

**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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**Objectives** Uterine sarcomas are rare malignant tumors arising from the mesenchymal tissues of the uterus including the endometrial stroma, uterine muscle and connective tissue. The diagnosis of uterine sarcomas is a challenge and no validated clinical or radiological criteria can accurately distinguish benign from malignant myometrial tumors. In particular, data on the ultrasound features of uterine sarcomas are scarce and they are mainly based on retrospective case series.

**Methods** This is a monocentric, prospective, observational cohort study. All patients with at least one myoma of 3 cm or more will be included in MYLUNAR study and will be assessed by Green Card criteria. If one of the Green Card criteria is present, a dedicated clinical and ultrasound paper form will be filled in to check the presence of the criteria

described in the Orange Card. If at least two suspicious characteristics according to Orange Card criteria are present, Magnetic Resonance imaging will be performed and the patients will be submitted to surgery.

**Results** In this 1-year interim analysis, we analysed 816 patients who were selected by MYLUNAR study criteria. The ad-interim analysis is expected to be concluded in May 2019, and we will present the results at the meeting.

**Conclusions** The discrimination between benign and malignant myometrial lesions is clinically relevant to plan the optimal management (surgery, interventional procedures, or medical treatment) and to define the most appropriate surgical approach. By defining an accurate diagnostic algorithm in identifying patients with uterine sarcomas, MYLUNAR study may represent the guide line in the management of women with myometrial lesion.

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### EVALUATION OF THE CONSTRUCTED THE DEVICE ALONG WITH THE SOFTWARE FOR DIGITAL ARCHIVING, SENDING THE DATA AND SUPPORTING THE DIAGNOSIS OF CERVICAL CANCER

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**Objectives** 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-screener. 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, CA - 95,72% efficiency was achieved.