



脊髄損傷の再生医療の開発

Development of Regenerative Medicine for Spinal Cord Injuries

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Summary

To achieve the regenerative medicine of the damaged central nervous system, Regrowth of disrupted neuronal axons, Replenishment of lost cells, and Recovery of lost functions are essential. Considering these, for the development of innovative therapeutic intervention for spinal cord injury (SCI), we have been investigating the stem cell therapy for more than 15 years, using fetal brain or spinal cord-derived neural stem cells (NSCs) and other type of stem cells. At present, we are planning iPS-based cell therapy for spinal cord injury (SCI) patients in the sub-acute phase using clinical-grade human iPS cell stocks supplied by Prof. Shinya Yamanaka' group at CiRA. Using clinical-grade human iPS cell stocks, we are now developing human iPS cell-derived neural stem/progenitor cells (NS/PCs) for use in clinical research for spinal cord regeneration. Using these cells, we plan to establish safety screenings against post-transplantation neoplastic transformation, and commence clinical research (Phase I-IIa) trials for the treatment of sub-acute phase SCI. The next step would be to treat chronic phase SCI by the combination of human iPS cell-derived NS/PCs, antagonists of axon growth inhibitors and rehabilitation.

はじめに

中枢神経系は、古くより再生能力がない臓器の代表格と考えられてきた。しか

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