

Diagnostic Value of 64 Slice Spiral CT Combined Detection of Cd4 + Cd28-T Lymphocytes in Patients with Coronary Artery Plaque

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Abstract: in recent years, with the continuous progress and development of science and technology and the increasingly mature medical technology, the diagnosis of coronary artery plaque is becoming more and more complex. In recent years, there are many challenges and obstacles in the development of scientific and medical treatment. In order to successfully break through these challenges and obstacles, we must establish a 64-layer spiral CT detection system and lymphocyte symptom response. This paper mainly introduces the design and study of the diagnostic value of 64 slice spiral CT combined detection of CD4 + CD28-T lymphocytes in peripheral blood of patients with coronary plaque. This paper uses 64 slice spiral CT to detect the value of peripheral blood CD4 + CD28-T lymphocytes in the diagnosis of coronary plaque. The main purpose of CT is to solve two problems: the shape, size, location and activity of coronary plaque; The influence of coronary plaque on vascular anatomy and physiology plays a guiding role in treatment. The motion of coronary plaque and its relationship with heart cavity, heart wall and valve mouth (such as whether the movement of coronary plaque causes obstruction of valve mouth, etc.) can be displayed by film scanning, and cardiac function can be calculated. The results show that the diagnostic value of combined detection of CD4 + CD28-T lymphocytes in peripheral blood of patients with 64 slice spiral CT makes the plaque treatment rate increase by 16%. The limitations of the design of 64 slice spiral CT are analyzed the research and summary will enrich the academic research results.

Keywords: 64 Slice Spiral CT, Cd4 + Cd28-T Lymphocytes, Peripheral Blood, Coronary Plaque

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64 slice spiral CT (CTA): it has good value in the evaluation of coronary artery morphology. It will replace the traditional cannulation angiography in the preliminary diagnosis and interventional treatment of coronary artery disease, coronary stent and bridge angiomorphology evaluation. The sensitivity and specificity of 64 slice spiral CT in diagnosing coronary stenosis were 76.7%, 94.7%, and the coincidence rate was 86.0%. MS CT showed that the sensitivity and specificity of coronary stenosis (>50%) were 89% and 98%, and the positive and negative predictive values were 90% and 98% respectively. It can be used as a noninvasive method for the evaluation of coronary stenosis. The value of the diagnosis of coronary artery

malformation and variation.

64 slice CT is made of X-ray beam with accurate collimation γ The X-ray, ultrasonic, etc., together with the detector with high sensitivity, make one after another cross-sectional scan around a certain part of the human body, which provides a good research method and research basis for the research of in vivo blood vessels ^{1,2}. In recent years, some scholars have made useful exploration on the construction of in vivo coronary artery network by CT. So far, many scholars have made detailed anatomical study on the arterial vascular network of human body parts such as skull and thyroid gland by using this technique. Therefore, there is no report on the detailed CT imaging anatomical data of the

coronary artery network. Therefore, Y-Z, based on the original in vivo coronary CTA study, made use of the three-dimensional reconstruction technology of CT, observed and analyzed the CTA images of 33 normal coronary arteries, and studied the anatomical characteristics of the branches of normal coronary arteries, especially the origin, the running and the adjacent structures of the small collateral arteries, so as to identify the CTA expression of the coronary artery. It provides a platform for the diagnosis and treatment of coronary disease by 3D reconstruction technology, and provides anatomical and imaging basis for interventional radiotherapy and laparoscopic minimally invasive surgery.³⁻⁵

The summary of CD4 + CD28-T lymphocytes has shown that CD4 + CD28-T lymphocytes are a subgroup lacking CD28 expression and an important immunological index of the aging of the immune system. Wu x f believes that CD28 is a homodimer glycoprotein, a member of immunoglobulin superfamily, which can be expressed on 95% of CD4 + T lymphocytes, and participates in the regulation of the initiation, expansion, maintenance and down regulation of immune response, especially in the maintenance of immune system. It can maintain the survival of appropriate and functional T cells. It can improve the response of T-lymphocyte, induce the expression of anti-apoptosis gene, increase the secretion of relevant cytokines, promote the proliferation and activation of T-lymphocyte, and it plays an important role⁶. After several cell division cycles, T cells began to enter the aging process. The conclusion shows that there are three characteristics of cell aging: the length of telomere is shortened and the proliferation is stopped; Changes in cell function, such as the production of a large number of inflammatory cytokines, etc; Tolerance to apoptosis^{7,8}. The loss of CD28 is the most well-known phenotype change of cell aging. The results showed that the shorter telomere of CD28, the higher the infection rate, and thought that cd28t cells represented aging lymphocytes. The response was changed from the shortened telomere length of cd28+ precursor cells after repeated stimulation of antigen^{9,10}.

