IMPROVED PREOPERATIVE RISK STRATIFICATION IN ENDOMETRIAL CANCER: EXTERNAL VALIDATION OF THE ENDORISK NETWORK MODEL IN A POPULATION-BASED CASE SERIES

1M Grube*, 1C Reijnen, 1PJ Lucas, 1FK Koomans, 1SY Bruderer, 1E Oberlechner, 1B Krämer, 1J Anders, 1PE Nesi, 1SA Staehler, 1JM Pijnberg, 5K Koomans, 1Tuebingen University Hospital, Department of Women’s Health, Tuebingen, Germany; 2Radboud university medical center, Department of Radiation Oncology, Nijmegen, Netherlands; 3University of Twente, Department of Data Science, Enschede, Netherlands; 4Institute of Pathology im Medizin Campus Bodensee, Friedrichshafen, Germany; 5Heidelberg University Hospital, Institute of Pathology, Heidelberg, Germany; 6Tuebingen University Hospital, Department of Pathology and Neuropathology, Tuebingen, Germany; 7Radboud university medical center, Department of Obstetrics and Gynaecology, Nijmegen, Netherlands

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Introduction/Background* Preoperative risk stratification of newly diagnosed endometrial carcinoma (EC) patients has been hindered by only moderate prediction performance for many years. Recently ENDORISK, a Bayesian network (BN) model using easily accessible biomarkers, showed increased predictive performance when compared to current guidelines. It was the aim of this study to validate ENDORISK by applying a locked-down model to a population-based case series of endometrial carcinoma patients.

Methodology We assessed a retrospective cohort of women from the Tuebingen University Women’s Hospital surgically treated for EC from 2003-2013. Minimal requirements for using ENDORISK were: availability of preoperative tumour grade, at least 3 of ER, PR, p53 or L1CAM immunohistochemical biomarkers, at least 1 preoperative marker (PAP, CT-scan, CA125 or thrombocyte count), pathologic examination of lymph nodes, and 5-year disease specific survival data (DSS). ENDORISK was applied and prediction accuracy of lymph node metastasis (LNM) as well as 5-year DSS was investigated. The model’s overall performance was quantified by the Brier score, discriminative performance was measured based on the area under the curve.

Result(s)* A complete data set was evaluable from 247 patients. Median patient age was 64yrs (33-90), 78.1% cases were endometrioid subtype. Grade distribution included 87 (35.2%) G1, 106 (42.9%) G2, and 54 (21.9%) G3 tumours. 156 (63.2%) patients had stage IA disease, with the remaining stage IB (n=52;21.1%), stage II (n=12;4.9%), and stage III/IV (n=27;10.9%). AUC for LNM prediction was 0.851 (95% confidence interval [CI] 0.761-0.941) and 0.698 (95% CI 0.595-0.800) for 5-year DSS. The Brier scores were 0.06 for LN and 0.09 for 5-year DSS, respectively. In 156 patients (63.2%) LNM prediction was ≤ 5% (false-negative rate 0.6%).

Conclusion* We have successfully demonstrated ENDORISK prediction of LNM and 5-year DSS in a large single-centre population-based cohort using preoperative clinical and biomarker data. Next steps will now have to focus on ENDORISK performance in clinical practice environments, e.g. dealing with missing data. Incorporating molecular profiling will be of key importance for future extended use. This external validation study reinforces previous findings and may support further promoting of data-based decision-making tools in EC research and patient care.