Eijiro Akasaka et al., J Pigment Disord 2017, 4:2 (Suppl)
DOI: 10.4172/2376-0427-C1-003

Peripheral blood mononuclear cells may contain a small amount of mesenchymal stem cells which express type VII collagen

Eijiro Akasaka, Hajime Nakano and Daisuke Sawamura
Hirosaki University, Japan

Introduction: In mutational analysis of dystrophic epidermolysis bullosa (DEB), COL7A1 mutations are analyzed using genomic DNA obtained from peripheral blood mononuclear cells (PBMCs). However, additional invasive skin biopsies are required to obtain mRNA from keratinocytes or fibroblasts for detecting the consequences of the mutations. Recently, we revealed the exact expression levels of COL7A1 mRNA in PBMCs and demonstrated that RT-PCR and direct sequencing of cDNA using mRNA obtained from PBMCs are useful, non-invasive methods that can confirm the accurate consequences of COL7A1 mutations. However, the types of cells in PBMCs that express type VII collagen remains to be elucidated. Several reports have shown that bone marrow-derived mesenchymal stem cells (MSCs) recruited to skin produce functional type VII collagen. Hence, the aim of this study is to elucidate whether MSCs circulating in peripheral blood actually express type VII collagen.

Methods & Results: First, we tried to isolate MSCs from circulating PBMCs. CD105 and CD29 are the widely accepted markers of MSCs, while CD45 and CD34 are representative hematopoietic lineage markers. Flow cytometric analysis failed to detect CD45-negative and CD105-positive cells in a population of 200,000 circulating PBMCs. Subsequently, we isolated MSCs from PBMCs using human mesenchymal stem cell enrichment cocktail and cultured those cells in MSC growth medium. Immunofluorescence examinations showed that these isolated cells expressed type VII collagen and were positive for CD29 and CD105 and negative for CD45 and CD34, which is consistent with the immunological features of MSCs. These results showed that PBMCs contain a very small percentage of circulating mesenchymal stromal cells, which possibly include MSCs and those cells can express type VII collagen.

Conclusion: Although the actual function of type VII collagen-expressing MSCs remains unknown, the existence of type VII collagen in PBMCs will surely be helpful for developing novel therapeutic and diagnostic methods for DEB.

Biography

Eijiro Akasaka is an Associate Professor of Department of Dermatology, Hirosaki University, Graduate School of Medicine. He has completed his MD and PhD degrees in Dermatology form Hirosaki University Graduate School of Medicine, Japan, in 2003 and 2011, respectively. He has worked at Hirosaki University Hospital, Japan, as a Dermatologist. His research interests include diagnostic and therapeutic approach of genetic skin diseases, especially epidermolysis bullosa and disorders of keratinization and autoimmune bullous diseases. He has received several awards including: The Japanese Society for Investigative Dermatology Kisaragi Award (2010), Travel Grant Award from the 3rd Eastern Asia Dermatology Congress (2014) and Abstract Award of the 113th Annual Meeting of the Japanese Dermatological Association (2014).

akasakae@hirosaki-u.ac.jp

Notes: