

Distinct different intra-tumor distribution of FDG between early phase and late phase in mouse fibrosarcoma

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An early image of intra-tumor distribution of ^{14}C -labeled fluorodeoxy glucose (^{14}C -FDG) was compared with a late image of ^{18}F -labeled FDG (^{18}F -FDG) using mouse fibrosarcoma. Heterogeneous intra-tumor distribution of ^{14}C -FDG was observed 1 minute post injection of the tracer, whereas relatively homogeneous distribution of ^{18}F -FDG was seen 30 minutes later. ^{14}C -FDG was particularly taken up in the peripheral part of the tumor immediately after the tracer injection. A gradual and significant increase in ^{18}F -FDG accumulation with time was seen in the central part of tumor, which indicated an enhancement of anaerobic glycolysis. An initial uptake of ^{18}F -FDG was also compared with distribution of ^{14}C -iodoantipyrine and ^{14}C -thymidine uptake. Intratumoral distribution of initial uptake of ^{18}F -FDG showed almost the same regional distribution of ^{14}C -iodoantipyrine. A similar distribution of ^{14}C -thymidine as the initial uptake of ^{18}F -FDG was also observed. These results indicated that a high initial FDG uptake area seemed to be highly proliferative. A significant difference in the intratumoral distribution of FDG between early phase and late phase seemed to be related to heterogeneous biological characteristics of tumor cells.

Key words: FDG, dual autoradiography, tumor, thymidine, distribution