

## Gene expression of immune-related markers, PD-1, PD-L1, and PD-L2 in tissue of endometrioid endometrial cancer

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### ABSTRACT

**Introduction:** The immune checkpoint inhibitor has been actively explored as immunotherapy for cancer. Our study aims to determine the mRNA expression level of programmed cell death protein 1 (PD-1), programmed cell death ligand 1 (PD-L1), and programmed cell death ligand 2 (PD-L2) in patients with endometrial cancer. **Methods:** A prospective study was conducted in the Universiti Kebangsaan Malaysia Medical Centre (UKMMC), between the years 2021 and 2023. We collected endometrial tissues from patients who underwent hysterectomy for endometrial cancer and benign gynaecological cause (which act as controls). The mRNA gene expression of PD-1, PD-L1, and PD-L2 of the endometrium samples, was analysed using real-time PCR. GAPDH and ACTB were used for housekeeping genes. **Results:** A total of 36 patients were recruited; endometrial cancer (n=24) and controls (n=12). All cancer samples were early stage endometrioid endometrial cancer, with less than 50% myometrial invasion and no evidence of lymphovascular invasion. The mRNA expression of PD-1 was significantly higher in endometrial cancer compared to the control group (3.33-fold, p=0.003). The endometrial cancer group also reported greater mRNA expression of the PD-L1 and PD-L2 ligands; 3.00-fold (p=0.011) and 3.11-fold (p=0.003) respectively. **Conclusion:** The early-stage endometrioid endometrial cancer cells exhibited increased expression of the mRNA level of PD-1, PD-L1, and PD-L2, compared to the controls. These findings provide preliminary data on the role of these immune-related markers as cancer markers in immunotherapy. Further research is very much needed.

## Fertility preservation surgery in early-stage ovarian cancer

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### ABSTRACT

**Introduction:** Ovarian cancer is one of the most common cancers among women worldwide. Ovarian cancer risk increases with age and patients often present late. Nowadays, with increased medical awareness and screening programs, ovarian malignancy is detected early. The standard management of ovarian cancer involves radical surgery. The current trend among women delaying pregnancy has posed a medical dilemma in managing patients who wish to retain their fertility. We aimed to assess the outcome of fertility preservation surgery in women with early-stage ovarian cancer in Hospital Sultanah Bahiyah. **Methods:** A retrospective analysis was conducted involving patients who underwent fertility-sparing surgery for early-stage ovarian malignancy from January 2009 to December 2017. All these patients were followed-up for 5 years. **Results:** A total of 65 patients were included, with a median age of 24 years old. Descriptive analysis was used in this study. The majority of the patients were Malays. 32.3% (21 patients out of 65 patients) were pregnant after the surgery and from that number, eighteen patients had successful livebirths (85.7%). Out of 65 patients, 56 patients (86.2%) had disease-free interval. Seven patients (10.8%) had recurrence while two patients (3.1%) had disease progression. In terms of overall survival, 61 patients (93.8%) had five years survival. Unfortunately, four patients (6.15%) did not survive. **Conclusions:** Patients who underwent fertility-sparing surgery had very good outcomes in terms of pregnancy, oncologic outcome, and overall survival.