 50, the disease rarely begins. However, in reality, in most authors [7,9,11] the disease was detected late, because the radiographs usually show signs of pronounced sacroileitis. The authors described that the pathological process primarily involves the sacroiliac joints, then joints, the spine and peripheral joints, vertebral bodies, intervertebral discs, and ligaments of the spine. According to the authors [10,11,18], there are four clinical forms of Bechterew's disease:

1) Central - only the spine is affected (all or some parts of it);
2) Rhizomelic- affecting the spine and root joints (shoulders and hips);
3) Peripheral - affects the spine and peripheral joints (knees, feet);

4) Scandinavian - affects the spine and small joints of the hands and feet.

This rare form bears a great resemblance to rheumatoid arthritis.

The authors [13,15,22,25] describe that these patients have a lot of features that must be considered when planning operations:

1. Most patients are younger compared to coxarthrosis patients;
2. The bone tissue quality is marked by pronounced osteoporosis;
3. Rapid bone resorption is observed;
4. Slow wound healing;
5. Low resistance to infection;
6. Postoperative period, patients often develop acute adrenal insufficiency;
7. Most Patients noted that, the frequent development of the head protrusion into the pelvic cavity.
8. Continued use of anti-inflammatory drugs.

The authors [20,28,29,32] indicate that atrophy of the gluteal muscles, ganorthritis, and heel bone spurs are additional signs.

In the treatment of Bechterew's disease, the main task is to relieve the pain syndrome and inflammatory reaction and to reduce the joints stiffness. Patients receive pyrazolone drugs (butadion, reopirin, pyrabutol, etc.) intermittently for a long time, ketole derivatives (indomethacin, metindol), voltaren, brufen, etc.

In Bechterew's disease, the low effectiveness of conservative treatment and the high percentage of disability in hip joint (HJ) lesions are relevant to practical medicine due to the significant frequency of hip joint lesions.

The authors [16,17,21,31] described that, in the BD treatment belongs to operative methods, do justice to conservative treatment, it should be noted that an important role, especially in the late stages of hip arthroplasty in 1995 and made a report on the successful mobilization of ankylosed joints using a free flap of the broad femoral fascia.

The author Freeman M.A.R. (1982) [30] performed sinus capsuloectomy of the hip joint in the presence of arthromeningitis without marked the articular cartilage destruction with the purpose of therapeutic and prophylactic value and is appropriate. After removal and subsequent regeneration of the synovial membrane, the researcher notes no recurrence. Therefore, for many years the main methods of surgical treatment in BD have been synovial capsulovectomy of the hip joint.

According to [12,4] after intervertebral osteotomy of the femur and the joint arthroplasty, as well as the hip joint arthrodesis, which gives the possibility to stop the clinical manifestations of the disease and marked changes in the basic biomechanical aspects of the joint with obtaining its short-term relief. The authors studied the long-term results and described that after these operations the disability rate of corrective osteotomy increased from 26% to 58%, after medializing osteotomy from 54% to 81%.

The authors [12, 21, 22, 24, 25] described that after arthromeningitis arthrodesis in the HJ, the disability rate of patients increased from 20% to 75%, and after decompressive operations from 23% to 54%.

Currently, endoprosthetics is the most effective surgery for BD with a lesion of the hip joint. Since 1990, the German surgeon, Themistocle Gluck, has created an endoprosthesis hip arthroplasty, and then the author created a total knee endoprosthesis out of ivory. The researcher solved the problem by virtue of Gluck -stable fixation of the endoprosthesis [26,27,33,34,35].

Many authors [23] created new domestic prostheses based on the K.M. Sivash endoprosthesis.

Thus, the current main method of surgical treatment for late stages with hip joint dysfunction in BD is total hip replacement.

**The purpose of the research was:** To study the clinical manifestations of Bechterew's disease depending on the clinical signs and the disease stage to choose treatment tactics.

**Material and research methods.** We monitored 135 patients with Bechterew's disease of rhizomic form. There were 25 patients of the 1-2 degree and 110 patients of the 3-4 degree. There were 85 men and 50 women. In the initial stage, the patients were treated as outpatients by a general practitioner and received conservative treatment.

