The aim of the present study was to investigate the relationship between $^{18}$F-fluorodeoxyglucose (FDG) uptake and Hypoxia-inducible transcription factor 1 alpha (HIF-1α) expression in invasive breast cancer. The association between prognostic parameters of breast cancer (tumor size, axillary lymph node involvement, hormone receptor statuses, human epidermal growth factor receptor 2 (HER-2), Ki-67, grade and histology) and $^{18}$F- FDG uptake was also evaluated. Between August 2013 and April 2015; 92 patients with biopsy proven breast cancer underwent $^{18}$F-FDG PET/CT scanning for staging. The maximum standardized uptake values (SUVmax) of the primary tumor and nodal was measured. HIF-1α expression and clinicopathologic parameters such as tumor size, axillary lymph node involvement, estrogen (ER) and progesterone receptor (PgR) statuses, HER-2, Ki-67, grade and histology were analyzed. SUVmax compared with clinical-pathological parameters as well as HIF-1α expression. Median SUVmax in ER negative and PgR negative tumors were significantly higher (p=0.004 and p=0.008). The levels of SUVmax were significantly different in T2&T3 tumors from T1 tumors. Between Ki 67 > %10 group and Ki-67 < 10% group, median SUVmax level were higher in Ki-67 > 10% group (p=0.001). Although median SUVmax value was similar in HER-2 positive and HER-2 negative tumors, it was higher in triple negative tumors (p=0.04). With regard to tumor grade, median SUVmax was significantly higher in high grade tumors. SUVmax showed no significant correlation with HIF-1α. HIF-1α was correlated with tumor size and progesterone receptor expression; HIF-1α expression was increased as tumor size increases (r: 0.27, p=0.008) and progesterone receptor expression becomes negative (r:-0.26, p=0.0002). Axillary SUVmax of N1 was statistically lower than N2 and N3. In the multivariate analyzes, tumor size, Ki-67 expression and ER Allred score were significant independent factors influencing SUVmax. The results of our study indicated, strong relationships between tumor size, tumor grade, Ki-67 expression, negativity of the hormonal receptor, triple negativity and SUVmax values. However, no correlation was observed between FDG uptake and HIF-1α expression. Therefore, the relationship between FDG uptake and HIF-1α indicate that hypoxia and glycolysis do not always correlate.