In this paper, CD4 + CD28-T lymphocytes were selected to study and find that it can regulate

the growth and differentiation of the cells, regulate the proliferation and differentiation of the cells, stimulate the secretion of extracellular matrix and inhibit the immune response of the body. Lymphocyte pathway is widely involved in cell processes and involves in some diseases, including cancer, tuberculosis, etc. Foreign scholars reported that both the macrophages and the epithelial cells of tuberculosis granuloma can secrete corresponding cells, and stimulate the increase of the number of secretory cells can construct animal models of skin and coronary artery fibrosis. These results suggest that CD4 + CD28-T lymphocytes are related to coronary plaque dense cutting, which provides a theoretical basis for guiding clinical diagnosis and treatment.

STUDY OF CORONARY ARTERY PLAQUE UNDER 64 SLICE SPIRAL CT

Ct Image Reconstruction Algorithm

The basic material decomposition algorithm based on projection domain decomposes the attenuation coefficient of an object into the attenuation coefficients of several basic materials, which can be expressed as: the principle of image denoising based on mean filtering can be expressed by Formula 1:

$$\frac{\partial I(x,y,t)}{\partial t} = \text{div}(\nabla I(x,y,t)) = \frac{\partial^2 I(x,y,t)}{\partial x^2} + \frac{\partial^2 I(x,y,t)}{\partial y^2} \quad (1)$$

Here, n represents the number of basic materials, μ represents the linear attenuation coefficient of basic materials in energy N , and d represents the corresponding content of basic materials. The attenuation of X-ray can be expressed as follows:

$$dN_1 = -\mu N d\theta \quad (2)$$

It should be noted that the X-ray energy is a continuous spectrum, where $w(E)$ is the weight of the energy in the i th energy spectrum curve. Take dual energy CT imaging as an example. The main performance is that when the neighborhood range is relatively large, the edge gradient and the pseudo edge gradient caused by noise will also increase at this time, which will cause the image to be a line integral on the ray path of the base material content, expressed as

$$X_t = \sum_{j=0}^q \theta_i \varepsilon_{i-j} \quad (3)$$

The basic material decomposition algorithm based on image domain also assumes that the linear attenuation coefficient of a material can be

linearly combined by the linear attenuation coefficients of multiple basic materials. Firstly, the traditional CT reconstruction algorithm is used to reconstruct multiple groups of image data by spectral projection, and then the material decomposition operation is performed on the image. Taking dual energy CT imaging as an example, the attenuation coefficient of two energies can be expressed as

$$grad(X) = (x \oplus b) - (x \otimes b) \quad (4)$$

Inverse matrix $T = k^{-1}$. In 2014, Niue tal. Pointed out that the above direct matrix inversion method will produce more serious noise, so they proposed a material decomposition iterative algorithm based on image domain to obtain better denoising effect. They construct a least square model with smooth penalty term

$$g(I_m(I)) = \frac{e^{i\theta}}{1 + (\frac{I_m(I)}{M\theta})^2} \quad (5)$$

$$I(x, y, 0) = I_0(x, y) \quad (6)$$

More and more research institutes pay attention to the physical property reconstruction algorithm. This algorithm is different from the matter decomposition algorithm in that they do not consider the attenuation coefficient of matter as a combination of multiple base substances, but consider the attenuation coefficient as a function of density (P) and effective atomic number (z)^{11,12}. This function can be used as a table

$$\frac{\partial I(x, y, t)}{\partial t} = div(g(|\nabla I(x, y, t)|) \nabla I(x, y, t)) \quad (7)$$

$$M_{MO} = \frac{2MO}{A1 + A2} \quad (8)$$

$$\bar{V} = \frac{1}{J} \sum_{K=1}^J X_K \quad (9)$$

CT system can be expressed as linear system $ax=y$, where a $m \times n$ is called system matrix, and the matrix is over determined. Moreover, the projection data collected in practice contains a lot of noise. The reconstruction of images can be obtained by solving the constrained least square problem

$$A = [a_{ij}]_{m \times n} \quad (10)$$

The effective information between similar pixel blocks is eliminated by nonlocal mean filter. This filter can be expressed as:

$$\hat{y}(t) = CX_i(t) \quad (11)$$

$$\frac{\partial I(x, y, t)}{\partial t} = div(\nabla I(x, y, t)) = \frac{\partial^2 I(x, y, t)}{\partial x^2} + \frac{\partial^2 I(x, y, t)}{\partial y^2} \quad (12)$$

The optimal solution can be obtained. Using the classical gradient descent method and the positive term constraint condition, we can get the following iterative algorithm

$$Y_{ik} = \alpha I_i + U_i Y_{ik} > 0 \quad (13)$$

$$I_{i,j}^{t+1} = I_{i,j}^t + \lambda [g_N \nabla_N I_{i,j} + g_S \nabla_S I_{i,j}] \quad (14)$$

