**Introduction/Background**

Endometrial carcinoma (EC) is the most common gynaecological malignancy in the developed world. Currently, no valid non-invasive diagnostic or prognostic methods exist, making diagnosis and treatment rely on histopathological and surgical findings. The clinical study 'Biomarkers for Diagnosis and Prognosis of Endometrial Carcinoma' (BioEndoCar; NCT03553589) addresses this issue.

**Methodology**

A prospective observational case-control study was conducted at six medical centres across Europe. Plasma samples from women with diagnosed EC and controls were examined using non-targeted/targeted metabolomic and semi-quantitative immune-based proteomic approaches. The blood metabolomics (>850 metabolites) and proteomics (>900 proteins) data together with clinical and epidemiological data, were analysed using advanced artificial intelligence (AI) and machine learning (ML) methods to develop new diagnostic/prognostic models for early EC diagnosis and identifying patients with low/high risk for cancer progression and recurrence.

**Results**

BioEndoCar has recruited over 440 patients, with strict standard operating procedures for sample collection, processing, and storage. The diagnostic/prognostic models based on all data developed using AI/ML methods showed promising characteristics with a repeated k-fold cross-validation AUC > 0.8. The developed models will undergo further validation using both statistical (AI/ML) approaches to confirm which subset of proteomic and metabolomic data could serve as diagnostic and prognostic biomarkers in endometrial cancer.

**Conclusion**

The BioEndoCar study has completed the initial phase of identifying and validating diagnostic/prognostic models for early EC diagnosis and identifying patients with low/high risk for cancer progression and recurrence using artificial intelligence and machine learning methods. If validated, the models including a subset of proteomic and metabolomic data could serve as a foundation for developing valuable non-invasive tools for the diagnosis and prognosis of EC.

**Disclosures**

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