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Credits

1. Darima Kyshektovna Garmaeva, Doctor of Medical Sciences, Associate Professor, Professor, Department of Normal and Pathological Anatomy, Operational Surgery with Topographic Anatomy and Forensic Medicine at NEFU's Medical Institute, dari66@mail.ru, Yakutsk, Russia;

2. Mariya Telektezovna Buzinaeva, Candidate of Medical Sciences, Head of the Histology Laboratory of the Bureau of Forensic Medical Examination of the Ministry of Health of the Sakha (Yakutia) Republic in City of Yakutsk, 879246637709@mail.ru, Yakutsk, Russia;

3. Aleksandra Innoketyevna Pavlova, Doctor of Veterinary Sciences, Professor, Professor of the Department of Animal Physiology and Ecology of the Yakutsk Agricultural Academy, pavlova_ai2018@mail.ru, Yakutsk, Russia.

METHODS OF DIAGNOSIS AND TREATMENT

A. V. Antonov, V. E. Volovik, G. A. Palshin

THE ROLE AND THE PLACE OF ARTHROSCOPY OF THE HIP JOINT IN TREATMENT OF ASEPTIC NECROSIS OF THE FEMORAL HEAD

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ABSTRACT

Aseptic necrosis of the femoral head (ANFH) is one of current problems in orthopedics today. The arthroscopy of a hip joint in ANFH is a modern way of minimal-invasive surgery. We use the following staged means of arthroscopy: capsulotomy and synovectomy, debridement and sanation of a joint, revision of degenerative and dystrophic changes, resection of the affected cartilage, microfracturing, removal of free microscopic and macroscopic fragments of cartilage. The quality of life in operated patients before and after was estimated on Harris Hip Score (HHS). Arthroscopy of the hip joint has shown the positive clinical results and indeed improves quality of life in patients. It is necessary to revise more deeply all possibilities of arthroscopic surgery of the hip joint, to estimate all results, to improve treatment methods and to achieve long remission of a disease.

On the basis of the orthopedic department of the KGBUZ Regional Clinical Hospital No. 2 in Khabarovsk, an analysis of the frequency of occurrence of aseptic necrosis of the femoral head, its various diagnostic methods, conservative and operative treatment, and the pathological picture of the disease among the adult population in various age categories was made. The obtained positive results of treatment indicate the need for further study of the problem in order to achieve a long lasting remission, and possibly a complete recovery of the patient.

Keywords: arthroscopy, aseptic necrosis of the femoral head.

Introduction. Aseptic necrosis of the femoral head (ANFH) is wide spread multifactorial poliethiologic disease affecting primarily men of working age, the initial link in the pathogenesis of which is not exactly understood. ANFH diagnosis presents considerable difficulties, due to the late-stage patients, late medical care, and the absence of clear diagnostic symptoms. Edema of the bone marrow in the initial stage of the pathological process can be detected only on MRI investigation. Traditional conservative treatment has not enough effectiveness and provides short-term improvement only in the early stages of the process due to the use of drugs with low or unproven effectiveness, and anyhow results the complete replacement of the joint only for a short period of time. Surgical methods mostly are traumatic and require long-term rehabilitation, while not providing for long-term remission, and hip replacement is associated with high risks of components' instability.

Nowadays, one of the little-known methods of surgical treatment in ANFH patients is arthroscopy of the hip joint [8, 9].

Materials and methods of research. On the basis of Territorial state educational Health facility "Regional clinical hospital №2" in Khabarovsk we've analyzed the frequency of aseptic necrosis of the femoral head, different methods of its diagnostics, conservative and surgical treatment, as well as the pathological picture of the disease among the adult population of different age. From 2015 to 2017, 97 patients diagnosed with aseptic necrosis of the femoral head of the 2nd-4th degree (according to ARCO) were treated in the hospital, which is 25% of all degenerative diseases of the hip joint. 53% of the cases were middle-aged women (45-59 years).

The **purpose** of the study is to analyze the frequency of ANFH occurrence.

Results and discussion. Detection of the disease ANFH at an early stage in most cases is extremely difficult and formed 9 percent of cases, post-traumatic ANFH - 13% of patients and 4% had congenital abnormalities of the hip joint [3].

Complaints of patients after hospitalization are usually non-specific, which is probably is one of the reason for incorrect interpretation at the ambulant stage of examination: permanent pain syndrome (93%), increasing under weight load (92), accompanied by a violation of limb function (98) and requiring the use of additional means of support in movement (64%).

Despite the development of modern highly informative radiographic methods of diagnosis, the main standard of examination is radiography of the affected joint, and an additional method of investigation only in 4% of cases is magnetic resonance imaging.