Here is the identity matrix of size $N \times N$. In order to simplify the above formula, we define SS NLM filter as follows:

$$g(I_m(I)) = \frac{e^{i\theta}}{1 + (\frac{I_m(I)}{M\theta})^2} \quad (15)$$

64 Slice Spiral CT of Coronary Artery

The coronary vascular network model constructed by 64 slice spiral CT provides a certain image anatomical basis for the study of coronary artery morphology, provides an individualized and accurate morphological basis for minimally invasive coronary surgery and coronary intravascular intervention, provides new technology for clinicians to diagnose and treat coronary vascular diseases, and lays a foundation for the development of individualized treatment^{13,14}. Methods: 64 slice CTA data sets of patients with postpartum hemorrhage who failed to receive conservative treatment were used to reconstruct the coronary artery network with the software provided by CT, to study the method and significance of constructing the coronary artery network in postpartum hemorrhage, and to observe and analyze the situation of coronary artery participating in the blood supply of lesions in postpartum hemorrhage^{15,16}. For all 21 patients, the complete coronary vascular network was successfully constructed. The vascular network had clear edge, regular shape, natural movement and strong three-dimensional sense °. Rotation observation can clearly show the internal iliac artery and its 3 ~ 4 grade vascular branches, and can be used for three-dimensional imaging of all coronary arteries including coronary artery. Among the 21 patients, 12 patients (57.1%) could show coronary arteries in CTA images. There were 42 coronary arteries in 21 patients, including 12 on both sides and 6 on both sides. The display rate of coronary arteries was 42.9% (18 / 42). In 12 patients with coronary artery, CTA images showed that the diameter of coronary artery was thickened, ranging from 2.0 mm to 11.6 mm. In 2 patients, OA was abnormal and the coronary vein was developed in advance,

indicating the existence of coronary arteriovenous malformation^{17,18}. Objective to evaluate the value of 64 slice spiral CTA in the diagnosis of giant coronary plaques by observing the display of blood vessels and feeding arteries, and to provide help for the formulation of clinical treatment plan^{19,20}. Coronary CT is shown in Figure 1.²¹⁻²³

T Lymphocyte Function Analysis

The percentage of CD4 + CD28-T lymphocytes in peripheral blood of patients with abdominal aortic aneurysm and acute cerebral infarction was significantly increased. The expression levels of ifn-y and TNF-a in peripheral blood of patients with A were significantly increased, and the expression levels of ifn-y and TNF-a were positively correlated with the diameter of A, respectively. It is speculated that the increase of CD4 + CD28-T lymphocytes, tnf-u, ifn-y and other cell factors has a significant effect on the growth of patients with A. It may play an important role in the early inflammation and immune pathogenesis of patients with acute cerebral infarction, and then lead to ifn-y and TNF- α . The interaction stimulates the process of inflammatory response and aggravates the damage of brain tissue and local inflammation of abdominal aorta respectively²⁴. According to the data, TNF- α the increase of specificity can also lead to the decrease of CD28 expression, which leads to the increase of CD4 + CD28-T lymphocyte aggregation. Its TNF- α , the specific injury mechanism of ifn-y and CD4 * cd28t lymphocyte interaction in patients with abdominal aortic aneurysm and acute cerebral infarction needs further study. The details are shown in Figure 2:²⁵

Although the coronary artery, aorta and pulmonary artery can be imaged by spiral CT with less than 16 slices, the choice of scanning parameters is quite different. The coronary artery is slender, and the minimum collimation and small pitch should be selected; However, the large diameter of aorta requires relatively low spatial resolution, but the aorta is long, so large pitch is needed to meet the requirements of large-scale scanning. Due to the limitation of scanning speed, it is difficult to meet the requirements of small collimation and small pitch fine scanning of coronary artery in large-scale scanning of aorta, and it is difficult to display the whole process of

aorta in small collimation and small pitch fine scanning of coronary artery. Because of the difference between pulmonary circulation time and systemic circulation time, pulmonary artery and coronary artery cannot be well displayed at the same time, so the data of one scan cannot meet the requirements of three kinds of angiography at the same time. The etiological diagnosis of acute chest pain often needs multiple scans, which increases the X-ray radiation and economic burden of patients. With the advent of 64 slice spiral CT, it can meet the requirements of high-resolution reconstruction with larger coverage and faster scanning speed. Choosing small collimation and small pitch is feasible to scan in a larger range. One scan can simultaneously perform coronary artery, aorta and pulmonary artery imaging. This scanning technology is called combined cardiothoracic angiography. The application of cardiothoracic combined with angiography can quickly and intuitively identify the cause of acute chest pain, and provide scientific basis for timely and appropriate treatment. It will have a broader application prospect in the diagnosis of cardiovascular diseases. The details are shown in Figure 3:

