Summary

In countries with a high Human Development Index, including Poland, endometrial cancer is the most common malignant tumor of the female reproductive system. Along with the identification of its four molecular groups: group 1 with POLE gene mutations, group 2 with mismatch repair deficiency (MMRd), group 3 with molecular alterations of low copy number, and group 4 with *TP53* gene mutations and molecular alterations of high copy number, research has begun to establish the associations between the molecular groups of endometrial cancer and factors that influence its development and progression. The second most prevalent molecular group of endometrial cancer, right after the tumors with molecular alterations of low copy number, are MMRd cancers. Two of the promising factors, that may impact carcinogenesis are the anti-Müllerian hormone (AMH) and its type II receptor (AMHR-II). In oncology, AMH and its receptors are being investigated as potential diagnostic and therapeutic markers, particularly in the context of radioimmunotherapy targeting AMHR-II with radiolabeled antibodies. There is also a need to identify subgroups of patients who may benefit the most from AMH and AMHR-II-based therapies.

The aim of the conducted study was to examine the relationship between MMRd deficiency and the expression of the AMHR-II receptor in endometrial cancer, as well as to evaluate the association between MMRd and AMH expression and the impact of other factors on these correlations.

The study was conducted on archived materials from patients who underwent surgery for endometrial cancer at the Voivodeship Specialized Hospital in Olsztyn between 2006 and 2010. The study group consisted of 218 patients. Demographic and clinical data of the patients were collected from medical records. Microscopic slides of tumors were analyzed, and immunohistochemical staining panels and the Idylla MSI RT-PCR test were performed to assess the MMRd status.

The analysis of the results showed no correlation between MMRd status and the expression of the AMHR-II receptor. However, an association was observed between AMHR-II expression and the tumor type. It was also demonstrated that the level of AMH expression is independent of MMRd status but may be influenced by other factors such as breastfeeding duration, body mass index (BMI), number of miscarriages, and tumor type. No statistically significant relationships were observed between MMRd presence and other variables such as childbirth, miscarriages, hormonal contraception, hormone replacement therapy, type 2 diabetes, hypertension, patient age, BMI, number of pregnancies, average birth weight, breastfeeding duration, and smoking. The highest occurrence of MMRd was observed in low-grade endometrioid endometrial cancers. MMRd was detected in 21.56% of the patients in the study group using immunohistochemistry and in 16.05% of the patients using the RT-PCR test. The concordance between the results of both methods was 74.47%.

In conclusion, the study results suggest no association between MMRd status and the expression of AMH and AMHR-II receptors in endometrial cancer. However, there is a certain correlation between AMHR-II expression and tumor type, with low-grade endometrioid endometrial cancer being more frequently associated with MMRd. Additionally, analyzed factors such as patient age, BMI, childbirth and miscarriage history do not affect the presence of MMRd.