Late-stage pathological process, the severity of clinical symptoms lead to the surgical treatment, which was performed in 65% patients. Mostly total cementless hip replacement (Zimmer, DePuy). In 1% of cases, due to instability of the acetabular component, augments were used during the press-fit. Instability of the endoprosthesis components in late follow-up occurred in 3% of cases, all around implants with a cement type of fixation.

Intraoperational autopsy material was taken for histological examination in 50 patients, both who undergone total hip replacement and core decompression. In

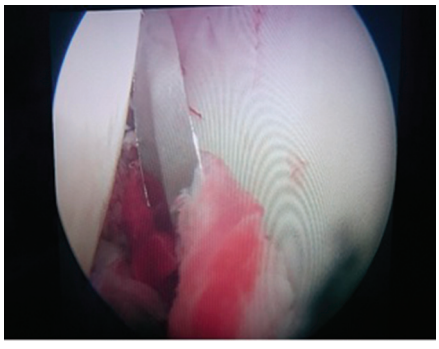

Fig.1. Anterolateral and posterolateral capsulotomy with an arthroscopic BEAVER knife

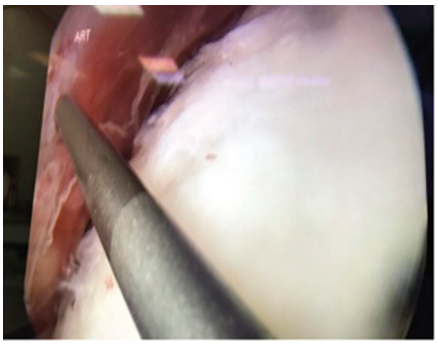

Fig.2. Revision of the joint by a Shaver (arthroscopic picture of the hip joint in ANFH)

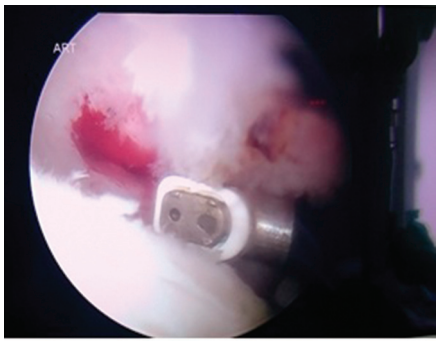

Fig.3. Revision of the joint by VAPOR-electrode, removal of degenerative changes of the cartilage elements

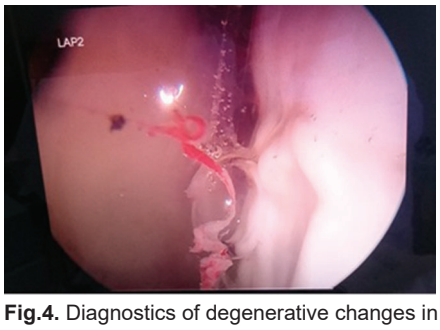

Fig.4. Diagnostics of degenerative changes in the cartilaginous tissue of the femoral head for subsequent microfracturing

Fig.5. Visualization of free osteochondral fragments in the hip joint

Fig.6. Chondroid corps from the hip joint after removal

most cases, specimen had signs of fatty degeneration of the bone marrow in a ratio of 5: 1, with the presence of fibrous tissue, signs of resorption, necrobiosis, lymphoid-plasmocytic and histocytic infiltration of the stroma, and in some cases, signs of an inflammatory reaction.

Arthroscopic revision of the hip joint included the following stages:

1) anterolateral and posterolateral capsulotomy with an arthroscopic BEAVER knife (Fig.1),

2) revision of the joint by a Shaver (Fig.2),

3) revision of the joint by VAPOR-electrode, removal of degenerative changes of the cartilage elements (Fig.3),

4) diagnostics of degenerative changes in the cartilaginous tissue of the femoral head for subsequent microfracturing (Fig.4),

5) visualization of free osteochondral fragments in the hip joint (Fig.5),

6) removal of the chondroid corps from the hip joint (Fig.6).

Results were fixed and evaluated on the Harris hip scoring system (HHS). Before surgery HHS ranged from 24 to 70. According to preliminary results, we have got 60% positive results, 20% of them correspond to the excellent result of treatment, 20% – good and 20% – satisfactory, 40% of the results were assessed as unsatisfactory because of the persisting pain syndrome with up to 68 HHS.

