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Motor Cells in the Knee Osteoarthritis Patients under the Microscope

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Abstract: Knee osteoarthritis is a chronic joint disease with degeneration of joints and hyperplasia of bones around the joints. The initial site of this disease is generally cartilage tissue, which is a common disease among the elderly. It seriously affects the patient's health and life. Knee osteoarthritis is often accompanied by changes in joint soft tissue motor cells. Motor cells are an important part of biology and determine the direction of knee osteoarthritis. With the development of microscope technology, the observation of motor cells entered a new perspective. The purpose of this article is to solve some problems when using electron microscope to observe the changes of exercise cells, trying to find the best treatment for knee osteoarthritis by analyzing the changes of exercise cells. This article uses 30 patients with knee osteoarthritis for the research object, the electron microscope technique is the observation method, and the immunohistochemistry method is the detection method. The results of the study show that observing the changes of knee osteoarthritis motor cells under the microscope can increase the therapeutic effect of knee osteoarthritis by 24%. At the same time, it is found that the migration of motor cells at the joints of knee osteoarthritis patients increases 17%, cell proliferation inhibitory effect increased by 15%, this finding is of great significance for the treatment of knee osteoarthritis, proving the feasibility and necessity of microscopic observation.

1. Introduction

Knee articular cartilage double knee arthritis (KOA) disease is a disease characterized by the degeneration or loss of cartilage defects on both sides of the knee joint, and the defect of the cartilage on the edges of the articular cartilage on both sides and the bone below the cartilage chronic cartilage disease. The site of the onset of the disease is lumbar spine cartilage, which is most common in elderly patients, and both men and women may be complicated. This patient often has repeated and persistent right knee pain, morning stiffness, joint muscle swelling, and right knee

muscle dysfunction, especially when squatting, going up or down, or jumping from the building frequently. The main risk factors and mechanism of osteoarthritis of the knee are mainly related to increased age, genetic changes, joint tissue damage and excessive drug use, obesity, decreased bone mineral density, increased pressure on the medial bone, and sex hormones various factors are related.

With the rapid development of electron microscope technology and further understanding of the pathogenesis of osteoarthritis, it was found that the formation of cartilage bone apoptosis in sports stromal cells, the degradation of cartilage matrix outside the sport's stromal cells and the formation of subchondral bone matrix reconstruction. The process is the main cause of cartilage matrix degradation in patients with osteoarthritis of the knee [1]. Foreign clinical scholars generally believe that the main causes of clinical occurrence of knee osteoarthritis are mostly caused by apoptosis of certain motor-active cells in the knee bone and cartilage, such as protein and polysaccharide metabolism and synthesis disorders and joint collagen fiber framework and degeneration and decomposition of soft tissues. High pressure of intraosseous bone and other mechanical external forces, mainly because bone and trabecular fine joint fractures cannot heal, making the bone under the articular cartilage soften and harden, resulting in knee bone progressive fracture damage with cartilage [2]. The emergence of electron microscopy technology has brought the field of motor cell research into a new stage. At the same time, the role of motor cell apoptosis in cartilage in the pathogenesis of knee osteoarthritis has also attracted more and more attention from researchers.

In this article, in order to discuss the specific changes of motor cells in the knee osteoarthritis patients under the microscope, we have consulted many relevant resources and summarized them. Among them, El-Banna gave a detailed introduction to the principles of concomitant knee osteoarthritis, analyzed the current problems in the medical system for the treatment of knee osteoarthritis, and elaborated the medical community for knee osteoarthritis Research methods and techniques [3]. In his article, Casula proposed that the development and application of electron microscope technology is very important for the treatment of knee osteoarthritis, and pointed out some of the shortcomings of disciple microscope technology [4]. Zhang elaborated in the article that it is necessary to study the exercise cells of patients with knee osteoarthritis, and mastering the changes of exercise cells is the key factor for radical treatment of knee osteoarthritis [5]. Ke proposed that a knee osteoarthritis model can be established to study knee osteoarthritis from a biomechanical point of view, but this research method is also inseparable from the support of electron microscope technology [6]. Morais emphasized in the article that the study of sports cells is an important research direction in the field of biomedicine. For the treatment of many diseases, ultimately, it depends on the results of electron microscope examination of human sports cells [7].

