Cancer Metastases: Early Dissemination and Late Recurrences.
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Abstract

BACKGROUND: Metastatic cells from a primary tumor can occur before the primary cancer is detected. Metastatic cells can also remain in the patient for many years after removal of the primary tumor without proliferating. These dormant malignant cells can awaken and cause recurrent disease decades after the primary treatment. The purpose of this article is to review the clinical evidence for early dissemination and late recurrences in human malignant tumors. We used the following definitions: dormancy of cells may be defined as a nonproliferating state or an arrest in the cell cycle that results in a prolonged G0 phase. If one accepts the term "late metastases" to indicate a period exceeding 10 years from the removal of the primary tumor, then the two malignancies in which this occurs most frequently are cutaneous malignant melanoma (CMM) and renal cell carcinoma (RCC).


RESULTS: Several case reports of early dissemination and late recurrences of various types of malignancies were found. Analyses of the growth rates of several malignant tumors in the original host indicated that the majority of cancers had metastasized years before they were detected. CMM, RCC, and malignant glioblastoma were the three most common malignancies resulting from an organ transplantation. CMM and RCC were also the two most common malignancies that showed dormancy. In several cases of transplanted CMM and RCC, the donor did not have any known malignancy or had had the malignancy removed so long ago that the donor was regarded as cured.

CONCLUSION: (1) Metastases can frequently exist prior to the detection of the primary tumor. (2) Metastatic cells may reside in organs in the original host that are not usually the site of detectable secondary tumors, for example, the kidneys and heart. (3) Metastatic cells remain dormant for decades after the primary tumor has been removed. (4) Dormancy might be reversible and lead to late recurrences.

KEYWORDS: dormancy; early dissemination; inadvertently transmitted cancer; late recurrences; metastases; transplantation of cancer; tumor growth rate