CIRCULATING ALTRUISTIC STEM CELLS AS A MARKER OF IMMUNOSUPPRESSION IN ORAL CANCER

Lekhika Pathak*, Seema Bhuyan, Bidisha Pal, Partha Saikia, Sukanya Gayan, Shrinipt Mitra, Tutumoni Baishya, Ramana Chilakamarti, Bikul Das. KaviKrishna Laboratory, Guwahati, India; *Thoneaur Laboratory for Global Health, Boston, MA, USA

Abstracts

Circulating altruistic stem cells (ASCs) to the altruistic phenotype,2, 3 an embryonic stem cell like phenotype involving niche defense abilities. Here, we propose to test the immunosuppressive ability of ASCs, and their detection in the circulation of head & neck cancer subjects undergoing platinum based chemotherapy.

Methods We obtained ASCs by culturing CD271+ BM-MSCs with the conditioned media of EPCAM+/ABCG2+ CSCs of SCC-25 cancer cell line or primary tumors as previously described.2 The immunosuppression test: immunosuppressive secretory factors, mixed lymphocyte reaction (MLR) assay, and a Boyden chamber based co-culture assay with NK cells.3 Next, we obtained circulating CD271+/CD45- cells of stage IV head and neck cancer subjects (n=20) (S). Kaplan-Meier survival analysis and log-rank test to find association between the presence of circulatory ASCs and overall survival (OS).

Results CSCs including primary tumor obtained CSCs reprogrammed MSCs to altruistic phenotype; 2, 3 an embryonic stem cell like phenotype involving niche defense abilities. Here, we propose to test the immunosuppressive ability of ASCs, and their detection in the circulation of head & neck cancer subjects undergoing platinum based chemotherapy.

Conclusions The circulatory ASCs could be a promising biomarkers for immunotherapy.

Acknowledgements We thank the staffs of KaviKrishna Telemedicine Care, Sualkuchi, Assam, India for their support in patient selection for the study, obtaining consent, sample collection and patient follow up. For funding, we thank KaviKrishna Foundation, Sualkuchi, Assam, India, Department of Biotechnology, Govt of India and KaviKrishna USA Foundation.

References


3. Pal B, Sandhya S, Talukdar S, Pathak L, Li H, Das B. Developing micro-fluidic chip to understand to understand altruistic stem cell reprogramming. (https://cancerres.aacrjournals.org/content/79/13/Supplement/5154).


Ethics Approval The clinical study was approved by 'Institutional Ethics Committee' of KaviKrishna Laboratory, Guwahati, India and KaviKrishna Telemedicine Care, Sualkuchi, Assam, India. The stem cell study was conducted following the guidelines of NAC-SCRT and was approved by Institutional Committee for Stem Cell Research (ICSCR), KaviKrishna

Abstract 90 Figure 1 Subjects with advanced oral squamous cell cancer e

A. Representative flow cytometry profile depicting the presence of CD271+ cells in a population of EpCam-/CD45- cells sorted from peripheral blood mononuclear cells (PB-MNCs) of subjects with Oral cancer (supplementary table 4). The PB-MNCs were subjected to immunomagnetic sorting for EpCam-/CD45- cells. The sorted population was then mixed with CD271+/CD45+ cells recovered from the same subject for 1-day in serum free medium, fixed in 4% formaldehyde, and subjected to CD271 staining. The mixing with CD271+/CD45+ cell was done to minimize cell loss during flow cytometry procedure. B. The quantitative data of viable circulating CD271+/CD45- cells was estimated by trypan blue exclusion assay. Healthy subjects did not exhibit circulating CD271+/CD45- cells. C. Relative CFU-F was estimated in the isolated circulating CD271+/CD45+ cells to confirm the mesenchymal phenotype. High Grade Oral Cancer (HG cancer) CFUs: 4.2 ±1.5/103cells (n=4). D. Relative protein level of p53 as measured by in-cell ELISA of CD271+/CD45- cells cultured in vitro in serum free medium. E. Gene expression profiles of circulating CD271+/CD45- cells. Note that circulating CD271+ cells exhibited enhanced expression of Hif-2a, Nanog, Sox-2 and Oct-4. The CD271+/CD45- cells were cultured in the serum free StemSpan medium for one week to obtain mRNA. The values were compared with Day-8 CM treated MSCs. F. CM of circulating CD271+/CD45- cells obtained from HG- cancer exhibited higher capacity to enhance the tumorigenicity of non-SP cells compared to CM of R-MSCs (Day-8, reprogrammed by SCC-25 ABCG2+SC-CM).


J Immunother Cancer 2022;10(Suppl 2):A1–A1603

A98