In the study of changes in motor cells in patients with knee osteoarthritis under the microscope, this article summarizes and analyzes the research experience and results of a large number of predecessors. In addition, this article has made some innovations in the research content and research methods. The following points: First, in this article, the first observation of the target with an electron microscope is to replace the ordinary light source with the characteristics of strong monochromaticity and high brightness, to overcome many difficulties such as light spots and interference images, and the observation results are more accurate. Second, this paper firstly combined a laser scattering measurement technique with a highly sensitive anti-interference technique to invent a new diagnostic method for identifying moving cells. Thirdly, this article takes the lead in combining optical microscope, laser scanning and computer image processing technology together to create a picture generation method based on computer intelligent operation processing, which greatly improves the clarity of observation images.

2. Cell Tracking and Microscope Principles

2.1. Ways to Track Motor Cells

Of course, in the treatment of many diseases including knee osteoarthritis, the role of motor cell research is very important. Since the establishment of cytology, the first study was the movement of cells [8]. At that time, due to the limitations of experimental equipment, unlike today's high-power microscopes, the microscopic level that the human eye can see is just the entire cell under the microscope. The basic changes of sports cells can be observed, so the cytology research at that time was more focused on the movement of cells. Scientific researchers have always been workers in the field of sports cells research. With the passage of time, the development of science and technology today makes scientific research convenient and effective[9]. Although more scientific research activities have penetrated into the microscopic field of cells, the importance of sports cell research has not faded with the passage of time, but gradually disappeared with the passage of time. This method is very active in the field of cell research. In general, the study of moving cells is divided into physical and chemical methods and image methods. Physical and chemical methods are mainly cell staining methods. Through staining techniques, cells are stained with chemical reagents. Under the microscope, due to the strong contrast between the stained cells and the dark background, motion observation is effective.

Movement cell tracking based on staining has been the main method for tracking movement cells. Its technology is mature and many scientific research organizations are still using it. The staining technique for living motor cells is usually fluorescent staining, the dark environment of the microscope. Excellent contrast makes the movement observation clearer. The operation process has been standardized, and the general biological laboratory can carry out the operation of dyeing technology. Through the microscope, the movement of stained cells in the cell culture fluid can be observed, and related activities can be observed in real time. However, this is a rather tedious technical activity. The staining process is not only cumbersome, but also takes a lot of time to perform the staining operation, and if you want to observe the movement of the cells, it takes a long time for the experimenter to observe with the eyes.

The study of motion cells in image tracking mode is an emerging research method developed in recent years. This method not only reduces the tedious activities of artificial staining, but also makes motion analysis intelligent, and does not require the observer to always stare. The collection equipment collects the moving images of the cells under a microscope, and then observes and analyzes the video or images of the cells. It usually takes ten to twenty hours to observe the moving cells, and some observations take longer. The physical health of the observer is still very rigorously tested [10]. Moreover, the dyeing method is a biochemical method after all. After injecting the chemical substance, even if the chemical substance has less influence on the cell, it cannot always give the objective situation of moving the cell. Therefore, if the image mode is used, the movement process of the unit can be objectively displayed. Admittedly, there are many problems with image-based motion cell analysis technology. After all, this is a new type of sports cell analysis technology that requires more researchers to analyze and study related issues.

2.2. Application Principle of Electron Microscope

Electron microscopes can be roughly divided into two categories: scanning electron microscope (SEM) and transmission electron microscope (TEM) [11]. The two works in much the same way, but they are also different. The working principle of electron beam in electron microscope is similar to the working principle of visible beam in our life. When the sun shines on the leaves, it receives the visible light reflected by the leaves with the naked eye to understand the shape of the trees. In

the scanning electron microscope, after the electron beam reaches the surface, it interacts with the surface of the sample, and the signal is excited by the structure close to the surface of the sample, and the probe receives the signal to obtain the surface morphology of the sample. The sun shines on the leaves and shows some shadows on the ground. By analyzing the distribution of the shadows, you can see the shape of the tree. In the transmission electron microscope, after the electron beam reaches the sample, it not only interacts with the sample, but also passes through the sample. The probe receives the light passing through the sample and obtains structural information about the sample. In life, the sun and electric lights can be used as a source of visible light. In an electron microscope, a "light source" with appropriate strength and stability can also emit electrons. This can be achieved by heating tungsten wire or chromium hexaboride. This is mainly because the wavelength of accelerated electrons is shorter than the wavelength of visible light, the wavelength of accelerated electrons is 150 kivas about 6 pm, and the wavelength of visible light is 200-500 nm. Since the resolution limit is limited by the wavelength, the electron beam can be used to achieve a better resolution limit than visible light.

