

Interaction effect between the receptor for advanced glycation end products (RAGE) and high-mobility group box-1 (HMGB-1) for the migration of a squamous cell carcinoma cell line

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ABSTRACT

Aims and background. The receptor for advanced glycation end products (RAGE) is a multiligand cell surface receptor of the immunoglobulin superfamily and a newly recognized invasion-related gene. High mobility group box-1 (HMGB-1) is a 30-kD protein binding to RAGE and acting as a transcription-factor-like protein that regulates the expression of several genes. In this study, the interaction effect between RAGE and HMGB-1 on the migration of SCC7 cells was investigated along with the inhibitory effect of the drug nifedipine on this interaction effect.

Methods and study design. Ten surgical specimens from patients with squamous cell carcinoma (SCC) of the head and neck and a SCC7 cell line were stained using immunohistochemical and immunocytochemical methods. Reverse transcriptase-polymerase chain reaction (RT-PCR) was used to detect RAGE expression in SCC7 cells; Western blot analysis was used to detect HMGB-1 expression in SCC7 cells. An *in vitro* migration assay (Boyden chamber migration assay) was used for evaluating the interaction effect between RAGE and HMGB-1 on the migration of SCC7 cells. HMGB-1 and various concentrations of nifedipine were tested for their effect on SCC7 cell migration with *in vitro* migration assays.

Results and conclusions. RAGE and HMGB-1 were expressed in almost all human head and neck SCC tissues and in SCC7 cells as detected by immunostaining. The migration assay showed that the interaction between RAGE and HMGB-1 increased SCC7 migration activity depending on the level of HMGB-1, and nifedipine inhibited the interaction effect between RAGE and HMGB-1 on SCC7 cells in a dose-dependent manner. The interaction between RAGE and HMGB-1 could be closely associated with metastasis of SCC of the head and neck. Nifedipine may have an inhibitory effect on tumor metastasis.

Key words: RAGE, HMGB-1, nifedipine, migration, SCC7 cell line, squamous cell carcinoma.

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