We performed primary total hip arthroplasty in 110 patients. There were 23 women and 87 men. Hip joint lesion on the right was - in 37 patients, on the left - in 29 and bilateral - in 44 patients. There were 70 patients aged 19-29 years, 29 patients aged 30-39 years, and 11 patients aged 40-49 years or more. Out of 110 patients treated, 124 hip arthroplasty operations were performed.

The patients were divided into two subgroups: the control 75 group and the main 35 group of patients. Patients underwent THJR using different designs of endoprostheses without cementless in 77 and 33 patients with cement (Table 1, 2).

Table №1. Number of patients with cementless endoprostheses

| Prosthesis type | Study groups | | | | Total | |
|---|---|---|---|---|---|---|
| | Main | | Control | | | |
| | abs | % | abs. | % | abs. | % |
| Zimmer | 6 | 22 | 21 | 42 | 27 | 35,0 |
| DePuy | 12 | 44,0 | 15 | 31,2 | 27 | 35,0 |
| Irene | 7 | 25,2 | 8 | 16,7 | 15 | 19,70 |
| Others | 2 | 7,5 | 6 | 12,5 | 8 | 10,3 |
| Total: | 27 | 100% | 50 | 100% | 77 | 100% |

Table №2. Number of patients with cemented endoprostheses

| Prosthesis type | Study groups | | | | Total | |
|---|---|---|---|---|---|---|
| | Main | | Control | | | |
| | abs. | % | abs. | % | abs. | % |
| Zimmer | 7 | 53,8 | 7 | 23,5 | 14 | 36,7 |
| De Puy | 3 | 23,1 | 10 | 58,8 | 13 | 43,3 |
| Irene | 0 | 0 | 0 | 0 | 0 | 0 |
| Others | 3 | 23,1 | 3 | 17,7 | 6 | 20 |
| Total: | 13 | 100% | 20 | 100% | 33 | 100 % |

Table №3 Evaluation of total hip joint replacement in the short run by W. Oberg scale

| Score (point) | Control group | Main group | Number of patients |
|---|---|---|---|
| Very Good (11-12) | 28 (40%) | 12 (34,5%) | 40 (36,0%) |
| Good (10) | 29 (41,5%) | 20 (57%) | 49 (44,5%) |
| Average (9) | 15 (17%) | 2 (6,0%) | 17 (16,0%) |
| Mediocre (8) | | | |
| Unsatisfactory (7 or less) | 3(1,5 %) | 1 (2.5%) | 4 (3,5%) |
| Average value (8-9) | 75 (61,9%) | 35 (41.9%) | 110 (100%) |

From the table we can see that in the control group of 75 patients, very good result was obtained in 28 (40%) patients, good in 29 (41.5%) patients, average in 15 (17%) patients, unsatisfactory in 3 (1.5%) patients. The mean score at distant times after HJR was 8-9 points.

In the main group of 35 patients: very good result was obtained in 12(34,5%) patients, good - in 20(57%) patients, average - in 2(6%) patients, unsatisfactory - in 1(2,5%) patient. The average score in the distant period after HJR was 9-10 points. The average value in both groups was 9-10 points.

Long-term results after 6 years were studied in 90 patients: 35 in main group and 55 in control group with Bechterew's disease after HJR.

According to the four main symptoms: pain, mobility, walking and limping of the patient according to the W. Oberg scale.

These traits were divided into 4 categories: evaluated on 6 points each. The results can be assessed in two ways, by absolute or relative measures. We evaluated

the absolute values of the scores sum obtained by the patient after HJ surgery.

These traits were divided into 6 categories: scored on 11 and 12 points each. The results can be assessed in two ways, by absolute or relative measures. We evaluated the absolute values of the scores sum obtained by patients after hip joint surgery.

The hips mobility degree was assessed as normal more than 90 degrees, with abduction up to 30 degrees -11-12 points to ankylosis in a vicious position-0 points.

The walking condition was evaluated from 11-12 points, when the patient could not walk - 0 points.

The lameness degree: in the absence of lameness - 0 points, with a strongly pronounced lameness - 11-12 points. The result of the sum of points 11-12 we assessed as very good, 10 points - good; 9 points - average; 8 points - mediocre; 7 or less points - bad.

After surgeries in the control group, 25 patients had no pain in the joint; 19 patients had mild or rare pain, normal activity; 10 patients had minor pain while walking, quickly disappearing during rest; 1 patient had tolerable pain limiting activity. Severe pain while walking, excluding any activity, severe pain at night, pronounced and constant was not observed.

