

Red cell distribution width as a prognostic marker in ovarian cancer patients

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ABSTRACT

Red cell distribution width [RDW] represents a new prognostic marker which has been widely studied in malignant tumors including ovarian cancer patients. Therefore, it has been stipulated that RDW can be also used as a prognostic marker and a follow up tool for these patients. The aim of the current paper was to analyze the variations of this parameter on a study group of 31 patients diagnosed with advanced stage ovarian cancer and respectively 48 cases with benign ovarian lesions submitted to surgery between 2017-2020 in "Cantacuzino" Clinical Hospital.

Keywords: red cell distribution, ovarian cancer, follow up

INTRODUCTION

Also known as the silent killer, ovarian cancer remains one of the most aggressive malignancies which is responsible for a significant number of deaths among women worldwide due to two main causes: due to the absence of specific signs and symptoms and due to the absence of an appropriate screening program [1]. Although traditionally the most relevant prognostic marker available preoperatively is represented by the serum levels of CA125, it has been widely demonstrated the fact that significantly increased values are presented only in advanced stages of the disease while in early stages

minimal modifications are to be expected. In the last decade attention was paid on identifying other prognostic markers which are expected to give more specific information regarding the stage and extent of the disease during the preoperative workup [2-4]. Usually determined as part of the whole blood cell count, red cell distribution width represents a quantitative parameter indicating the dimensions of the red blood cells and respectively their heterogeneity; interestingly in certain malignant lesions such as liver, ovarian or endometrial cancer, higher than normal values of RDW are to be expected [5,6]. The aim of the current paper is to analyze the correla-

tion ship between RDW and ovarian cancer prognosis.

MATERIAL AND METHODS

After receiving the ethics committee approval number 38/2023 data of patients submitted to surgery with a preoperative presumption of ovarian cancer were retrospectively reviewed. Finally there were 31 patients with histopathologically confirmed diagnosis of ovarian cancer who were submitted to surgery with curative intent during this period and 48 cases in which the final diagnosis was of benign ovarian lesions.

RESULTS

Between 2017-2020 79 patients with presumed ovarian cancer were submitted to surgery in “Cantacuzino” Clinical Hospital. After analyzing the histopathological reports these cases were classified in two groups: cases diagnosed with benign ovarian tumors [48 cases] and respectively cases diagnosed with malignant ovarian tumors [31 cases]; the mean age in the first group was of 38 years [range 16-56 years], significantly lower when compared to the second group [in which the mean age was of 56 years [range 28-71 years]. When it comes to the most commonly encountered histopathological subtypes, there were represented by cystadenoma [23 cases] followed by mucinous cysts [14 cases] and endometrioid cysts [in 11 cases] while in the second group the most frequently encountered histopathological subtype was represented by serous adenocarcinoma [in 21 cases] followed by mucinous carcinoma [in seven cases] and endometrioid carcinoma [in four cases].

When studying the RDW values, we found a significant difference between cases diagnosed with benign versus malignant lesions [0,13 versus 0,16], $p=0,0012$. Moreover, when analyzing the distribution of RDW among cases diagnosed with ovarian cancer we also observed that patients diagnosed with advanced stages of the disease reported significantly higher values of RDW when compared to cases diagnosed with earlier stages [0,17 for stages III-IV versus 0,145 for stages I-II]. As expected cases presenting higher RDW values needed more extended resections in order to achieve no residual disease and reported a significantly higher rate of severe postoperative complications; therefore, among the 31 cases diagnosed with ovarian carcinomas there were eight cases who experienced postoperative complications who had a mean RDW value of 0,18 and 23 cases with no postoperative complications presenting a mean RDW value of 0,12 [$p=0,011$].

DISCUSSIONS

Although debulking surgery to no residual disease has been widely implemented as the standard therapeutic approach in ovarian cancer patients, a significant number of patients will develop recurrent disease and platinum resistance [7-9]. Therefore attention was focused on identifying different prognostic markers which might increase the chances to achieve a more rapid diagnostic, in an earlier stage of the disease [10,11]. In the last decade particular interest has been given to the association between chronic inflammation and cancer, a significant correlation ship being demonstrated so far; therefore, in ovarian cancer patients the presence of a chronic inflammatory status is translated through a high level of circulating cytokines which inhibit the stimulating effect of erythropoietin on bone marrow. In consequence synthesis, maturation and apoptosis will be seriously affected leading to the apparition in the peripheral blood of heterogenous red cells with different aspects and therefore with increased RDW [12]. Therefore, in ovarian cancer patients increased levels of interleukin 1, interleukin 6, interleukin 17 and tumor necrosis factor alpha are responsible for a chronic inflammatory status and therefore an increased RDW [13]. Moreover, certain authors underlined the fact that association between RDW and CA 125 levels in the preoperative setup might increase the chances to better identify ovarian cancer patients; therefore in the study conducted by Qin et al and published in 2018 the authors underlined the fact that the area under the curve for the combination of CA125 and RDW is significantly larger than the one of CA125 and respectively RDW alone suggesting therefore that the combination of these two parameters is expected to offer a better diagnostic tool when compared to the one obtained by each parameter in part [14].

Moreover, it seems that RDW represents an important tool in order to differentiate malignant from benign cases and respectively early stage from advanced stage lesions in various pathologies; therefore, Yang et al demonstrated that patients with colorectal cancer are expected to have significantly higher values of RDW when compared to those with benign colonic cancers [15], Kos et al demonstrated that higher RDW values are associated with more aggressive types of pulmonary cancer, Wan et al demonstrated that RDW can also have a prognostic value in esophageal cancer patients [17] while Huang underlined the fact that this parameter can distinguish between benign and malignant breast pathologies and might predict the long term outcome [18].

CONCLUSIONS

RDW seems to be a promising parameter in order to better understand the biological aggressive-

ness of ovarian cancer; therefore patients with higher preoperative values of RDW seem to have a more

aggressive biological subtype and might be rather candidates for more personalized therapies.

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