

Comparison of the cardiac function and coronary angiogram in conventional pigs and micropigs measured by multidetector row computed tomography

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Introduction : Pigs are the most likely source animals for cardiac xenotransplantation. However, an appropriate method for estimating the cardiac function of micropigs had not been established. Computed tomography (CT) analysis estimating the cardiac function and coronary artery in micropigs has not been carried out. Therefore, this study examined the feasibility of evaluating the cardiac function in a micropig model using multidetector row computed tomography (MDCT), and compared the values of the cardiac function with that of conventional pigs.

Methods : To examine the cardiac functions of conventional pigs and micropigs, CT examinations were performed using a two-phase, contrast-enhanced, ECG-gated, MDCT scanner (Sensation cardiac 64, Siemens, Forchheim, Germany) set at a 0.75-mm section thickness with a gantry rotation time of 330 msec and a kernel value of B25f.

Results : The measurements of cardiac function using MDCT were EDV (48.80±23.30 ml vs. 36.70±9.36 ml), ESV (22.97±11.30 ml vs. 13.30±7.43 ml), LVEF (52.93±3.10 % vs. 59.00±5.56 %), SV (25.83±12.11 ml vs. 23.40±2.26 ml), CO (1.46±0.64 L/min vs. 1.21±0.24 L/ml), and myocardial mass (41.83±19.47 g vs. 37.03±6.89 g) between the conventional pigs and micropigs in MDCT.

Conclusion : There were no significant differences in the cardiac function between the conventional pigs and micropigs in the reconstructed CT images. There were also no differences in the coronary angiographic images by MDCT. The data presented in this study suggest that the MDCT is a feasible method for evaluating the cardiac function in micropigs.

References

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