When working in an electron microscope, a SEM picture is not the same as taking a picture. The entire picture is recorded at the same time, but the electron beam is focused on a certain point on the sample surface to obtain information about the point, and then continue to move to the next one point. After the electron beam sweeps through the area, the information of each point will be used as the pixels of the composite image. The electron beam is not focused on a single point, but strikes the sample in parallel. At the same time record the electronic information through the sample, and then collect the electronic signal through the sample until the scan. After the entire area, the information of each point will be synthesized into the image. Focused ion beam is also an important TEM sample preparation method in electron microscopy. Since electron microscopy requires a sample thickness of about 20 nm, a focused ion beam can be used to cut and remove sample pieces of corresponding size to observe the TEM structure [12]. In this case, the thickness of the SEM sample should be less than 20 nm as with the TEM sample, otherwise the beam cannot penetrate the sample effectively. The electron microscope can obtain information about the sample surface, and can quickly and easily observe the shape and size of nano-scale materials. The electrons in the electron microscope pass through the sample, and the transmitted electronic signals transmit structural information inside the sample, making it suitable for analyzing the structural information of the sample, such as biomolecules, cell structure, and cell changes. The characteristic of the electron microscope is its excellent resolution ability, and the advanced scanning transmission electron microscope can achieve direct imaging at the atomic level, so it has great value in medicine.

3. Moving Cells under Microscope

3.1. Research Object Selection and Research Content

In this experiment, 30 patients with knee osteoarthritis were diagnosed as the test object, 18 male patients and 12 female patients, aged 50-70 years old. These patients were randomly divided into three groups, and they were conducted with an electron microscope medical testing, through expert consultation and research, to determine different research programs, in order to test the changes of the electron microscope on the movement cells of the diseased tissue of patients with knee osteoarthritis. Examine the injection of antispasmodic agent to the knee osteoarthritis site, establish the venous access in the right hand, and conduct the drug sensitivity test. Before scanning, it is recommended to apply an appropriate amount of neutral hydrochloric acid dehydrogenated sodium chloride foaming agent or other water-soluble rinsing solvent to the hospital mucosal layer and coated drug surface of the mucosal lesion, and intravenously inject 10% sodium fluorescein each

time. 5ml and or evenly spray 0.05% concentrated neutral dichloromethane dihydrochloride 5-10m in the local mucosa coating of the hospital, and then immediately prepare to start the hospital mucosa coating scanning disinfection processing control system, the end of the electron microscope endoscope is usually tight Stick on the surface of the patient's joints. When observing the endoscope of a local lesion, first put the endoscope of the lesion in the lower left corner of the observation window, and use a blue distal laser connector as a light guide to gently guide a remote laser connector of the laser endoscope. Placed on the damaged mucosa, the visible position of the focal plane can be adjusted with the laser button on the lens body, in order to ensure that the laser endoscope and the human knee osteoarthritis injury lesions are fully attached and at the same time maintain a stable visibility. The location often requires laser attraction of these lesions. The inspection method is an organic combination of automatic depth, layer-by-layer ECG scanning and manual foot-operated ECG. The Coomassie bright blue coating method is adopted, and the main working principle is the principle of fully applying the traditional organic chemical reaction method. Programmable calculation and detection of human protein content through human absorption and luminosity, a series of biochemical reaction methods to help determine the degree of arthritis in patients, combined with the use of electron irradiation microscope analysis of the generated three-element picture, accurate surgery or use medicine to aid treatment.

On the basis of the electron microscope, the experiment continuously replicated the arthritis soft tissue movement cell model by continuously stimulating the patients with arthritis lesions to make them contract isometrically. The electrical stimulation scheme of this model is: use a needle electrode, the negative electrode is located at the midpoint of the ischial tuberosity and iliac tuberosity, and the positive electrode is located in the middle of the skeletal muscle; the electrode penetrates 2.5-4cm, and the pole spacing is 5-6cm. Stimulation parameters are: voltage 8-80V, wave width 0.1-0.5ms, frequency 66Hz, string length 0.5sec, trigger once per second; use laser microscopy combined with minimally invasive surgery to take specific parts of the diseased joints of patients with knee osteoarthritis. The patient's knee soft tissue mass of about 0.5*0.5*0.1cm lesions was immediately fixed in 3% glutaraldehyde fixative solution for the preparation of transmission electron microscopy sections, fat and connective tissue were removed, and dried with filter paper for subsequent. Prepare for research and analysis of laser microscope application effects.

