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Analytical Indicators Of Complex Treatment Methods For Arthrosis Of The Knee Joint

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Relevance of the study. In the world, a number of scientific studies are carried out to diagnose arthrosis of the knee joint, treat it using arthroscopic methods and prevent its complications, the use of hyaluronic acid (GK) in arthrosis of the knee joints helps to restore the natural homeostasis of the affected joint and its biochemical effect to improve the protective, lubricating and external In recent years, growth factors have been increasingly used to improve the recovery processes of various damaged and damaged tissues. Platelet-rich blood plasma (TBP) is considered as a factor of this type. It is known that platelet Alpha granules are a number of growth factor mediators, notably insulin-like growth factor-1, primary fibroblast growth factor, platelet growth factor, epidermal growth factor, vascular endothelium growth factor which plays an important role in attenuation of inflammatory reactions and destruction of necrotic cells. It is important to carry out scientific research on such problems as improving modern methods of conservative treatment of knee joint arthrosis in patients, improving their effectiveness and long results, studying pathological changes in joint synovial fluid, a pathogenetic approach to the treatment of the disease.

In our republic, it is now one of the important tasks to improve the health system, develop early detection, treatment and preventive measures for common diseases, including orthopedic ones. In this regard, large-scale measures are being implemented to develop the quality of medical care in our country, high-tech medical service, which include important tasks for supporting a healthy lifestyle of the population and increasing the level of physical activity. The Prevention of knee joint osteoarthrosis (TBOA) and their complications found in patients, the implementation of an early diagnosis of the disease and the use of modern conservative methods in their complex treatment, the determination of the condition of synovial fluid in the joint is one of the urgent tasks that awaits its solution today.

Osteoarthrosis is a pathological condition of the synovial contents of the knee joint, characterized by a significant deterioration in quality of life due to early disability and constant pain. Gonoarthrosis often occurs in the knee joints. Drug treatment of primary osteoarthrosis often cannot provide adequate improvement in the quality of life of patients, therefore, the search for effective and safe methods of local therapy for this disease remains an urgent task. For the treatment of degenerative pathology of the musculoskeletal system in world practice, preparations made from calf blood-actovegin and adgelon –are being used [12,15].in recent years, the use of platelet-rich autoplasm (TBA) has been widely carried out. TBA contains transformative growth factor (TGF-B), vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF-2),platelet growth factor as well as insulin-like growth factor (PDGF), epidermal growth factor (EGF), and stores adgesive molecules (fibrin, fibronectin, vitronectin). It should be noted that in particularcm, attempts to use individual growth factors in experimental osteoarthrosis did not bring significant results. In the treatment of sports injuries, unlike biological preparations based on platelet-rich plasma, in surgical actions, this drug has shown a high therapeutic efficiency (in particular in the joints). The use of TBP in rheumatology practice has shown its effectiveness in the treatment of tendinitis of the knee, elbow and calf-paw joint[2.4.6.8.10.12.14.16.18].

The knee joint is considered one of the largest joints in the human body.Since it experiences significant static and dynamic mechanical strain and has a complex anatomical structure, various knee joint injuries are

considered common. According to various authors, they account for 50-70% of all damage to the movement-base system. Post-traumatic chondropathy (chondromalyasia) is characterized by the presence of abnormalities in the hyaline toga in patients with knee injuries of varying depth, location, and patients. Compared to arthroscopy data, the incidence rate of this pathology is 66% out of 51. Mountain hyaline has unique biomechanical properties and is able to withstand mechanical stresses during active movement. However, when a hyaline tuber is injured it has the property of self-regeneration. This is due to the low reproductive capacity of chondrocytes, insufficient mobility and the absence of intracellular Matrix vascularization. If there is a defect of a non-large size in the joint, movements in the knee joint are limited and lead to the development of gonoarthrosis. Therefore, the treatment of post-traumatic chondropathy remains one of the pressing problems of modern Traumatology and orthopedics.

