

Does the number of circulating platelets influence the postoperative evolution of endometrial cancer?

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ABSTRACT

Endometrial cancer is a frequently encountered gynecologic malignancy with increasing incidence; in order to maximize the chances to achieve a long-term survival rate, attention was focused on better identifying the patients at risk to develop more aggressive forms of the disease.

The aim of the current paper is to investigate the influence of the number of circulating platelets alone or in association with other biomarkers on the perioperative outcomes of endometrial cancer patients.

Keywords: endometrial cancer patients, platelet count, perioperative outcomes

INTRODUCTION

Endometrial cancer represents a serious health problem affecting women worldwide which usually develops due to the presence of high amounts of circulating unopposed estrogens [1-3]; this biological feature is frequently encountered in obese women, in whom a higher volume of adipose tissue will lead to the appearance of an increased level of serum estrogen. This unbalanced hormone will further stimulate the proliferation of the endometrial lining, conducting to the apparition of endometrial hyperplasia and even endometrial cancer [3,4]. Meanwhile, it has been widely recognized the fact that in neoplastic diseases higher levels of circulating platelets are to be expected, this parameter being also correlated in certain cases with the severity of the malignancy [5-7]. The aim of the current paper is to investigate the correlation ship between

the platelet count and the perioperative aspects of endometrial cancer patients.

MATERIAL AND METHODS

After obtaining the approval of the Ethics Committee no 113/2022, data of patients submitted to surgery for presumed endometrial cancer between May 2021 and May 2022 were retrospectively reviewed. After analyzing the histopathological reports, 38 such cases were identified which were further analyzed.

RESULTS

The mean age at the time of surgery was of 63 years old while the mean value of the body mass index was of 33 kg/m². As expected most patients were diagnosed with type I endometrial cancer, this histo-

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pathological subtype being encountered in 33 cases; in the other five cases the histopathological reports demonstrated the presence of type II endometrial cancer in four cases and respectively of a uterine leiomyosarcoma in one case. As for the FIGO stages at the time of diagnostic, there were 32 cases diagnosed in FIGO stages I and II and six cases diagnosed in FIGO stage III and IV of the disease. Perioperative data and their correlation with the number of circulating platelets is presented in Table 1.

TABLE 1. Univariate analysis studying the relationship between the preoperative platelet number with perioperative factors:

Variable	No. of cases	Platelet count (cells/mm ³)	p-value – univariate analysis
Age (years): <55 years >55 years	n=12 n=26	353.000 411.000	p=0,08
BMI (kg/m ²): <30 kg/m ² >30kg/m ²	n=4 n=34	383.000 410.000	p=0,76
FIGO stage I and II III and IV	n=32 n=6	327.000 440.000	p=0,003
Histopathological subtype: - Type I - Type II - Sarcoma	n=33 n=4 n=1	313.000 422.000 415.000	p=0,004
Degree of differentiation: - G1 - G2 - G3	n=16 n=15 n=7	283.000 344.000 387.000	p=0,001
Myometrial invasion: - Positive - Negative	n=12 n=26	390.000 280.000	p=0,003
Lymph node metastases: - Positive - Negative	n=11 n=27	393.000 305.000	p=0,005

As it can be observed from the table above, there was a strong correlation ship between the number of platelets and the FIGO stage at diagnostic (p=0,003), the histopathological subtype (p=0,004), the degree of differentiation (p=0,001), the presence of myometrial invasion (p=0,003) and the presence of lymph node metastases (p=0,005). All these data come to underline once again the hypothesis that in endometrial cancer, the presence of a higher number of circulating platelets is usually associated with a higher risk of dissemination and, globally, with a more aggressively tumor. As for the anthropometric

data such as age and BMI, no significant relationship could be established.

DISCUSSIONS

Besides their well-known functions in preventing hemorrhage, defending the host against antimicrobial infections and responding to the local areas of injury at the level of the vascular structures, platelets also seem to play a crucial role in tumorigenesis and in cellular metastasizing [8,9]. Moreover, in certain malignancies it seems that a higher circulating number of platelets has been observed preceding the clinical diagnostic of cancer; therefore patients presenting an unexplained, higher number of circulating platelets should be closely monitored in order to achieve an early diagnostic of a tumoral transformation [8]. Meanwhile it has been demonstrated that such patients also present a higher level of proinflammatory cytokines represented by interleukine 6, 1,3,11 which will further stimulate the neoplastic process. Therefore, administration of antiplatelet agents seem to interrupt this vicious cycle and, in association with chemotherapy seems to diminish the process of tumoral dissemination.

When it comes to the incidence of thrombocytosis in endometrial cancer, it widely ranges between 1% and 34% and seems to be associated with poor rates of survival [6-11]. Therefore, in the study conducted by Gucer et al. on 135 endometrial cancer, the authors demonstrated the presence of a strong correlation ship between the number of circulating platelets and the degree of differentiation, myometrial invasion, lympho-vascular invasion and stage at diagnostic. Moreover, the same study came to demonstrate the fact that the number of platelets is strongly correlated with the recurrence risk [12].

A similar conclusion was drawn in the study conducted by Njolstad et al. and published in 2013; the study included 557 patients with endometrial cancer and demonstrated that an increased number of circulating platelets was significantly associated with an advanced stage of the disease, with the presence of lymph node metastases as well as with a poorer rate of disease-free survival and overall survival; moreover, this study also came to demonstrate the presence of a positive correlation ship between the aggressivity of the tumoral biology and the levels of hemoglobin and with the number of circulating white cells respectively. However, in multivariate analysis, only the number of platelets and respectively the levels of hemoglobin seemed to significantly influence the overall survival [13].

Surprisingly, in the study conducted by Ayhan et al. on this issue, the authors came to demonstrate that only the stage at diagnostic, cervical involvement and the degree of differentiation of endome-

trial malignant tumors are significantly correlated with the number of circulating platelets. According to this study, patients with higher preoperative number of platelets should particularly benefit from a radical hysterectomy with bilateral adnexectomy in order to improve the chances to achieve a long term survival rate [14].

CONCLUSIONS

Data obtained so far came to demonstrate that a strong correlation ship between the number of

platelets and the aggressivity of different endometrial tumors is to be expected. In this respect, patients with higher numbers of circulating platelets are expected to benefit most from radical hysterectomy in association with lymph node dissection. Therefore, the platelet count seems to be a promising biological marker in order to identify the patients at risk for a more unfavorable outcome.

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