3.2. Related Equipment and Methods of Operation

The equipment required for this experimental study is as follows: laser micro endoscopy (integrated confocal laser micro endoscopy, embedded micro confocal laser microscope into the lens side of general white light). The head side is composed of water gas nozzles, auxiliary observation equipment for observation, use a water spray hole, two guided beams and a Leica CTS SP2 laser scanning confocal microscope. Microscope image resolution: 1024x256 scan time interval: 400ms; pinhole: 20μm, zoom: 2; scan mode: XYT scan mode, bidirectional sequential scanner: scan frequency: 800Hz; 20 frames, use channel 1, excitation wavelength: 488nm emission wavelength: 498nm ~ 510nm. Medical ultrasonic coupling agent AB-I, thin paper ring, adhesive window, adjustable power supply 36V, related materials: biological tissue embedding machine BMJ-6, thin film machine, detector, sodium fluorescein 10%, light yellow hydrochloride 0.5%.

Apply the detection gel evenly to the confocal laser microscope and install it with a disposable contact lens. Adjust the microscope lens position and focal length according to the position of the diseased joint of the knee osteoarthritis patient. Scan, the scanned picture should try to choose a clear picture to save the results, and finally use Rostock measurement method for research and analysis. The morphological changes, whether it is the changes of motor cells in the joint soft tissue

of the patient observed by the laser microscope or the electron microscope, meanwhile, the blood biochemical methods detected the degradation of muscle enzyme activity, myoglobin and muscle protein in serum. Elevated levels can be used as indirect evidence and signs of knee joint disease. Adjust the focus under the inverted microscope, select the bright and dark bands, the knee joint fiber damage is less and close to the edge of the entire muscle, and then focus into the knee joint fiber.

3.3. Experimental Results and Related Data

When locating the material under an electron microscope, the CB-HRP-labeled neurons of the motor cells of the diseased tissue are dark brown, the dendrites of the cell body and motor cells are clear and smooth, without visible damage and those without starvation. Compared with labeled samples, the density of labeled dendrites in the white matter is slightly lower. Due to the use of a vibrating microtome, parallel knife marks are left on the slicing surface. Observed under an electron microscope, the CB-HRP-TMB reaction product after starvation showed characteristic electron-dense needle-like crystals, which were arranged parallel to each other to form thick bundles or clumps, and the boundary was not smooth. In addition to the sparse crystal beam, the electron density is usually higher than that of the myelin sheath. The length of the beam seems to be related to the cutting angle. The crystal bundles of motor cells are mainly located in the plasma membrane of dendrites. Sometimes it can be seen that they bend sharply under the membrane. As if the presence of the membrane hinders the forward growth of the crystal, causing it to extend in the opposite direction, but occasionally, the crystal beam passes through the dendritic membrane and enters the dendrite. Electron microscopy samples after TMB histochemical reaction showed that the knee tissue of patients with knee osteoarthritis is usually worse than the unlabeled samples. The cytoplasmic matrix of the motor cells in the dendrites contracted and deformed more severely, and the mitochondria swelled, but the synaptic structure of the motor cells was still clearly distinguished. As shown in Table 1, the data table related to the migration, autophagy, apoptosis, and contraction of motor cells of the diseased tissue of the knee patients under the microscope.

Table 1. Movement cell migration, autophagy, apoptosis, and contraction related data

List of changes in exercise cells				
Name	Multiplication effect	Inhibitory effect	Serum quantity	Recovery cycle(day)
Cell migration	1048±10	507.8-619.2	19.9-121.3	6-8
	1836±15	417.3-518.8	68.6-106	7-12
Autophagy	2037±12	632.5-714.8	59.4-87.9	14-18
Cell contraction	3145±12	863.7-912.8	88.5-97.1	12-15

