

第19回日本再生医療学会の振り返りと循環器内科領域の再生医療について

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iPS cell, cardiomyocyte, heart failure, transplantation, heart

SUMMARY

Regenerative medicine of the failing heart had been long awaited. We used human HLA haplotype homo-iPS cells, which matches to approximately 17% of the Japanese population, to generate ventricular cardiomyocytes. We performed transcriptome and fluxome analysis, and found that their metabolic pathways were completely different between iPS cells and cardiomyocytes. Based on these findings, we could purify the cardiomyocytes with more than 99% purity. The transplanted cardiomyocytes did not make teratoma formation in immuno-deficient NOG mice skin and heart. We transplanted the aggregate (spheroid) cardiomyocytes using our newly developed device. The transplanted cardiomyocytes could survive in the heart for the long period, showed physiological cell hypertrophy after transplantation, and could improve cardiac function due to myocardial infarction. We are now planning to examine the first in human clinical trial to transplant the human regenerated cardiomyocytes to the patients with HLA-6 class matched dilated cardiomyopathy in the near future.

第19回日本再生医療学会を振り返って

2020年1月に中国湖北省武漢市内で発生した新型コロナウイルスCOVID-19感染は武漢市を中心としてその周辺地域にパンデミックを引き起こし、多くの肺炎患者と死亡者を惹起し、瞬く間に中国本土から全世界に拡散した。日本では2020年2月に横浜に入港した大型客船グランドプリンセス号内で発生したCOVID-19はパンデミックとして発症し、高齢者を中心に決して少ないとはいえない死亡者数を出すに至った。その後国内でも散発的に感染者が続き、次第に市中でもパンデミックの様相を呈してきた。安倍総理大臣も日本