It is known that platelets contain many growth factors and cytokines in the regeneration of damaged tissues. Platebositesalpha-granules have more than 30 growth factors that simultaneously affect the recovery process of the articular tissue. The most important are platelet growth factor (PDGF) – stimulates chemotaxis, mitogenesis of fibroblasts, collagen synthesis; vascular endothelial growth factor (PDEGF) - has a stimulating effect on endothelial cells; tranformation growth factor (TGF-ya).The latter is a large group of proteins, some of which and morphogenic proteins modulate cell proliferation and less differentiated cells to osteoblasts, increasing the synthesis of bone extracellular matrix and thinning its breakdown and other growth factors.

The goal of treating knee joint ostoarthrosis is to move the developing pathological process to the clinical compensation phase, consists in stabilizing degenerative-dystrophic changes in the joint.In osteoarthrosis of the knee joint, nosteroid is performed using anti-inflammatory drugs, chondroprotectors, application terapii, administration of harmonic drugs into the joint, hyaluronic acid derivatives of various molecular weights, as well as TBA. The disease has no etiotropic treatment, so the mechanism of development of this pathology remains unclear. Today, the processes of renewal in the field of modern Traumatology and orthopedics, the recommendation of modern methods of diagnosis, treatment and rehabilitation, the perfection of existing conservative methods of treatment and a new look at the processes of rehabilitation after conservative treatment, that is, the improvement of the quality of life of the patient, their return to labor activity in many cases and For the field of modern medicine, as well as Traumatology and orthopedics, all these tasks are carried out as a result of the performance of research work on this area.

Taking into account the above, it is advisable to carry out research work on solving the problems of improving the treatment of this pathology using modern conservative methods of treatment in knee joint osteoarthrosis, which today is waiting for its solution in modern orthopedics and Traumatology, has not lost its relevance and necessity. Osteoarthrosis is a polyethiological degenerative-dystrophic disease characterized by damage to the metaphysical and subchondral part of the articular bone part, the articular joint, and damage to the synovial shell of the joint, the mandible, the capsule and the muscles. This in turn is manifested by the formation of bone-inferior tumors and the delimitation of movement in the joint, as well as the appearance of pain[1.3.5.7.9.11.13.15.17.19].

According to epidemiological studies, 8% to 20% of the adult population suffer from this disease, the localization of the most common pathology is dengenerative-dystrophic damage to the joint, characterized by temporary loss of labor capacity. In older age groups, osteoarthrosis is growing day by day. Osteoarthrosis can be considered the most common pathological process among diseases. The causes of the origin of osteoarthrosis have not been fully studied to date. Therefore, this problem remains one of the unresolved problems of the specialty Traumatology and orthopedics.

In arthrosis of the knee joint, joint traumatization, physical exertion occupy a special place. In overweight people, a large strain falls on the joints, as a result of which this strain stimulates the development of arthrosis in the joints. In the pathological process, not only the joint is involved,but also other elements of the joint, the subchondral bone part, the vertebrae, the capsule, the synovial shell and the periarticular muscles. Osteoarthrosis in adult humans is one of the leading causes of incapacity for work. Gonoarthrosis is accompanied by osteoporosis from diseases of the musculoskeletal system. From pathologies accompanied by arthrosis of the knee joint, arterial hypertension (in more than 60% of patients),ischemic heart disease, heart failure, obesity, diabetes mellitus, lung diseases(chronic obstructive pulmonary diseases) and diseases of the gastrointestinal tract are observed.

Laboratory indicators focus on increased blood cholesterol levels (in more than 30% of cases) and blood glucose tolerance. To determine the state of the pathological process, X –ray research methods, computed momography(CT), magnetic resonance imaging (MRI), as well as arthroscopic research methods are currently used for the diagnosis of osteoarthrosis[5,19]. Some authors have believed for many years that the development of osteoarthrosis is the result of the aging process of the body[2,8]. Currently, views on the pathogenesis of

osteoarthrosis have changed significantly. The pathogenesis of osteoarthrosis consists of two components: "pathological stress", that is, pathological load on the Joint (they can be associated with trauma and various dysplasias); "pathological Nagai" (due to aging, metabolic disorders play a key role in their formation). The reasons for the early change in the body of patients include: the presence of a long-term load on it; the observation of metabolic disorders; the fact that weight is much higher than the physiological norm; a decrease in Mountain tolerance to physical exertion. According to data, the risk of developing knee joint osteoarthrosis in women increased after the age of 35 and they were 2 times more common than men, while in men the development of osteoarthrosis increased after the age of 45. Many researchers believe that the origin of osteoarthrosis is multifactorial, in which mechanical and metabolic factors lead, while inflammation occupies the leading place in the pathogenesis of the disease. There are also no experts who believe that osteoarthrosis is a systemic disease[20.22.24.26].