Observed with an electron microscope, under normal circumstances, the proliferation and contraction speeds of moving cells are slightly unbalanced. During the centripetal contraction of motor cells, when the maximum contraction rate of motor cells differs by 0.5%, the proliferation capacity of motor cells differs by only 2%; while during autophagy of motor cells, although the contraction rate also differs by 0.5%. The effects of proliferation inhibition differ by more than 50%. Therefore, during the migration of exercise cells, due to the large differences in the ultrastructure of exercise cells in knee osteoarthritis, it is easy to cause the Z line flow of exercise cells, or the pulling of myosin makes myosin in the sarcomere. The change of the apoptosis efficiency of exercise cells is manifested by the reduction of cell migration and autophagy, which will change the soft tissue structure of the knee joint. It is actually the external manifestation of cell damage. In this study, the electron microscope obtained a total of 897 images, of which 58 C-level images (5.8%), 118 B-level images (13.6%), and the remaining A-level images, a total of 738, accounting for

80.13%.

4. Analysis and Discussion of Movement Cell Changes

4.1. Analysis of the Changes of Motor Cells in Patients with Knee Osteoarthritis under the Microscope

This study found that motor cells in affected tissues of knee osteoarthritis patients have the ability to "reverse polarity". This allows the cell to quickly adjust its direction of movement in response to changes in the surrounding signal field, and accurately reach the specified range in the area where it performs its function. At the molecular level, the key to "polarity reversal" of exercise cells is that the intracellular signal molecules are redistributed according to the direction of external signal stimulation: certain molecules that mark the formation of prosthetic feet, the knee. The intracellular signaling pathways used by cells that change during the "sexual reversal" phase are consistent with the "early polarization" phase. The changes caused by "limit reversal" of motor cells in the diseased tissues of knee osteoarthritis patients are shown in Table 2.

Table 2. Changes caused by "limit reversal" of exercise cells

Number	Indicator type	Before the experiment	After the experiment
G protein	49±0.185	138±0.235	120 ± 10^{4}
Phosphokinase	38±0.136	146±0.185	119 ± 10^{5}
Actin	57±0.221	140±0.221	123±0.776
Diphosphate	66±0.328	158±0.487	102 ± 10^{4}

Knee osteoarthritis is due to the thin film layer located at the front of the motor muscle cells in the soft tissue of the patient's knee lesions and the driving force of the adjacent membrane area is the main movement site, which has a microfilament density of up to 100 / micron. The actin cells that have been purified in vitro can quickly aggregate and form long and flexible filamentous microfilaments. Such a microfilament structure may soon produce a continuous and effective lateral driving force for it. The nucleation of the microfilaments is coupled with the short filaments connected to the knee joint, which provides the foundation of human body structure for the direct movement structure of the muscle and ligament through the microfilament cytoskeleton in the soft tissue inside the knee. A regenerated short filament can also directly participate in the movement of the moving cell membrane, and the resultant force can effectively drive the directional contraction of the microfilament cells. Due to the specialization of the terminal dendritic cell core of the filial cell receptor microfilament, the growth angle of the filial cell relative to the mother filament is about 70 degrees on average, so for each filament. The direction of cell growth movement is not completely perpendicular to the front edge but the movement receptor cell microfilament cell membrane. Under the field of view of the electron microscope, the driving force of the thin layer of the frontal layer of the motor cells in the diseased tissue of the knee osteoarthritis patients changes specifically, as shown in Figure 1.

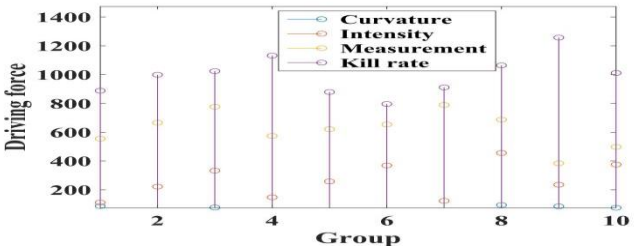

Figure 1. The frontal thin layer of the motor cell near the membrane area is the specific change of the driving force

From the data in Figure 1, it can be seen that under the field of view of the electron microscope, the driving force of the thin film near the membrane of the diseased tissue of the knee osteoarthritis patients will be increased by 34%.