After surgeries in the main group, 16 patients had no pain in the joint; 12 patients had mild or rare pain, normal activity; 5 patients had minor pain while walking, quickly disappearing during rest; 2 patients had tolerable pain limiting activity. Severe pain while walking, excluding any activity, severe pain at night, pronounced and constant was not observed.

The mean preoperative score was 2.1 in the main group and 1.9 in the control group. After surgery, the main group score was 9.1 and the control group 8.2.

We also studied the hip mobility degree in the observed patients after surgery in the control group of 24 patients with flexion: more than 90 degrees, abduction: up to 30 degrees; in -16 patients flexion: 80 to 90 degrees, abduction: less than 15 degrees; in -9 patients bending: 60 to 80 degrees patient can reach the foot; in -5 patients bending: 40 to 60 degrees; in 1 patient bending less than 40 degrees mild deformity. There were no patients with ankylosis in the vicious position in the control group.

After the operation of the main group, 10 patients had more than 90 flexion degrees and up to 30 abduction degrees; in 7 patients bending 80 - 90 degrees, abduction less than 15 degrees; 4 patients bending 60 - 80 degrees the patient can reach the foot; 6 patients have 40-60 flexion degrees; 3 patients have less than 40 degrees of flexion, no active movements, slight deformity. There was also no ankylosis in the vicious position in the main group.

The mean score before surgery was 1.8 in the main group and 1.9 in the control group. After surgery, the main group scored 8.9 and the control group 7.2.

The recovery degree of affected joint function was also judged by walking; the control group 4 could walk only with crutches, and 51 walked even without a stick with a slight limp. In the main group, 28 patients could walk only with crutches, and 12 patients could walk without a stick.

The average score before surgery was 1.6 in the main group and 1.5 in the control group. After surgery, the main group was 8.1 and the control group 7.5.

All of the observed patients had claudication of varying severity prior to surgery. After surgery, the lameness and pain

in the joint gradually disappeared, indicating the surgical treatment effectiveness.

After surgery in the control group, 1 patient had severe lameness; 2 had severe lameness; 3 had moderate lameness; 4 had mild lameness; 6 had minor lameness; 8 had occasional minor lameness; 26 patients had no lameness.

After surgery in the main group, 2 patients had severe lameness; 2 patients had severe lameness; 4 patients had moderate lameness; 4 patients had mild lameness; 5 patients had minor lameness; 4 patients had minor lameness; 9 patients had no lameness.

The average score before surgery was 1.4 in the main group and 1.5 in the control group. After surgery, the main group was 8.5, the control group 7.5. Here is an example of a patient from our observations (Fig. 1). Patient D., was born in 1987 ( 2017). Diagnosis: Bechterew's disease, rhizomyelic form, left-sided coxarthrosis with adduction contracture and lower limb shortening by 4 cm, grade IV. The patient was disturbed by severe pain even at night (2.8 points), no movement in the hip joint (0 points), walking long hours with a stick, short periods without a stick and limping (2.5 points) and pronounced claudication (1.9 points). The total score before surgery was 7.2, after surgery it was 10.5.

Figure 1.

Preoperative X-ray Postoperative X-ray

In this case, the sum of the scores was evaluated as good functional condition of the HJ, which shows good efficiency of the THJR.

Based on the study results, we can conclude that pain, mobility, walking, and claudication most fully reflect the depth of impaired HJ function.

According to the study results, we found that HJ in patients with Bechterew's disease, regardless of age, is an effective method of surgical treatment, eliminating pain syndrome and improving the life quality of the patient.

In the patients' treatment with Bechterew's disease, the use of cementless endoprostheses provides opportunities for the widespread introduction of HJR. In BD patients with severe osteoporosis, protrusion coxitis, and acetabular wall defects, THJR with bone cement is a justified method.

Thus, the treatment tactics of patients to date does not have clear, substantiated treatment methods and improper management of the patient increases the complications possibility in the long term, errors and complications of HJR depend on the surgical technique and postoperative orthopedic compliance of the patient.

**CONCLUSIONS:**

1. Clinical signs give the possibility of choosing the treatment method;
2. In the patients' treatment with Bechterew's disease, the use of cementless endoprostheses provides opportunities for the widespread introduction of HJR.
3. After surgical treatment, good results were obtained in the main group 91.5%, and good results in the control group 81.5%.

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