In the process of degenerative-dystrophic changes in the joint, the defect of the joint surface is observed in the terminal stages. In this process of the disease, all those that form a joint are involved. The ends of the joint remain without a practical trowel, the joint suddenly narrows, the bone subchondral zone scleroses, hardens. These changes are primarily due to the exchange of minerals in the joint. Synovial fluid composition varies significantly in joint pathologies[3,9]. The biochemical composition of the subchondral part of the bone is well studied in the development of osteoarthrosis, but in the literature the composition of electrolytes in the normal synovial fluid is poorly studied, and its changes in the development of the pathological process are practically not studied. The lack of this information does not lead to the determination of the interrelationship of the bone subchondral zone and synovial fluid composition in the development of osteoarthrosis[19.21.23.25].

Platelet-rich autoplasma and other blood derivatives have been widely used in various fields of Medicine and Tissue Engineering.Autoplasmic recombinant protein exhibits natural cocktails of autological growth factors that can provide an alternative to constituents. Such derivatives of blood successively manifest the potentiation of proliferation, migration and differentiation of stem cells. The use of platelet-rich plasma in practice is being considered as a promising direction in all aspects of Medicine.

The tissue engineering of an organism uses one biofaolic agent with basic regenerative functions, which usually leads to the process of excitation of cells. However, natural tissue regeneration is based on a cocktail of signaling molecules and growth factors. In the natural healing of wounds, platelets accumulate in the wound area and separate many factors that play an important role in directing wound healing. The use of one growth factor to control tissue regeneration is very simple and presents an inefficient effect. This is usually solved by presenting a supraphysiological quantity of the growth factor. This results in a rapidly growing number of studies investigating the effectiveness of approaches to tissue engineering based on growth factors, such as stem cells with a natural cocktail from platelet concentrate.

The purpose of the study. Knee joint osteoarthrosis consists in optimizing the effectiveness of treatment by using platelet-rich blood plasma in patients with osteoarthrosis.

Research material and styles. Data on this research work was carried out in the Applied Department of Traumatology and orthopedics of the Bukhara regional Multidisciplinary Medical Center in 2019-2022 in 114 patients treated with osteoarthrosis of the knee joint of various degrees. The duration of the course of the disease amounted to a period of 6 months to 15 years from the Anamnesis of patients. All patients received conservative treatment.

The 114 patients involved in the scientific studies carried out were between the ages of 25 and 75, which were divided into 2 groups, the main n=70 and the control group N=44. 30 of the patients (26.4%) were female and 84 (73.6%) were male, of which the main group consisted of women n=16 (53.3%), men N=60(71.4%), and women N=14 (46.6 %) in the control group, men N=24 (28.6%). As can be seen from the above, osteoarthrosis of the knee joint occurred 2.5 times more often in men than in women. This rate also increased proportionally to one another as the age increased.

In 114 patients who were under control, they were divided into 3 subgroups based on age to study the nature of the disease:

Sub-group 1 included 28 (24.5%) patients aged 25 to 45, sub-group 2 included 52 (45.6%) patients aged 45 to 60, and sub-group 3 included 34(29.8%) patients aged 60 to 75.

