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Migration of CD133-positive Cells in Human Gastric Cancer Tissues

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Since recent research suggests that stem cells are particularly resistant to conventional chemo- and radiation therapies compared with non-stem cells, it is critical issues to determine the roles of stem cells. Recent studies have reported that CD133 expression has been also identified as a marker of cancer stem cells and tumor—initiating cells in brain, prostatic adenocarcinoma, colorectal cancers, and pancreatic cancers. These stem cells are characterized by self-renewal and multipotency. The clinical significance of stem cell research is regulate 1) chemoresistance of cancer stem cells, 2) prognostic outcome after surgical therapy or chemotherapy, 3) recurrent diseases and cancer stem cells. Then, the microenvironmental stem cell compartment is termed "the niche". "The niche" is composed of various factors such as growth factors and several cytokines. Monocyte chemoattractant protein-1 (MCP-1) has been also reported to be able to migrate several stem cells. We have reported that MCP-1 is expressed in gastric cancer tissues and plays important roles in advance of gastric cancer. Therefore, we aimed to see whether CD133-positive cells, one of the surface markers of bone marrow-derived cells, could be observed in N-methyl-N-nitrosourea (MNU)-pretreated *Helicobacter pylori*-infected gerbils. In this model, CD133-positive cells were mainly localized in the bottom of the gastric epithelial cells in *H. pylori*-long-term infected gerbils and could be also seen in gastric cancer tissues in this model. In MNU-pretreated *H. pylori*-infected gerbils, CD133- and MCP-1 receptor, CCR2-positive cells were colocalized in MNU-pretreated *H. pylori*-infected gastritis and gastric cancer tissues. Then, we investigated another stem cell marker for gastric cancer, CD44-positive cells. In gastric cancer tissues, we confirmed that there were many CD44-/CD133-double positive cells using immunostaining. Further studies will be needed to clarify whether these stem cells contribute to advance of gastric cancer tissues.