MASTER'S THESIS

Functional roles of interlukin-8 in epstein-barr virus-positive nasopharyngeal carcinoma cells

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Functional Roles of Interlukin-8 in Epstein-Barr Virus-positive Nasopharyngeal carcinoma cells

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Abstract

IL-8 is strongly expressed in the tissues of nasopharyngeal carcinoma (NPC). The IL-8 expression has been found to contribute to cell growth and metastasis by binding to its receptors CXCR1 and CXCR2. However, the expression of IL-8 and its receptors in the growth and development in NPC has not been fully studied. In the present study, the role of IL-8 in NPC was examined. All the poorly differentiated NPC cell lines, including the EBV-positive C666-1, and the EBV-negative CNE-1, CNE-2, SUNE-1, HNE-1 and HONE-1, were found to express IL-8 and CXCR1. The expression of CXCR2 was only found in the C666-1 and CNE-1 cell lines. As EBV infection is closely associated with the development of NPC, therefore, C666-1 was selected to examine for the role of IL-8 in the growth and migration of NPC cells. Both the cell growth and migration were inhibited by the IL-8 peptide inhibitor and also the PI3K inhibitor LY294002. This observation indicated that IL-8 could promote cell growth and migration through the Akt signaling pathway. As the expression of the CXCR2 was over 300-fold higher than CXCR1, the role of CXCR2 was first evaluated and CXCR2 was found to effectively suppress the growth of C666-1.

After evaluating the role of IL-8 in C666-1 cells, the regulations of IL-8 expression were also studied. mRNA expression of IL-8 could be downregulated by the NFκB inhibitor parthenolide or MIF-knockdown. In addition, the inhibition of MIF expression was also found to significantly correlate with the decrease in the size of tumour spheres. Expression of the potential cancer stem cell markers, CD44 and Sox2 by the tumour spheres after MIF-knockdown was greatly decreased. Results from this study suggested that MIF could be a novel therapeutic target in the treatment of NPC.

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