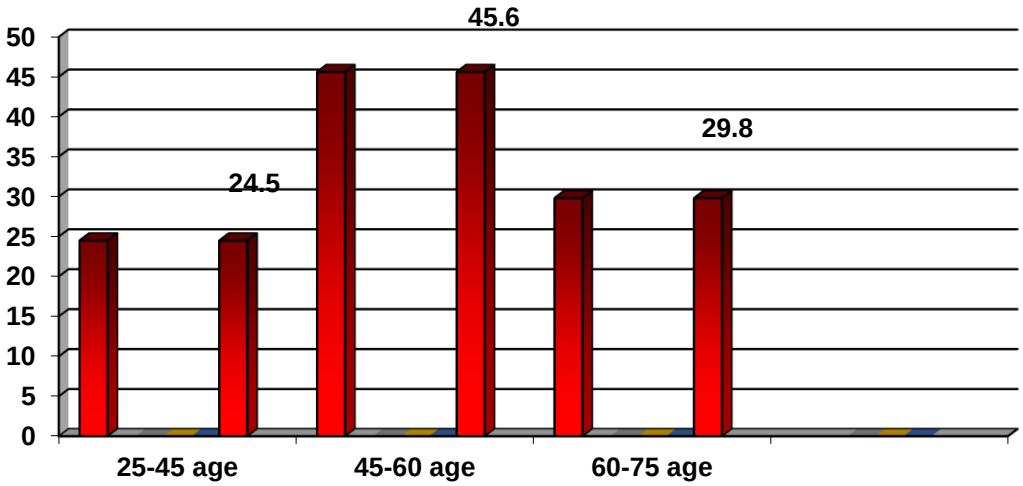

Figure 1. Age-based distribution of patients with knee joint osteoarthrosis
Methods for obtaining Autotrombositar mass.

The following tools and materials were used to obtain an Autotrombositar mass:
laboratory table centrifuge with centrifugal force capability of 800-12000g or rotation speed of 3200 revolutions per minute;
rlasmolifting ™ special 9 ml test tubes (sterile, Plasmolifting ™ technology has a special thixotropic gel in vivo technology has Heparin Sodium);
peripheral venous catheters with a diameter of at least 1.1 mm;
sterile disposable medical syringes (Luer-Losk systems), volume from 2.0 ml to 5.0 ml.

Ninas for injections.

The blood was taken in a volume of 9 ml with a diameter of 1.1 mm, using a peripheral venous catheter, and it became dependent on the place of its introduction when performing treatment. All the Blood received was deposited in Plasmolifting ™ 1-4 special test tubes. The Autotrombositar mass was obtained with the developed modes of centrifugation, by centrifuging the patient's blood using special test tubes for plasmalifting and centrifugation. The autotrombasic mass obtained by centrifugation has high-concentration platelets.
Special vacuum"Plasmoliphtingtm" test tubes are needed to obtain an injection form of Autotrombositar mass. Blood was obtained in a standard way using jgut, alcohol napkins, Nina butterfly with a size of 19-23 G, A conductor holder for test tubes, leukoplastery (figure 2.5).

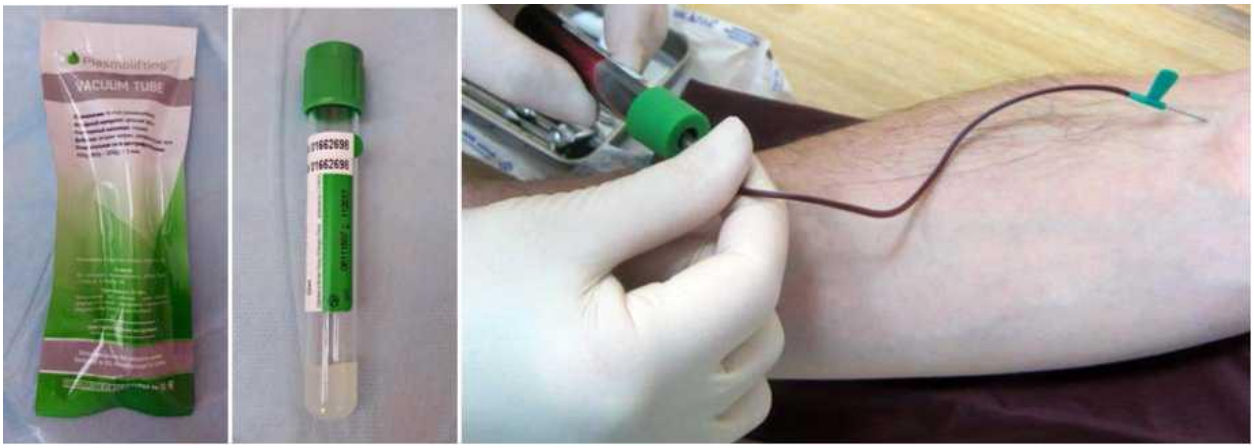

Figure 2. Patients with osteoarthrosis of the knee joint forearm venasidangon withdrawal.

