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Cell invasiveness in sarcomas: a possibly useful clinical correlation

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ABSTRACT

Aims and background. The prognosis of each individual patient affected by sarcoma, including those with low histopathologic grading, cannot be reliably predicted at the time of surgery. We have developed an *in vitro* cell invasion assay on early primary cell cultures derived from surgically removed sarcomas.

Methods. Primary cell cultures were subjected to *in vitro* cell invasion assays by using Boyden chambers, filters coated with matrigel and fetal bovine serum as a source of chemoattractant. For each primary cell culture, the sarcoma cell invasion index was determined in comparison with the percentage of human fibrosarcoma HT1080 cell invasion extent. The cell invasion index of 7 different sarcomas was evaluated in respect to the outcome of the disease, after a follow-up ranging from 14 to 48 months.

Results. Data evidenced that a low cell invasion index (39.7% ± 8.9) was retained by tumor cells derived from patients with no progression of the disease and with a longer interval of disease-free survival (21 ± 0.8 months). However, an increase in cell invasion index (61% ± 5) was retained by tumor cells derived from patients with progression of the disease and with a shorter disease-free survival (9 ± 3 months). Overall, although only 7 cases were analyzed, a statistically significant correlation was found between disease-free survival and cell invasion index ($P = 0.003$).

Conclusions. Our data support the possibility that cell invasion assays performed *in vitro* on cells derived from human sarcomas may be predictive of a more aggressive form of the disease.

Key words: *cell invasion, human sarcoma, prognostic parameter.*

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