In the field of clinical research and application of abnormal changes in motility leukocytes in early patients with knee osteoarthritis and diseased soft tissues, the experimental model has developed into the most important clinical research technique besides biochemical medical experiments. The cell models designed and constructed by the author in order to further study the cell model changes in cell movement still belong to the research category of "activation-inhibition" cell models. In this paper, the random activation / motion inhibition of cellular molecules is combined with the random movement of molecular entities between the single cell cytoplasm and plasma membrane, so that the function of the molecular model can also be used to process the signal transmission of the substance. Various characteristics of signal transmission processing system with other substances. In the tissues of patients with advanced knee osteoarthritis after knee disease, the typical motor joint cells based on P and MSPCT are very similar to the typical motor joint cells based on misacting, mainly through their respective cytoskeletons. The dynamic changes of the cells drive the rapid extension and dragging of the front of each cell to push the cell body forward. In the early stage of patients with rheumatoid arthritis of the knee. The changes in cell motility and cell nucleus in the diseased joint tissue include not only the migration of cell nucleus, but also changes in cell movement morphology, cell autophagy, and changes in cell movement polarity. Cell division and other new life chemistry activities. As shown in Figure 2, the changes in migration and value-added ability of motor cells in the tissues of patients with knee osteoarthritis.

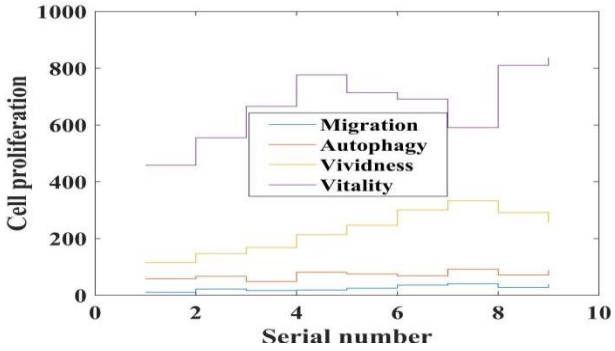

Figure 2. Changes in migration and value-added ability of exercise cells

From the data in Figure 2, it can be seen that under the microscope, the migration of motor cells in the diseased tissue of patients with knee osteoarthritis increased by 17%, and the cell proliferation inhibitory effect increased by 15%.

4.2. Discussion on the Changes of Motor Cells in Knee Osteoarthritis and the Application of Electron Microscope

(1) Discussion on observation of moving cells by electron microscope

Electron microscopy plays a huge role in studying the motor cells of diseased tissues of knee patients. Sports cell structure is the basic unit of the human body. The study of changes in sports cells can be roughly divided into observation methods of surface changes and internal changes of sports cells. Electron microscopy also plays an important role in the study of these methods. After decades of rapid development, electron microscope technology has greatly improved the image resolution multiples and resolution. With the continuous improvement of the resolution and imaging resolution of electron microscopes, the observation and research of human diseased tissues has

gradually developed and expanded from simple indirect observation with magnifying glass to direct observation of moving cells. The wide application of electron microscope has solved many optical problems. The difficult problem of the motor cells that cannot be directly observed by the microscope. The scientific research results obtained by conducting research on the observation of the motor cells of the diseased tissues of knee patients are many aspects of human histology and anatomy, physiology, pathology. The development of scientific research provides an important basis and more scientific research methods. The results of the study show that using electron microscope to observe the changes of knee osteoarthritis motor cells has greatly improved the observation effect and observation efficiency. The relevant data is shown in Figure 3.

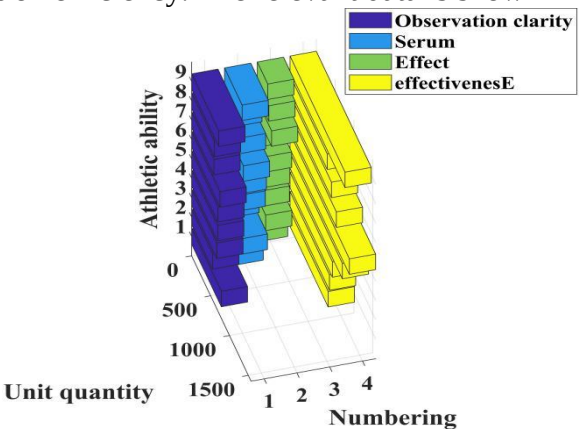

Figure 3. Movement cell changes have greatly improved the observation effect and efficiency

It can be seen from the data in Figure 3 that using electron microscope to observe the changes of knee osteoarthritis motor cells has greatly improved the observation effect and observation efficiency, which can increase the observation effect by 30% and the observation efficiency by 26%.

