Appendix 1

In our process, the 3D Retina-Unet deep convolutional neural network was used to segment calcified lesions in the coronary area (1). Similar to other segmentation networks, the main structure is a fully convolutional feature pyramid network. Then, a detection branch and a segmentation branch are applied as the whole supervision function. A total of 901 patients who underwent chest CT in our dataset, including 721 patients in the training set and 180 patients in the test set. All data were well labeled at the pixel level by clinical experts with more than 5 years of experience. The segmentation labels include heart, coronary vessels, calcification regions, and background. According to the segmentation results of the 3D Retina-Unet, we can easily obtain calcified regions around different coronary vessels, such as non-calcium, left anterior descending calcium, left circumflex calcium, left main stem calcium, and right coronary artery calcium. The calcification percentage corresponding to each patient was calculated according to the integral formula (2).

References

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