Does the preoperative thrombocytosis influence the postoperative outcomes in cervical cancer?

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ABSTRACT

Cervical cancer still remains a significant health problem in our country, an increased number of patients being diagnosed with this pathology. In order to achieve the best management in such cases, a combination of surgery and radiation therapy has been widely proposed. However, different results have been achieved; therefore attention was focused on identifying patients who could benefit most from neoadjuvant radiation therapy and multiple prognostic factors have been studied. The aim of the current paper is to study the influence of the preoperative platelet count on the postoperative outcomes of cervical cancer patients; the study was conducted on a study group of 82 patients submitted to surgery between June 2021 and May 2022 in "Cantacuzino" Clinical Hospital and the patients were classified in two groups according to the number of circulating platelets, a cut off value of 450.000 platelets/microliter being used.

Keywords: cervical cancer, platelet count, surgery, prognostic

INTRODUCTION

Although screening tests have been widely introduced in our country, a significant number of patients are still diagnosed with cervical cancer, an important per cent of them being diagnosed in advanced stages of the disease [1]. Meanwhile, due to the wide spread of human papilloma virus infection, the age at the time of diagnostic decreased; moreover, more aggressive viral subtypes have been isolated, this fact being probably responsible for the poorer outcomes in certain cases [2-4].

In order to obtain a maximum benefit in terms of survival especially due to the fact that this neoplasia is frequently encountered in young females, different therapeutic strategies have been proposed, most of them combining a radical surgical approach and radiation therapy. Unfortunately, although a radical intent therapeutical strategy is performed, a significant number of cases will experience recurrent disease at a certain time after the initial diagnostic and will need extended, mutilating surgical procedures [5-7]. In order to minimize this risk, different prognostic factors have been analyzed [8,9]. One of the most recently investigated such factor is represented by the preoperative platelet count. The aim of this paper is to study the influence of this parameter on a study group of 82 patients submitted to surgery

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between June 2021 and May 2022 in "Cantacuzino" Clinical Hospital.

MATERIAL AND METHODS

After obtaining the approval of the Ethics Committee no 83/2022, data of patients submitted to surgery between June 2021 and May 2022 were retrospectively reviewed; finally data of 82 patients diagnosed with cervical cancer and submitted to surgery accordingly were identified and analyzed. The 82 patients were divided into two groups in respect to the preoperative platelet count, a cut off value of 450.000 platelets/microliter being used.

RESULTS

Finally there were 58 patients with lower than 450.000 platelets/microliter and 24 patients with a higher number of platelets. The mean age of the entire study group at the time of conducting the study was of 47 years (range 28-63 years), no significant difference being observed between the two groups. Meanwhile, there was no statistical significant difference in terms of associated comorbidities, body mass index or presence of human papilloma virus infection between the two groups. Similarly, there were no differences in terms of the histopathological subtype or the degree of differentiation. However, patients with lower levels of circulating platelets were diagnosed more often with less advanced stages of the disease (p=0,003) (Table 1).

When it comes to the correlation ship between the histopathological results and the preoperative platelet count, a significant correlation ship was established between the higher number of platelets and the presence of lymph node metastases (p=0,001), the presence of lymphovascular invasion (p=0,002). All these data come to suggest that patients with a higher level of circulating platelets are at risk to present more aggressive cervical cancer lesions.

DISCUSSIONS

The correlation ship between the number of circulating platelets and the prognostic in patients with different malignancies has been widely studied so far and, in most cases a inverse relationship was observed; therefore, patients presenting a higher platelet count were demonstrated to have a poorer outcome and a poorer long-term survival [9-11]. The main mechanism which is related to this process refers to the fact that platelets are able to synthesize angiogenesis stimulating factors such a vascular endothelial growth factor or platelet derived growth factor which, at their turn, will stimulate the process of tumoral proliferation and dissemination [12-14].

TABLE 1. The correlation ship between the preoperative number of platelets and the preoperative factors

Variable	Platelet <450.000/ microl (58 patients)	Platelet >450.000/ microl (24 patients)	p value
Age <50 years >50 years	n=33 n=25	n=18 n=6	P=0,33
BMI <30kg/m² >30kg/m²	n=37 n=21	n=13 n=11	P=0,55
Associated comorbidities: - Arterial hypertension - Diabetes mellitus - Chronic pulmonary disease - Deep venous thrombosis	n=13 n=2 n=3 n=1	n=4 n=1 n=0 n=1	P=0,22 P=0,78 P=0,27 P=0.09
Histopathological subtype: - Squamous cell carcinoma - Non-squamous cell carcinoma	n=53 n=5	n=22 n=2	P=0.09
Degree of differentiation: - G1 - G2 - G3	n=23 n=11 n=14	n=11 n=8 n=5	P=0,08
HPV infection: - positive - negative	n=31 n=27	n=11 n=17	P=0,98
FIGO stage: - I, II - III, IV	n=53 n=5	n=2 n=22	P=0,03

n= number of cases

When it comes to the impact of platelet number on the postoperative outcomes of cervical cancer, the initial published results were rather conflictual; therefore, in the study conducted by Lopes et al. and published in 1994, the authors came to demonstrate that thrombocytosis itself (defined as a higher than 400.000/microliter number of circulating platelets) was not a significant factor for a poorer outcome in a cohort of 643 patients [15].

Moreover, another study conducted by Shen et al. came to demonstrate that in cervical cancer patients the number of circulating platelets is lower and the dimensions of these elements are more reduced when compared to healthy controls; therefore, in a study group of 181 cervical cancer patients and 181 controls the authors underlined the fact that patients without cancer had a mean number of platelets of 246.000/microliter while cases with cancer

had a mean value of 234.000/microliter (p=0,057). Meanwhile patients with cancer reported a significantly lower volume of the circulating platelets when compared to healthy subjects (8,6 fL versus 9,2 fL, p<0,001). Therefore, the authors concluded that the mean platelet volume could be used as a screening tool for cervical cancer diagnostic [16].

However, studies published more recently came to demonstrate that, similarly to other solid tumors, aggressive histopathological subtypes of cervical cancer are associated with poorer outcomes. An interesting meta-analysis which reached at this conclusion has been published in 2019 by Cao et al.; the authors reviewed 19 studies published on this issue at that moment, which included 6521 patients and demonstrated that a higher number of platelets is associated with a poorer overall survival rate and with a poorer disease-free survival interval; interestingly, the authors came to demonstrate that these conclusions were significantly influenced by the year in which the study had been published, by the country in which it was published and by the sample size [17]. In a similar study conducted by Cheng et al the authors demonstrated that a higher value of the platelet count in cervical cancer patients is significantly associated with higher clinical stage, with higher risk of lymph node metastases and with a higher in volume lesion. As expected a higher number of platelets was also associated with inferior overall survival and recurrence free survival [8].

CONCLUSIONS

Patients with higher number of preoperative platelets are at risk to present more aggressive subtypes of cervical cancer; therefore, in such cases a personalized therapeutic approach might be taken in consideration in order to maximize the effect on the long-term outcomes.

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