Abstracts

Methods Between 1/2009 and 12/2018, 116 women underwent preoperative 18F-FDG PET/CT were considered. SUV, MTV, TLG, geometrical shape, histograms and texture features were computed inside tumor contours. In group 1 (87 patients), univariate association with LN metastases was computed by Mann-Whitney test and a neural network multivariate model was developed. Univariate and multivariate models were assessed with leave one out on 20 training sessions and on group 2 (29 patients).

Results Sensitivity and specificity of LN visual detection were 50% and 99% on group 1 and 33% and 95% on group 2. The lower sensitivity of visual detection in group 2 is mainly related to the higher rate of micrometastases (25% vs 13%). A unique heterogeneity feature computed on the primary tumor (GLSZM ZP) was able to predict LN metastases better than any other feature, or multivariate model (sensitivity and specificity of 75% and 81% in group 1 and of 89% and 80% in group 2). Tumors with LN metastases generally demonstrated a lower GLSZM ZP value, i.e. by the co-presence of high-uptake and low-uptake areas.

Conclusions In our study the computation of imaging features on the primary tumor increases nodal staging for detection sensitivity in 18F-FDG PET and can be considered for a better planning of the surgical treatment.

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DIAGNOSTIC ALGORITHM FOR UTERINE SARCOMA IDENTIFICATION: A 1-YEAR INTERIM ANALYSIS OF A MONOCENTRIC PROSPECTIVE, OBSERVATIONAL COHORT STUDY

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The incidence and mortality of cervical cancer are high in Poland. There are effective methods of the prevention and the early diagnosis however, they require well-trained medical professionals. Within this project, we built a prototype of a new device together with implemented software, to convert the currently used microscopes, to fully independent scanning systems for cytological samples. The device is intended to improve the effectiveness of cytological screening and registration of cytological tests’ results. The features of the software include digital backup, transmission and telemedicine evaluation.

Methods The software uses the artificial neural network (U-NET) designed to recognize suspicious regions and enhanced CNN neural network, allowing to determine the type of disorder such as: ASCUS, ASC-H, HIS, AGC, cancer. 7128 liquid based cytology (LBC) samples were evaluated by cyto-screeners. Cytological abnormalities: ASCUS, ASC-H, HIS, AGC, cancer were found in 254 (3.6%) cases. All samples were scanned and archived. Selected samples with diagnosed abnormality, were a model to teach U-NET/CNN.

Results During LBC screening tests (distinguishing between positive and negative results) a 99,6% efficiency compliance with results obtained using standard methods were achieved. There were no positive results misinterpreted. In the field of distinguishing cytological abnormalities: ASCUS, ASC-H, HIS, AGC - 95,72% efficiency was achieved.