CXCR4 Expression in Osteosarcoma Cell Lines and Tumor Samples: Evidence for Expression by Tumor Cells

In Response: We read with interest Dr. von Luettichau’s letter about the expression of chemokine receptors in osteosarcoma patient samples. They analyzed chemokine receptor expression in osteosarcoma tumor samples following microdissection. Their results showed that infiltrating cells and not the tumor cells per se represented the major source of expression of chemokine receptors, including CXCR4.

However, other data suggest that the osteosarcoma cells are expressing CXCR4 and other chemokine receptors. We previously analyzed the chemokine receptor expression by real-time PCR in different osteosarcoma cell lines. CXCR4 was expressed in two cell lines, U2OS and HOS, as reported by others (1–3). In their recent study, Kim et al. reported that K7M2 murine osteosarcoma cell lines expressed CXCR4. The cells were treated in vitro with a CXCR4 inhibitor (CTCE-9908). They observed a decrease in the proliferative rate, an increase in apoptosis, and a decrease in adhesion to extracellular matrix proteins. In vivo, in an osteosarcoma murine model, they showed that mice treated with the CXCR4 inhibitor had a 50% decrease in the number of gross metastatic lung nodules (3). Perissinotto et al. (1) also showed that the development of lung metastases after injection of osteosarcoma cell lines in mice was prevented by the administration of a CXCR4 inhibitor.

Recently, CXCR4 expression was analyzed in osteosarcoma primary and metastatic samples by immunohistochemistry. Oda et al. (4) showed nuclear and cytoplasmic expression of CXCR4 in the tumor cells and found that CXCR4 expression was higher in the metastatic sites than in the primary sites samples and that it correlated with expression of vascular endothelial growth factor.

All these recent data strongly support the hypothesis that the osteosarcoma cells and not just the infiltrating cells are expressing CXCR4. However, the role of the tumor microenvironment needs to be further elucidated especially with regards to its influence on the metastatic potential of the tumor.

References

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