Conclusion. Aseptic necrosis of the femoral head is one of the urgent problems in modern orthopedics. Arthroscopic diagnostics of the pathological process with subsequent revision of the hip joint, capsulotomy and synovectomy gives a decompressing effect, reduce the tension of the joint capsule, makes it possible to remove free osteochondral fragments and areas of cartilage detachment with microfracturing if necessary, which allows to preserve the cartilage of the femoral head, thereby ensuring its stable function for an indefinite period of time. Positive experienced results of treatment dictate the need for further study of the problem, observation of patients and analysis of long-term results of treatment in order to achieve the longest possible remission, and in some cases, complete recovery of the patient.

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The authors

1. Antonov Alexander – orthopedic surgeon of Territorial state educational Health facility “Regional clinical hospital №2” in Khabarovsk, post-graduate student of the Postgraduate Institute for Public Health Workers, Maeror... * necessitas@mail.ru;

2. Volovik Valery Evgenjevich - MD, prof., acad. of Russian Academy of Sciences and Russian Academy of natural Sciences, Vice-Rector of Regional State Budgetary educational Institution of additional professional education for Public Health Workers, head of Department, volovik@ipksz.khv.ru;

3. Palshin Gennady Anatolyevich - MD, prof., head of Department of medical Institute of NEFU named after M. K. Ammosov, palgasv@mail.ru.

A.N. Koval, N.V. Tashkinov, G.G. Melkonyan, A.Y. Marochko, B.M. Kogut, N.I. Boiarintsev, V.V. Ianovoi, P.M. Kosenko

BASIC PRINCIPLES OF SURGICAL TREATMENT OF ARTIFICIAL PYOINFLAMMATORY DISEASES OF SOFT TISSUES

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ABSTRACT

Aim. To identify the peculiarities of surgical treatment of *APIDST.*

Material and methods. The analysis of treatment of 302 men with APIDST in the department of purulent surgery of the 301 Military Clinical Hospital of Khabarovsk from 1987 to 2013 was carried out.

Results. Surgical emergency procedures were performed in 40 (13.2%) patients with APIDST before admission to the hospital and in 262 (86.8%) patients with APIDST immediately after admission to the hospital. Necrectomy was performed in 6 (2.0%) patients with APIDST before admission to the hospital and in 118 (39.1%) patients with APIDST immediately after admission at the hospital. The signs of anaerobic infection were found during the surgical procedures in 260 (86.1%) patients. During hospitalization 2 or more surgical procedures were required in 188 (62.3%) patients with APIDST due to the progression of the disease.

Conclusions. In case of substantiated suspicion of APIDST surgical intervention should be based on the main principles of surgical treatment of anaerobic infections regardless of the duration of the disease. It is recommended to start the procedures with a small diagnostic incision through the site of introduction of the initiating substrate with a mandatory revision of the subfascial space and performing radical necrectomy.

Keywords: artificial pyoinflammatory diseases of soft tissues, treatment.

List of reductions:

APIDST – artificial pyoinflammatory disease of soft tissues.

Introduction. The choice of treatment strategy of APIDST is a very difficult problem due to insufficient knowledge of this pathology. It was established, that after deliberate introduction of non-sterile biological fluids into the soft tissues anaerobic infection develops in the majority of cases [3,16]. Various chemicals, introduced into soft tissues, cause «chemical» necrosis, progressive ischemia, creating conditions for the development of anaerobic infection [9,15]. It is well known that anaerobic infection of soft tissues holds a special place among surgical infections due to the high morbidity and mortality [4,5]. Currently, some experts are sure that the treatment strategy of APIDST, caused by non-sterile biological fluids, does not seriously differ from the conventional approach to the treatment of surgical soft tissue infections and does not have any specific features [13]. Other authors stick to the opinion that the treatment of APIDST has some specific features, particularly in patients after introduction of a chemical initiating substrate into the soft tissues of the body [9,15,18].

The aim of this work is to identify the peculiarities of the surgical treatment of APIDST.

Material and methods of the research. The analysis of treatment of 302 men with APIDST who accounted for 6,1% of all patients with different forms of surgical infections of soft tissues and had been hospitalized to the department of purulent surgery of the 301 Military clinical hospital of Khabarovsk from 1987 to 2013, was carried out. The most commonly used disease initiating substrates were oral fluid (36.1%), dental plaque (15.6%) and liquid hydrocarbons (6.3%).

Results and discussion. Of 302 patients with APIDST, surgical emergency procedures were performed before admission to the hospital in 40 (13.2%) patients, and immediately after admission to the hospital - in 262 (86.8%) patients (Table 1).

As is seen from the above table, radical treatment of the surgical infection focus including not only an adequate incision but also necrectomy was performed in 6 (2.0%) patients with APIDST before admission to the hospital and in 118 (39.1%) patients with APIDST immediately after admission to the hospital (Table 1).