Systemic high-mobility group box 1 administration suppresses skin inflammation by inducing an accumulation of PDGFRα^+ mesenchymal cells from bone marrow.
（HMGB1の全身投与は生体内間葉系幹細胞を動員することで皮膚の炎症を抑制する）

High-mobility group box 1 (HMGB1) mobilizes platelet-derived growth factor receptor alpha-positive (PDGFRα^+) mesenchymal cells from bone marrow (BM) into circulation. However, whether HMGB1-induced endogenous PDGFRα^+ mesenchymal cells stimulate skin regeneration has been unclear. Here, we investigated the functions of the HMGB1/BM-PDGFRα^+ mesenchymal cell axis in the regeneration of mouse skin grafts. We found that intravenous HMGB1 administration induced an accumulation of endogenous BM-PDGFRα^+ mesenchymal cells followed by significant inflammatory suppression in the grafts. In contrast, mice with reduced BM-PDGFRα^+ mesenchymal cells showed massive inflammation of the grafts compared to mice that had normal levels of these cells even after HMGB1 administration, suggesting that BM-PDGFRα^+ mesenchymal cells contribute to the HMGB1-induced anti-inflammatory effect. We also found that intravenously administered HMGB1 augmented the local migration of BM-PDGFRα+ mesenchymal cells from circulation to skin graft by inducing the expression of CXCR4, an SDF-1 receptor, on these cells. Finally, we showed the therapeutic activity of the HMGB1/BM-PDGFRα+ mesenchymal cell axis in an allergic contact dermatitis model. The results illustrated the contribution of the HMGB1/BM-PDGFRα+ mesenchymal cell axis in suppressing the inflammation of injured/inflamed skin. These findings may provide future perspectives on the use of HMGB1-based medicines for intractable diseases.