CD4 + CD28-T LYMPHOCYTE ON CORONARY ARTERY

CD4 + CD28-T Lymphocyte Target Analysis

Studies on the relationship between CD4 + CD28-T lymphocytes and acute coronary syndrome have found that a kind of CD4 + CD28-T lymphocytes with specific abnormal proliferation is found in patients with acute coronary syndrome. CD4 + CD28-T lymphocytes can be detected in plaque rupture and peripheral blood of patients with acute coronary syndrome. This special subset of CD4 + CD28-T lymphocytes has a strong inflammatory effect and can overexpress plaque necrosis factor- α (TNF- α) And interferon-y (ifn-y). Under the action of inflammatory cells, acute coronary syndrome causes proinflammatory cytokines ifn-y and TNF- α . There is a close relationship between them. The details are shown in Figure 4:

The possible mechanism is the abnormal proliferation of CD4 + CD28-T lymphocytes stimulated by antigen in patients with acute coronary syndrome, secreting a large amount of

inf- γ , and secreting TNF through activated monocyte macrophages- α and matrix metalloproteinases. On the other hand, it can induce apoptosis by binding to vascular smooth muscle cells expressing chemokine receptor CCR5. Relevant scholars believe that CD4 + CD28t lymphocytes may have a direct effect on plaque rupture in patients with acute coronary syndrome, i22i, and DRB1 * 01 and DRB1 * 04 are susceptible genes of coronary heart disease. The expression level of CD4 + CD28t lymphocytes in 136 patients with acute coronary syndrome who were classified by HLA-DRB1 was detected. The results showed that DRB1 * 01 and DRB1 * 04 were closely related to the increased expression of CD4 + CD28-T lymphocytes in patients with ACS. In addition, CD4 + CD28-T cells of patients with acute coronary syndrome have cytotoxic effect, which can kill endothelial cells in vivo and amplify the effect of I25i. In addition, TNF- α is a cytokine that promotes the proliferation of CD4 + CD28-T lymphocytes. Anti TNF- α monoclonal antibody can selectively block tnfr-0, thereby reducing the proliferation and expression of CD4 + CD28-T lymphocytes. Therefore, intervening the expression of CD4 + CD28t cells and inhibiting the inflammatory response mediated by CD4 + CD28t cells may be another effective way to prevent and treat ACS. The specific results are shown in the table.

T Lymphocyte Immune Imbalance Diagnosis

At present, immunological studies have found that T lymphocyte immune imbalance often exists in patients with coronary artery disease. Low immunity is a characteristic of coronary artery disease. The range of inflammation is expanded, the delayed hypersensitivity is high, and the inflammatory reaction is severe. Therefore, the regulation of immune response is also an important aspect of the treatment of tuberculosis. Among them, T lymphocytes are the main effector cells of cellular immune function. In normal body, T lymphocyte subsets maintain a certain number and proportion, regulate each other, interact with each other, and maintain stability, in order to maintain the normal immune function of the body. Although there are more and more researches on T lymphocyte subsets in tuberculosis, the role of CD4 + CD28-T

lymphocyte in coronary artery has not been reported. In this study, the expression level of CD4 + CD28-T lymphocyte in pleural effusion and peripheral blood of patients with coronary artery was detected, and then the change of its proportion was analyzed.

Studies have shown that the characteristic of coronary artery is the regionalization of protective immune cells. The results showed that the concentration of MCP-1 in pleural effusion was significantly higher than that in corresponding serum ($P < 0.05$), suggesting that MCP-1 may be related to the rich immunoregulatory cells (CD4 + T lymphocytes) in pleural effusion. In addition, compared with pleural effusion in malignant group, effusion group and empyema group, the concentration of MCP-1 in tuberculosis group was significantly higher, which further indicated that there was a possibility of the correlation between MCP-1 and CD4 + T lymphocytes in the pleural cavity of patients with coronary artery disease. When MTB stimulated the pleural cavity, it caused pleural inflammatory response, and the specific immune response promoted CD4 + T lymphocytes to gather in the pleural cavity, and secreted various cytokines. The expression of MCP-1 may be up-regulated by some regulation. The details are shown in Figure 5:

The expression of MCP-1 and TGF- β in CD4 + CD28t cells was detected- β Regulation of TGF- β 1 can stimulate the secretion of extracellular matrix and inhibit the autoimmune response. The increased expression of CD4 + CD28 T lymphocytes will inevitably lead to imbalance of other cytokines secretion. At this time, CD4 + CD28-T lymphocytes selectively express CX3CR1 and are chemotactic by CX3CL1. The interaction of CX3CR1-CX3CL1 can induce them to produce a large amount of plaque necrosis factor- α (It can also secrete a large amount of IFN- γ , make smooth muscle express MHC II molecules, reduce the type I and II collagen fibers that maintain the fiber cap tension, increase the permeability of pleural cavity skin, reduce the synthesis of collagen, and accelerate the process of tuberculosis inflammation. Finally, CD4 + CD28t lymphocytes infiltrated into the lesion tissue and damaged the pleural mesothelial cells through the mechanisms of cytotoxicity and apoptosis.

