



Biological correlation between glucose transporters, Ki-67 and 2-deoxy-2-[¹⁸F]-fluoro-D-glucose uptake in diffuse large B-cell lymphoma and natural killer/T-cell lymphoma

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ABSTRACT. The purpose of this study was to investigate the association between cellular 2-deoxy-2-[¹⁸F]-fluoro-D-glucose (¹⁸F-FDG) uptake and the expression of several subtypes of glucose transporters (GLUT) and Ki-67 in diffuse large B-cell lymphoma (DLBCL) and natural killer (NK)/T-cell lymphoma (NKTCL). Cell lines were histologically determined to be DLBCL (Raji cells) and NKTCL (Daudi cells), and uptake after pretreatment with ¹⁸F-FDG was determined. Real-time polymerase chain reaction was performed to detect the expression levels of GLUTs 1, 2, 3, 4, and 7 and Ki-67, and to evaluate their association with ¹⁸F-FDG uptake in DLBCL and NKTCL cells. The uptake rates of ¹⁸F-FDG ranged from 18 to 46% (average 30 ± 10.20%) in Raji cells and 25 to 48% (average 35.6 ± 7.57%) in Daudi cells. In DLBCL cells, the expression levels of GLUTs 1, 3, and 7 were

significantly correlated with cellular ^{18}F -FDG uptake rates (Spearman's rank correlation coefficient of 0.667, 0.516, and 0.468, respectively; $P < 0.05$). In NKTCL cells, the expression levels of GLUTs 1 and 3 were observed to be significantly correlated with cellular ^{18}F -FDG uptake rates (Spearman's rho of 0.756 and 0.498, respectively; $P < 0.05$). Ki-67 played no role in ^{18}F -FDG uptake in Raji or Daudi cells. In conclusion, the data acquired through this preliminary study indicate that GLUT 1 and GLUT 3 contribute to ^{18}F -FDG uptake in DLBCL and NKTCL.

Key words: Diffuse large B-cell lymphoma; Natural killer T-cell lymphoma; Glucose transporters; 2-Deoxy-2-[^{18}F]-fluoro-D-glucose; Ki-67; Real-time polymerase chain reaction