Metastatic Hepatocarcinoma He/De Tumor Model in Rat

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Abstract:

The aim of this study is to select among potential tumor models that could be suitable to follow the metastatic spread of tumor cells. $^{18}$FDG-PET tumor diagnostic test has been adapted to investigate tumor growth in vivo in local and metastatic rat models. **Materials and Methods.** The expression of glucose transporters was traced by immunohistological analysis, followed by the uptake of $^{18}$FDG and visualized by MiniPET scanner. After s.c. administration of hepatocarcinoma (He/De) cells intensive local tumor growth and $^{18}$FDG uptake were measured. **Results:** Whole body $^{18}$FDG-PET imaging supported by histological analysis have shown that subcutaneously growing tumors did not project metastases to other sites from the injected area. To avoid local tumor formation i.v. injection was chosen, but did not improve the safety of tumor cell administration. Tumor formation after i.v. injection took a longer time than after s.c. administration. Tumors upon i.v. generation were smaller and detectable in liver and lung, but not in other organs or tissues. iii) Subrenally implanted He/De cells spread from the retroperitoneal primary tumor of the kidney to thoracal paratymic lymph nodes (PTNs). The spread from primary site to metastatic tumors in PTNs was confirmed by post mortem surgery and histological examinations. **Conclusion:** Among the three methods applied: a) Local s.c. administration of tumor cells generated local tumors unsuitable to study metastasis. b) Intravenous administration causing unpredicable location of tumor formation is not regarded a reliable metastatic tumor model. c) Subrenal implantation model proved to be a suitable model to follow the metastatic process in rats.

Key Word: transplantation, metastatic models, tumor diagnostics, subrenal capsule model, min i- PE T, immunohistochemistry.