The sensitivity of 64 slice spiral CT in the diagnosis of coronary thromboembolic diseases is

as high as 90% ~ 100%, and the negative predictive value is close to 100%, but the specificity is low. Malignant tumor, infection and trauma can be increased. Therefore, the real value of 64 slice spiral CT is not in the diagnosis of coronary thromboembolic diseases, but when its measured value is less than a certain value (e.g. PE and / or DVT of lower extremities can be excluded when many measurement standards are 500ng / ml. therefore, DD with high specificity can be used for screening of coronary thromboembolic diseases, and PE and DVT of lower extremities can be excluded when the measurement value is lower than 500ng / ml, so as to avoid unnecessary examination; If the measured value is higher than the threshold value, CTV PA combined scan will be performed to confirm the diagnosis of PE and / or DVT of lower limbs, so as to avoid blind anticoagulant therapy, because blind anticoagulant therapy or anticoagulant time more than 2 weeks have the risk of cerebral hemorrhage and other complications 12%. In addition, 64 slice spiral CT is convenient, fast and reliable The combination of ctv-pa and 64 slice spiral CT has the following important clinical significance: DD has high sensitivity, and it has screening significance for coronary thromboembolic diseases, Normal DD level can be used as the basis for clinical exclusion of PE and lower extremity DVT: CTV team combined scan can directly show the filling defect of emboli, and positive DD can confirm the presence or absence of PE and / or lower extremity DVT. The combination of the two methods not only reduces the economic burden of patients, but also avoids unnecessary irradiation. Because of the high sensitivity of DD, the combination of DD and DD can improve the detection rate of coronary thromboembolic disease. 64 slice spiral CT has some false negative, the 64-slice spiral CT value of chronic embolus can be in the normal range, some cardiovascular and / or pulmonary diseases caused by insufficient or uneven enhancement of blood vessels and the influence of respiratory artifacts, so that the hilar lymph tissue near the pulmonary artery is easy to be misdiagnosed as endovascular embolic material.

EFFECT OF CD4 + CD28-T LYMPHOCYTES ON THE PROPERTIES OF CORONARY ARTERY PLAQUE

Coronary Artery Diagnosis

Detection of soft coronary plaque: rupture and bleeding of coronary artery plaque are the main causes of acute coronary syndrome. Therefore, it is increasingly important to analyze the morphology and composition of coronary artery plaque by noninvasive examination, and to carry out risk stratification for patients with known or suspected coronary heart disease. At present, there are few reports of using CT value to evaluate coronary artery plaque. As we all know, EBCT is mainly used for the detection of calcified coronary artery plaque, and there are few studies on soft coronary artery plaque. The results are shown in Figure 6.

Advances in CT diagnosis of cardiovascular diseases. Pericardial disease: on the cross-sectional image, the pericardium is clearly displayed under the background of low-density mediastinum and epicardial fat layer. It is a smooth thin line with a thickness of 1-2mm, not more than 3mm. The diagnosis of right ventricular anterior flow is of great value. Ce-ssm can clearly display the anatomy of the great vessels of the heart, provide the objective connection and spatial position of the great vessels, atrioventricular and atrioventricular valves, and determine the relationship between the heart, great vessels and surrounding organs, which is helpful to the segmental analysis of the diagnosis of congenital heart disease. EBCT and MSCT can clearly show the detailed anatomy of pulmonary artery development and malformation, and their diagnosis is clearer and clearer than that of angiocardiology. They can directly guide the choice of surgical methods, and have important value in the accurate diagnosis of complex congenital heart disease, and can be used as a supplement or alternative method of angiocardiology. The details are shown in Figure 7:

In practice, there are many factors that can affect the accuracy of CT value of coronary artery plaque; Artifact of heart beat: studies have shown that the fluctuation range of CT value of coronary plaque with coronary stenosis greater than 50% is within 25hu for every heartbeat. It can be seen

that the fluctuation of CT value caused by heart beat is not as large as expected. In CT scanning, we can reduce the influence of heart beat artifact by slowing down the heart rate of patients. CT image partial volume effect: on the basis of not significantly extending the scanning time, thin layer scanning is helpful to reduce the influence of partial volume effect. Contrast agent concentration: the measurement of CT value is affected by the contrast agent concentration, which is called "false enhancement effect" by some researchers. When the contrast agent concentration in the lumen around the coronary plaque reaches 250 ~ 300hu, this effect will appear, and the mechanism is not clear. The influence of coronary artery plaque itself: some coronary artery plaque density is uneven, there are not only fat components, but also fiber and calcification components. When a coronary plaque with a diameter of 2 ~ 3mm has these components at the same time, it is difficult to identify each component even using multiple ROI measurement CT values. The author thinks that in CT scanning and diagnosis, we should pay attention to the influence of the above factors in order to correctly measure the CT value and improve the detection rate of various coronary plaques.

CD28-T Cell Proliferation and Apoptosis

CD4 + CD28-T cells are highly differentiated CD4 T cells, which down regulate CD28 costimulatory molecules due to the loss of CD28 specificity. Under the continuous stimulation of virus, bacteria, autoantigen or inflammatory conditions, such as TNF stimulation, CD 28 gradually loses its function after replication aging. CD 4 * cd28t lymphocytes shorten telomere 4l, reduce the diversity of antigen receptor (TCR) by playing a cytotoxic role, express NK cell receptor 39 and play an anti-apoptotic role 140, Inflammatory CD4 + CD28-T lymphocytes are often found in patients with rheumatoid arthritis, but they are rare in rheumatoid arthritis. Through the study of 44 patients with rheumatoid arthritis, it was found that the expression of CD4 + CD28-T lymphocytes in peripheral blood of patients with rheumatoid arthritis was up-regulated. Flow cytometry was used to detect the intracellular cytokines of CD4 * CD28 T lymphocytes. It was

found that they could produce ifn-y, TNF, IL-17 and chemokine receptors C XCR 3, CCR 6 and ccr7i.

Compared with conventional CD4 * CD28 * T lymphocytes, the methylation level of CD4 * CD28 * T lymphocytes in cns-1 region of Ifng gene in patients with rheumatoid arthritis was significantly decreased, and higher levels of ifn-y and TNF were produced after TCR. Compared with the corresponding substances in non-inflammatory peripheral blood, cd4cd28 — T lymphocytes from inflammatory sites expressed more CXCR3 and CCR6. Although IL-17 production could hardly be detected in CD4 * CD28 T cells in peripheral blood, IL-17 production could be observed in CD4 + CD28-T cells in synovial fluid. CD4 + CD28-T lymphocytes are not only different from the conventional CD4 * CD28 * T lymphocytes in the humoral circulation, but also can prove that synovial CD4 + CD28-T lymphocytes can produce IL-17, an inflammatory cytokine, which is related to the persistent inflammatory reaction in rheumatoid arthritis patients with specific increase of CD4 + CD28-T lymphocytes. Here, the correlation between cell proliferation and time, pressure is analyzed, and the results are shown in Figure 8. It can be seen from 8 that CD4 * CD28 * T lymphocytes are located in the nucleus and have different characteristics in different values.

The apoptosis rate of CD28-T cells was increased by different pressure stimulation in vitro ($P < 0.05$), but the final results of different pressure values were different. Under 20 KP pressure, CD28-T cell apoptosis was inhibited with time ($P < 0.05$); The apoptosis of CD28-T cells was relatively stable under 40 KP pressure ($P < 0.05$); The apoptosis of CD28-T cells increased significantly with time under the pressure of 70 KP ($P < 0.05$); In the control group, the apoptosis of CD28-T cells gradually decreased with time, indicating that with time, the more pressure, the more apoptosis of CD28-T cells ($P < 0.01$).

The immune function of patients is inhibited, which leads to the diffusion and metastasis of coronary plaque. Xing Aimin et al. Found that although the CD8 + cells in the metastasis group were higher than those in the normal control group, the difference was statistically significant;

However, CD8 + cells in non-metastasis group were significantly lower than those in normal control group and metastasis group. Therefore, it can be considered that the changes of CD8 + cells reflect the inhibitory effect of the body on coronary plaque. When the coronary plaque is in the early stage without other systems, the body can improve its own immunity to coronary plaque by reducing CD8 + cells to a certain extent. Once other systems are invaded, coronary plaque cells contact with other systems, resulting in the increase of CD8 + cells and the gradual decline of immune function. It is also reported that the increase of the ratio of CD8 + in late stage is related to the secretion of transfer growth factor by CD4 in early stage, which can promote the proliferation of CD8 + T lymphocytes. The relationship between T cell apoptosis and proliferation. Here, the correlation between T cell apoptosis and proliferation is analyzed, and the results are shown in Table 3.