After the blood was drawn, the test tube was installed in the EBA 20 (Germany) or80-2s (China) centrifuge, the centrifugation mode was 3200 ayl/min for 5 minutes.

3- fig. External appearance of the centrifuge apparatus, Eva 20 (Germany).

4- image.Autotrombositar mass appearance in "Plasmolifhtingtm" test tube after centrifugation

In the process of centrifugation work, all blood is divided into two fractions: erythrocytar-leukocyte Quill and platelets containing plasma, micro - and macrominerals, vitamins, amino acids. With the help of a syringe (3.0 – 5.0 ml), a platelet autological plasma (supernatant) is obtained, which stands on a separator gel at the top of the test tube. The use of special "Plasmolifhtingtm" test tubes makes it possible to obtain 3.5±0.5 ml of platelet plasma, in addition, the separator gel allows quality filtration of plasma and good fixation of the erythrocyte well (Figure 4).

Figure 5.PlasmoliftingTM test tube

Autoplasma is obtained from the top of the test tube on an erythrocyte bottom, plasma can be obtained using a 5-10 ml syringe with 19-23 g of nines. For injection into the tissue of the knee joint, it is necessary to replace the Nina with a small diameter – 29 G, which corresponds to a diameter of 0.3 mm, the length of the Nina is 13 mm. Usually such nines are used in cosmetology for mesotherapeutic techniques. The autoplasm is inserted into the knee joint at the expense of 5.0±0.5 ml (1 test tube). 5.0 syringe Ninas were used for injections.Plasma input volume and area: knee joint area 0.1-0.2 ml, transition layers area 4-5 ml (Figure 5).

