1. **No.**

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2. **Title**

   Effects of GPR3 and α7 nAChR on Blood Brain Barrier Disruption by Mast Cell Activation Following Brain Ischemia.

3. **Period**

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4. **Summary**


   G protein-coupled receptor 3 (GPR3) is highly expressed in various neurons, and is unique in its ability to constitutively activate intracellular cAMP without ligand. Recently, we clarified that GPR3 expression is transiently up-regulated following brain ischemia. Analyses of Percoll density gradients from an ischemic brain homogenate revealed abundant GPR3 expression in the fraction rich in mast cells. In the present study, we investigated the potintail roles of GPR3 and nAchR in mast cell degranulation and cytokine expressions. Mast cells in the brain showed tryptase and CarnpsypeptidaseA3 gene expression; this phenotype is similar to that of the connective tissue-type mast cell. In addition, brain mast cell expressed α4, α7, β1, β2 subtypes of nAchR, which was different from peritoneal mast cell. CPA3-positive mast cells were localized in the leptomeninges and perivascular space in the thalamus and cortex in mice brain. Intracellular cAMP level and nAchR agonists tended to negatively regulate degranulation in the bone marrow-derived mast cell (BMMC). BMMC from GPR3 knockout mice reveal increased degranulation and TNFα・IL-6・IL-4 expressions compared with that from Wild-type mice. These findings suggest a potential role of GPR3 and nAchR agonists in negatively regulating mast cell degranulation and cytokine productions..