It can be seen from table 3 that through the determination and analysis of CD8 + CD28 + T, CD8 + T and CD3 + T cells in patients with coronary artery cancer, it is found that the decrease in the number of CD8 + CD28 + T cells is related to the occurrence of coronary artery cancer, which indicates that the decrease in the number of CD8 + CD28 + T cells reduces the killing function of T cells and is not enough to play an effective role in anti-coronary artery plaque, which may enable coronary artery plaque cells to escape the killing effect of cytotoxic T cells, So as to spread the coronary plaque²⁶.

It can be seen from table 4 that the research conclusion: CD8 + CD28 + T cells are a kind of specific immune cytotoxic T cells in the body. They recognize various antigens in a MHC limited way, and play a cytotoxic role after being activated by antigen presenting cells. They are the main effector cells in the body against coronary artery plaque. This study found that the level of CD8 + CD28 + T cells in patients was significantly lower than that in normal people ($P < 0.001$). These results indicate that CD8 + CD28 + T cells play an important role in the development of esophagus. CD8 + T cells are one of T lymphocyte subsets in vivo, and their cytotoxic effects on target cells are mainly carried out by these cells. This study found that the level of CD8 + T cells in patients with esophageal

disease was significantly lower than that in normal people ($P < 0.001$).

CONCLUSIONS

With the continuous upgrading of CT equipment, modern cardiovascular imaging has developed to a higher level, and the diagnostic information provided for clinical medicine is more and more intuitive and complete, the 64-slice spiral CT can not only reflect the patency of stent, but also show the progress of coronary artery disease, which is conducive to clinicians to fully understand the patient's situation and early treatment. In the process of coronary plaque treatment, in order to improve the effectiveness of Biotherapy, we should not only pay attention to the diversity and effectiveness of biological products, but also pay attention to the reactivity of different biological products, that is, the immunological differences of different individuals. At present, there are many kinds of products and drugs for biotherapy, and the mechanism of action is different. Different types of coronary artery plaque or different patients with the same coronary artery plaque have different cellular biological characteristics and immune function status. Different patients have different cellular biological characteristics and basic immune status, so there will be great blindness in the selection of biotherapy agents. Because the diagnosis of in stent non occlusive restenosis caused by intimal hyperplasia by MSCT is still difficult, the research status of CD8 + CD28 + T lymphocytes is mainly responsible for the body's response to coronary artery plaque cells. On the one hand, we should focus on the biological characteristics of coronary plaque (the level of MHC expressed by coronary plaque cells and the type and level of specific antigen peptide, etc.) and clinical symptoms (the number of patients with tumor, conventional treatment and general conditions of patients), on the other hand, we should also focus on the immune function of patients (the number and function of dendritic cells and T lymphocytes, etc.). Both, 64 slice spiral CT for the treatment of coronary artery plaque in order to achieve the ideal effect.

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Figure 1.
Cardiac coronary CT