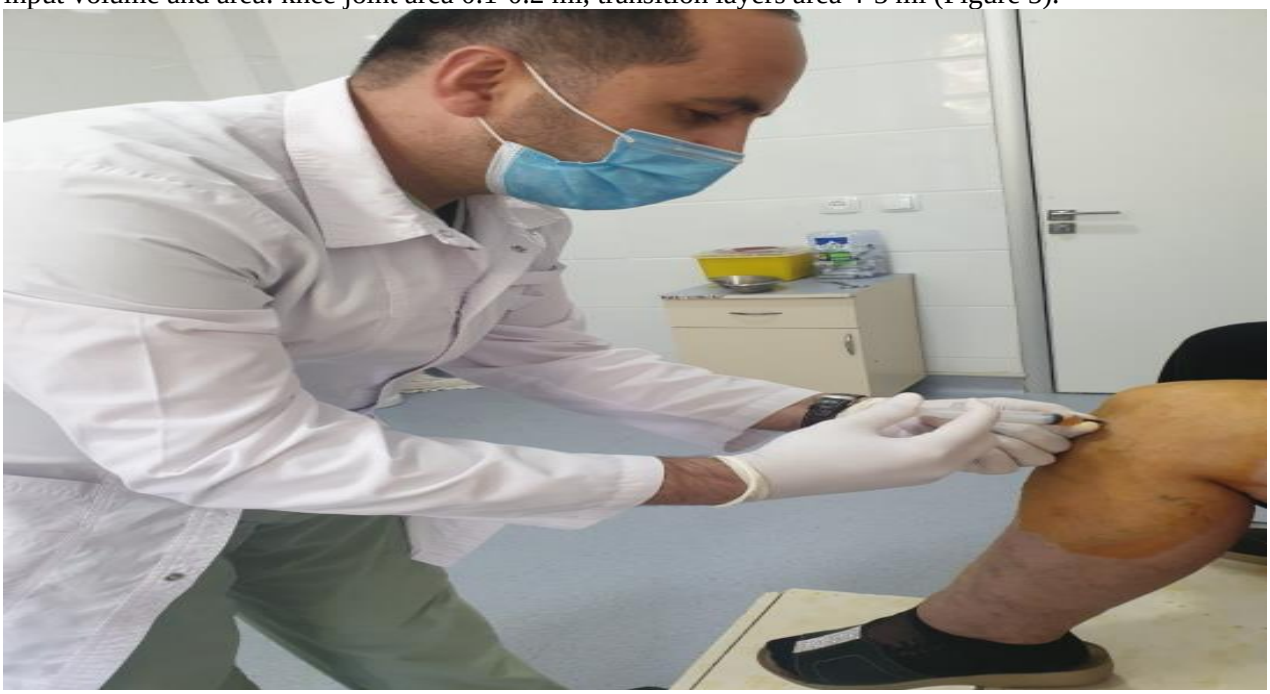

Figure 6.Autotrombositar mass injection into the knee joint area

Each patient is given this process 3-5 times.In the patient's appeal every 3 months, this manipulation was carried out.

In addition to the use of autotrombositar mass in the complex conservative treatment of knee joint osteoarthrosis, antibiotics, nonsteroidal anti-inflammatories, cytostatics and glucocarticoids were used inside the joint.

In patients with TB osteoarthrosis observed due to the above, patients with autotrombositar mass were tested for synovial fluid in biochemical methods. From the results obtained, it can be seen that convincing changes were found in the group where autotrombositar mass was transferred (group 1) compared to patients who did not have autotrombositar mass transferred (group 2).

Chunonchi found that MDA levels were 2.96±0.011 mkmol/L in Group 1 patients, while in Group 2 patients this rate increased convincingly after autotrombositar mass was taken - 3.30±0.027 mkmol/L and 3.21±0.16 mkmol/L (R<0.05), respectively. A reverse result was obtained on catalase enzyme activity, i.e. results after the adoption of autotrombositar mass (5.76±0.07 mkkat/L and 5.68±0.13 mkkat/l, respectively) (R<0.05). Changes in these indicators were assessed as a positive effect on the biochemical indicators of the synovial fluid of the operative treatment methods performed.

However, on both parameters, no convincing differences were observed between the indicators after the Opera. While no plausible discrepancies have been observed among groups on glutathioneductase enzyme activity (R0,05), intergroup plausible differences in superoxidismutase enzyme activity have been found.

If in Group 1, this enzyme activity is 3.21±0.03 conditions.one./min protein was mg whereas in groups 2, the buoys were convincingly high - a condition of 4.07±0.011, respectively.one./ min protein mg and 4.33±0.015 condition.one./ min protein mg (R<0.05). It is noteworthy that there were also convincing level differences among groups on this parameter (R<0.05).

Table 1. Results of biochemical examination of synovial fluid in patients with osteoarthritis of the knee joint

Specification	Patients with knee joint osteoarthrosis observed	
	1- group, n=35	2- group, n=30
MDA quantity	2.96±0.011	3.30±0.027*
(mkmol/l)	6.15±0.010	5.76±0.07*
Catalase enzyme activity	0.55±0.016	0.54±0.011
(mkkat/l	3.21±0.03	4.07±0.011*

Glutathioneductase	2.19±0.017	2.36±0.025*
enzyme activity (me/g)	2.19±0.017	1.30±0.017*
Superoxidismutase	16.39±0.50	21.72±0.52*
enzyme activity (condition.one./ min protein mg)	0.74±0.07	1.33±0.15*

Note: * - a sign of convincing differences in the parameters after the adoption of the autotrombositar mass from the indicators to the treatment