(2) Discussion on changes of motor cells in knee osteoarthritis

For patients with knee osteoarthritis, the apoptosis of motor cells in the diseased tissue is the same as cell proliferation, growth, and differentiation, which is a process of cell changes. Exercise cell apoptosis is a hot spot in medical and biological research in recent years. However, the mechanism of regulation of exercise cell apoptosis in osteoarthritis is not fully understood. With the discovery of more and more apoptosis-related factors, the mechanism of motor cell apoptosis seems to be more complicated. There are at least two independent pathways of apoptosis that are involved in the acute apoptosis of motility leukocytes on the synovial cartilage of acute osteoarthritis. Nitric oxide cell-mediated; the other is the apoptotic pathway associated with other synovial cartilage inflammatory cells, mediated by an abased. Not only are these two independent receptor pathways, but in chronic osteoarthritis, nitric oxide-dependent pathways are more important. Nitric oxide metabolism may cause chronic apoptosis in cells in moving objects through the following major metabolic mechanisms. First, it inhibits the activity of acetyl aconitase in the metabolic cycle of tricarboxylic acid, so that cells in moving objects are affected oxidized sugar metabolism and normal respiratory function are severely interfered, and glycogen breaks down, leading to glycogen failure. Directly combined with some acidic iron ions containing ferrous atoms or porphyrins to form a nitroamide-based complex, causing damage to the mitochondria. Induces matriculation of synthetic nucleic acid salts, destroys the synthetic DNA double helix molecular structure, affects other target matrix molecules in typical motility leukocytes, regulates the second messenger, and induces abnormal damage that depends on the combination of receptor genes into DNA Sports leukocytes undergo apoptosis. The study found that the rate of apoptosis of motor cells in diseased

tissues of knee osteoarthritis patients is higher than that of healthy tissues. The specific data is shown in Figure 4.

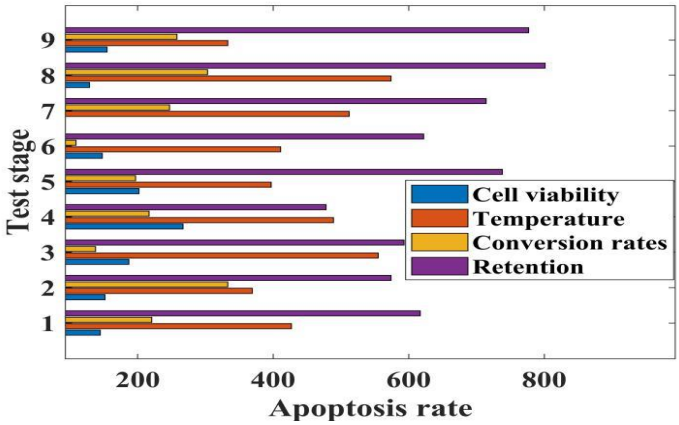

Figure 4. Exercise cell apoptosis is faster than healthy tissue

It can be seen from Fig. 4 that the apoptosis rate of exercise cells in diseased tissues of knee osteoarthritis patients is 19% higher than that of healthy tissues, which is also one of the causes of knee osteoarthritis.

5. Conclusion

(1) Knee osteoarthritis is a common disease in the elderly. The onset of knee osteoarthritis is often accompanied by changes in joint soft tissue motor cells. Motor cells are an important link in biology and determine the direction of knee osteoarthritis. With the development of microscope technology, the observation of motor cells has entered a new perspective, and the study of changes in motor cells of diseased tissues is of great significance for the treatment of knee osteoarthritis.

(2) The results show that observing the changes of knee osteoarthritis motor cells under the microscope can increase the therapeutic effect of knee osteoarthritis by 24%. At the same time, it is found that the migration of motor cells at the joints of knee osteoarthritis patients increased by 17%, the cell proliferation inhibitory effect increased by 15%, this finding is of great significance for the treatment of knee osteoarthritis, proving the feasibility and necessity of microscopic observation.

(3) Under the field of view of the electron microscope, the frontal thin layer of the motor cell in the diseased tissue of the knee osteoarthritis patients is near the membrane area, and the driving force will be increased by 34%. Using electron microscope to observe the changes of knee osteoarthritis motor cells has greatly improved the observation effect and observation efficiency, which can increase the observation effect by 30% and the observation efficiency by 26%. The rate of apoptosis of motor cells in diseased tissues of knee osteoarthritis patients is 19% higher than that of healthy tissues, which is also one of the causes of knee osteoarthritis.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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