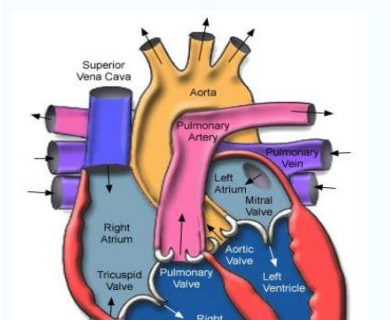


Figure 2.
Schematic diagram of CD4 + CD28-T lymphocytes

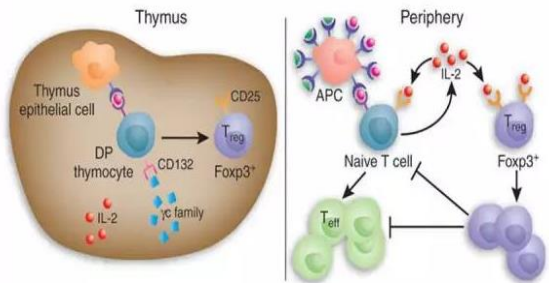


Figure 3.
Diagnosis of cardiovascular disease

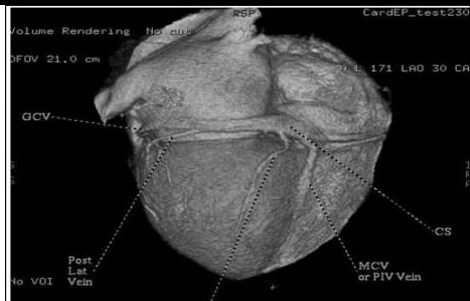


Figure 4.
CD4 + cd28t lymphocyte subsets

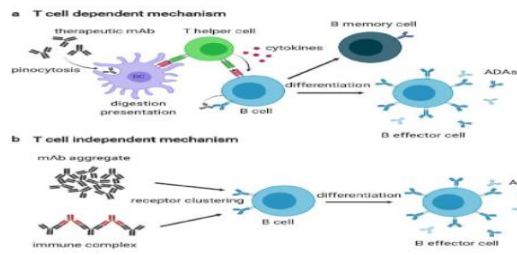


Figure 5.
Lymphocytes gathered in the pleural cavity

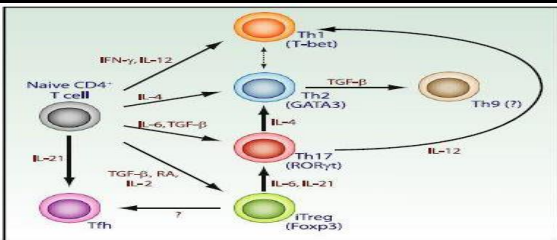
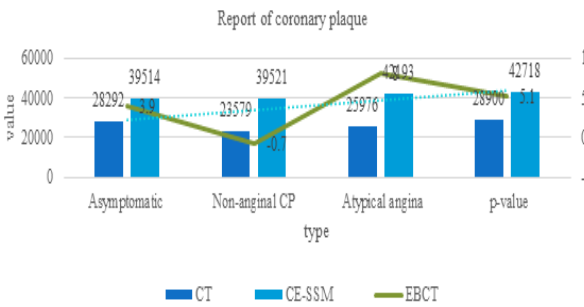


Figure 6.
Detection of coronary artery plaque



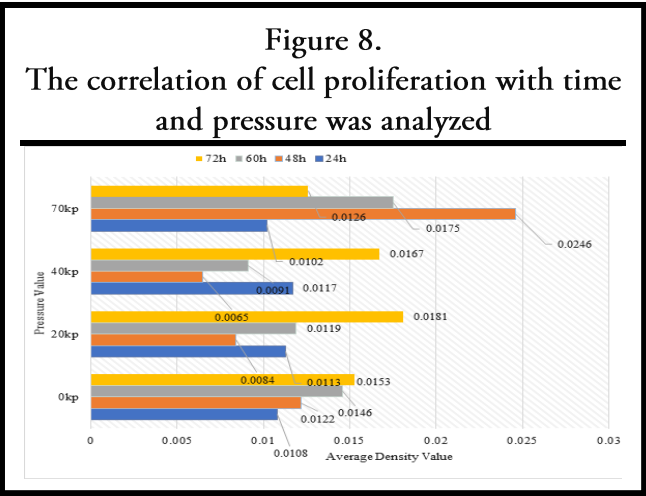
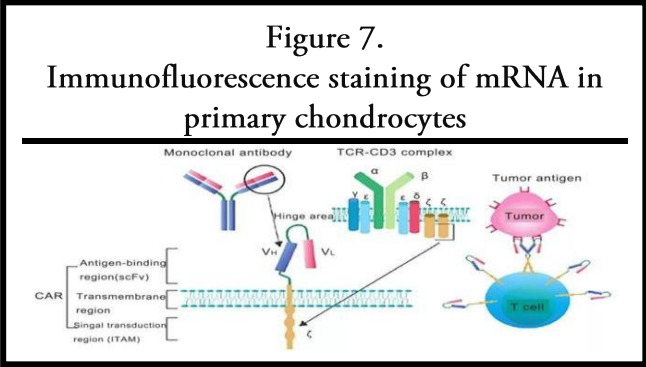


Table 1. Coronary syndrome			
	Very important	general	Very unimportant
Personal literacy	63%	31%	0%
Personal effort	57%	27%	2%
Personal hobbies	44%	32%	11%
Practice participation level	38%	27%	35%

Table 2. Main test instrument data sheet			
Method	Brand Name	Equipment Name	Brand Name
Clean bench	SANYO	Cell incubator	Forma
SIMS ultrapure water device	0.4	1.7	3.9
PCR machine	0.4	1.4	0.7
Desktop low-temperature high-speed centrifuge	0.3	1.6	0.5
	0.3	0.8	0.6

Table 3.
The relationship between chondrocyte proliferation and apoptosis

Performance parameter	CD8+CD28+T	CD8+T		CD3+T	
		Before optimization	Optimized	Before optimization	Optimized
Memory footprint		17.82	12.56	30.48	26.52
Rendering time		6	4	42	30
Frame rate		24	32	8	12

Table 4.
CNR comparison of three phantom images reconstructed by FDK, NLM and ss NLM methods, respectively

Classification		PCNA Index	TUNEL Index	PCNA/TUNNEL
CD8+CD28+T	Front pillar	47.2	42.4	8.4
	Catphan	42.8	59.6	13.6
CD 4+CD28+T	Gamme x	3.4	50.3	12.3
	Head	3.5	59.4	17.6