Application Value of 64 Slice Spiral CT Coronary Artery Imaging in the Diagnosis of Coronary Heart Disease

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Abstract. Objective to analyze the value of 64 slice spiral CT coronary angiography in patients with coronary heart disease. Methods, 102 patients with coronary heart disease received in our hospital from March 2016 to July 2016 were selected for coronary angiography and selective coronary angiography, and the diagnostic criteria of WHO were selected. To analyze the sensitivity, specificity and accuracy of 64 slice spiral CT coronary artery imaging in the diagnosis of coronary heart disease. Results of 98 cases of patients with one-time success, 4 cases of patients due to their own reasons for the failure was detected for the first time, the second test were successfully detected the degree of stenosis is more than or equal to 50% of the 34 cases, missed diagnosis in 1 case, 1 case was misdiagnosed. Conclusion and coronary artery angiography were compared, 64 slice spiral CT coronary artery imaging technique and its application to in the clinical diagnosis of coronary heart disease, not only has noninvasive, advantages of safe, economical and easy to operate, improve the accuracy of the diagnosis of stenosis of, but also for the diagnosis and treatment of the disease provide a reference has high value in clinical application. It is a widely used in examination method in the screening and diagnosis of coronary heart disease.

Introduction

Coronary atherosclerotic heart disease, referred to as coronary heart disease, is a serious hazard to people's lives and health of the common cardiovascular diseases. Coronary stenosis in patients with coronary heart disease incidence rate is high, which may be associated with the coronary artery lumen is small and lack of flexibility [1][5]. Selective coronary angiography (SCA) is one of the most commonly used methods in the diagnosis of coronary heart disease, but it is an invasive operation with high cost and difficult to accept [2]. Multi slice spiral CT coronary artery imaging (CTCA) is a non invasive examination, which has many advantages in the diagnosis of coronary heart disease.

Materials and Methods

General Information. Choose 2016 March to July 2016 in our hospital received 102 cases of coronary angiography and selective coronary angiography, patients diagnosed according to WHO diagnostic criteria for coronary heart disease; exclusion of arrhythmia, such as atrial flutter, atrial fibrillation, room premature attack frequently; II liver and kidney function is not complete; (3) iodine contrast agent allergy; (4) with severe left heart insufficiency; fifthly, cannot long breath hold lung disease. All patients underwent 64 slice spiral CT coronary angiography. All patients underwent CT coronary angiography, 99 of them had coronary artery stenosis, and were associated with different atherosclerotic plaques. Male 58 cases, female 44 cases; age 28~88 years old, average 58 years old.

Preparation before Scanning. Scan before 4 h fasting ban water, heart rate over 70 BPM, the patient to give twice his Le Ke 1mg/kg oral control heart rate; and effective communication and respiratory training, ensure the accuracy of the inspection. Scanning the 5min before using nitroglycerin under the tongue with clothing.

Scanning Method and Image Processing. Using the United States GE company production of precious stones (OptimaCT660), the subjects took hands hold the head, connect the electrode piece, open the ECG monitor; connect the vein of the needle, the sleeve needle type: 18-20G. The peak time determination method is lateral positioning scanning, covering the heart region, the correction of the central line of the shaft center, will range positioning in the tracheal carina $1 \sim 1.5$ cm to the heart of the diaphragmatic surface using double tube injector by antecubital vein injection of contrast agent (iopamidol 370 mg / ml) 20 ml saline 20 ml, flow rate of 5 ml / s). The level of aortic root was selected, the time density curve was obtained by software and the peak time was calculated, and the delay time was $4 \sim 5S$ after peak value. The coronary artery enhancement scan, subjects breath holding, injection rate and the time to peak was consistent, according to patient weight injection of contrast agent $60 \sim 80$ ml, additional injection of saline $40 \sim 50$ ml, scanning scope ibid. Scan parameters: tube voltage 120kVp, tube current ($650 \sim 100$) mAs, ball speed 0.35s/r, scanning layer thickness 0.625 mm, Pitch (pitch) value of 0.20 + 0.02. The raw data were transmitted to the GE AW4.6 workstation, using coronary artery analysis software to carry on the reconstruction and analysis, and by two experienced physicians independent evaluation.

Assessment of Coronary Artery Stenosis.Lumen stenosis 50% evaluation of lesions. Coronary stenosis judged by international visual diameter method is divided into mild stenosis < 50%), moderate stenosis (less than or equal to 50 stenosis < 75%), severe stenosis (75% is less than or equal to narrow <100%) and vascular occlusion (stenosis area is 100%) [3][4][5][6].

Result

Patients with CT Imaging Quality. All patients in 98 cases of patients with a one-time inspection success, 4 cases of patients due to the tension, respiratory training is not enough, resulting in failure of breath hold imaging stage, affecting the image quality of coronary artery, but second check is successful.

Coronary Artery Stenosis. Coronary artery stenosis, coronary artery stenosis is mild to severe stenosis, 1 cases of occlusion; the main focus right coronary artery and left anterior descending branch, 35.48% and 37.42% respectively. The degree of stenosis was detected in 75%14 cases, 1 cases of occlusion, more than 50%34 cases, 1 cases of misdiagnosis, misdiagnosis of 1 cases.

Discussion

Coronary artery stenosis caused by coronary atherosclerotic plaque is the basic lesion of coronary artery disease. Because SCA can directly evaluate the coronary artery stenosis, it is regarded as the "gold standard" for the diagnosis of coronary heart disease ". But, especially in patients with no obvious symptoms of occult CAD patients difficult to accept the traumatic examination and coronary angiography is mainly observed the lumen diameter, for masked by the vascular compensatory dilatation of the coronary artery atheromatous plaque and plaque in nature cannot be quasi accurate judgment [7]. Also because of this check the price is expensive, should not be repeated to check to a certain extent, limit the wide application of SCA. And there are studies to indicate that the 64 slice MDCT coronary artery anatomy structure and pathological changes, reasonable judgment coronary artery type and length, diameter, in the diagnosis and evaluation of coronary artery stenosis shows good diagnosis effect [8]. Compared with SCA, low cost of MDCT coronary angiography, minimally invasive, safe, and easily accepted by patients. And showed that the outside of the cavity lesions and accurately evaluate plaque, visible MDCT coronary angiography of the clinical application value of affirmation.

For MDCT coronary angiography of missed diagnosis and misdiagnosis, reason is: is due to coronary artery disease occurs in a larger range of partial calcification, with significant hardening artifacts, and coupled with partial volume effect, easy to lesions narrow to judge the degree of overweight; the second is with a small number of patients the left circumflex artery (LCX) in the middle and the right coronary artery (RCA) will appear irregular segments of pipe wall, in the

lumen showed low density shadow and therefore wrong judgment stenotic lesions. Some scholars believe that this error is mainly due to this segment of the coronary artery is located in the atrioventricular sulcus, atrial and ventricular under normal circumstances during the cardiac cycle are presented for reverse beat of, and LCX proximal and middle and RCA in the atrioventricular junction across, often appear obvious displacement in the beating of the heart, to visible artifacts [9]. Controlling the rate of good intentions and selecting the optimal phase window can reduce the influence of artifacts, which is helpful to improve the accuracy of diagnosis [10].

In summary, 64 MDCT coronary angiography without invasive, safe, economical and easy to operate, in the diagnosis of coronary heart disease (CHD) has good sensitivity and specificity, for evaluation of coronary artery lesions and the degree of stenosis had a higher value, as a coronary artery disease screening and diagnosis of primary examination technology.

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