Different results were observed in terms of the amount of CA+2 ion and the determination of ionized Ca+2 parameters. If the amount of the CA+2 Ion was increased relative to the control group (2.19±0.017 mmol/L versus 2.36±0.025 mmol/l and 2.48±0.03 mmol/l, r<0.05), we observed the opposite in the case of ionized Ca+2parameters, i.e. in the underlying group
the parameters were convincingly lower than the control group indicators - 1.30±0.017 mmol/l against 2.19±0.017 mmol/l (R<0.05), respectively.
Positive indicators in synovial fluid after Autotrombositar mass intake were also observed in terms of total protein content and total phospholipid content. In either case, the indicators after the adoption of the autotrombositar mass were distinguished by a convincing difference from the parameters before it. In general terms-against 16.39±0.50 g/L at mosrawish-21.72±0.52 g/l (R<0.05). Also in terms of total phospholipid content - 1.33±0.15 g/l (R<0.05) against 0.74±0.07 g/L at mosrawish.
In this way, the recommendation ofautotrombositar mass has the property of positively influencing not only the clinical effect, but also the synovial fluid composition after ingestion. The specific pre-and post-treatment results on catalase, glutathioneductase, superoxidismutase enzyme activities studied as well as MDA, Ca+2, ionized Ca+2, Total Protein, and total phospholipid amounts indicate this.
At the next stage of our scientific work, fragments of phospholipids in synovial fluid were identified (Table 2).

Table 2. Patients with knee joint osteoarthrosis observed results of studies of phospholipid fractions in synovial fluid

Specification	1- group, n=35	2- group, n=30
Lysophosphatidylcholine	8,33±0,57	10,78±0,40*
Sphingomyelin	21,46±0,91	18,38±0,84*
Phosphatidylcholine	46,74±1,77	32,97±1,94*
Phosphatidylinositol	1,56±0,20	1,40±0,28*
Phosphatidylethonolamine	2,88±0,20	3,97±0,27*
Phosphatidylserine	0,26±0,06	0,17±0,08*
Lysophosphotidylethanolamine	0,48±0,11	0,83±0,14*
Skull fractions	18,29±0,51	31,5±0,64*

The results obtained showed that in all phospholipid fractions, the post-treatment indicators changed convincingly compared to the pre-treatment parameters (R<0.05). Since this situation is clearly observed in all fractions, we did not need to make a comparative analysis, citing the numbers.
It is worth noting that in some fractions, the group 1 indicators differed convincingly not only from the pre-treatment parameters, but also from the group 2 indicators (R<0.05). Notable examples of phospholipid fractions with such convincing discrepancies are lysophosphatidylcholine, phosphatidylcholine, phosphatidylethonolamine, lysophosphotidylethanolamine (R<0.05).
A comparative analysis of the results obtained showed that the indicators of LPO products show a decrease in catalase enzyme activity, an increase in the activity of the superoxidismutase enzyme due to an increase in MDA and antioxidant protection system (Aoht) products and an increase in the activity of the superoxidismutase enzyme, an increase in glutathioneductase enzyme is not observed, An increase in synovial fluid activity suggests that a decrease in the concentration of secondary products is evidence that LPO has been barcarized.
Also, with an increase in the amount of ion Ca+2 in all groups, a decrease in the amount of ionized sa+2 is a sign of the stability of the synovial fluid. At the time of the onset of degenerative-dystrophic changes, a decrease in the content of ionized electrolyte sa+2 in the synovial fluid in the subchondral zone of the bone led to changes in the chemical properties of the synovial fluid. In this case, ionized SA+2 electrolytes are related to phospholipids in the bone synovial fluid. The decrease in some of the phospholipid fractions also affects the

decrease in the Total sa+2.The information presented reflects their nature, it has been proven that changes in phospholipids lead to changes in synovial fluid, indicating an imbalance of prooxidants and antioxidants.

Conclusion

1.An algorithm developed for the use of autotrombositar mass in the complex treatment of knee joint osteoarthrosis made it possible to determine the severity of the disease, optimize the recommended therapy and increase the effectiveness of treatment.
2.Clinical and economic results of autotrombositive mass treatment and standard treatment of inflammatory diseases of the knee joint showed that the disappearance of clinical signs of inflammation and the normalization of synovial fluid indicators, moderate movement of the knee joint, normalization of the biochemical state of synovial fluid composition showed that the use of autotrombositive mass in complex treatment in the treatment of severe.

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