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Routine Blood Tests In Patients With Gynecological Malignancies.

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ABSTRACT

Lately use of routine blood tests have been shown to be promising in determining disease free and overall survival in patients with various malignanices and also in gynecological malignancies. Pubmed was searched in the last 5 years in order to review publications upon complete blood counts and gynecological malignancies and 15 papers were found. Most of the studies published so far suggest that preoperative leukocytosis, thrombocytosis, neutropenia, aneamia, hyperfibrinogenemia, neutrophilia, higher serum albumin and CRP values, higher NLR and PLR together with higher CA125 and CA19-9 indicate shorter disease free and overall survival in patients with ovarian cancers.

Keywords: blood, gynecological, malignancies.

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INTRODUCTION

Recent publications highlight the higher importance of common serum tests in patients with various cancers than it was previously assumed. Malignant tumors are often accompanied by increased risk of hematological abnormalities. Recent studies have shown that the presence of systemic inflammation correlates with poorer disease-free and overall survival in patients with cancer (1, 2, 3). Anemia, haemoglobinemia, thrombocytosis and leukocytosis are thought to be an adverse prognostic factors in various malignancies. Recently, it has been shown that the preoperative neutrophil/lymphocyte ratio (NLR) and platelet/lymphocyte ratio (PLR) as well as lymphocyte to monocyte ratio (LMR) might indicate patients which will respond poorly to the treatments and who have worse disease-free survival (DFS) together with overall disease survival (OS) in many cancers such as small cell lung carcinoma, esophageal carcinoma, pancreatic adenocarcinoma and head and neck cancers (1, 2, 3). Thrombocytosis, leukocytosis and anemia have been demonstrated to be independent poor prognostic factors in ovarian, endometrial and uterine serous papillary carcinoma. It is known that over 20% of ovarian cancer patients have preoperative thrombocytosis or hyperfibrinogenemia (4).

MATERIALS, METHODS AND RESULTS

Pubmed was searched in the last 5 years in order to review publications upon complete blood counts and gynecological malignancies and 15 papers were found.

DISCUSSION

Wang et al. (4) analysed retrospectively 143 patients with ovarian cancer and reported that NLR and serum albumin were independent prognostic factors for overall survival (OS) and disease-free survival. An inverse correlation was seen regarding the NLR and serum albumin concentration. The same authors proposed novel prognostic inflammation score (PIS) as a significant predictor for OS and PFS and low PIS significantly correlated with advanced tumor stage, metastasis and preoperative high PLR. Younes et al. (5) found put that leukocytosis and neutrophilia significantly correlated with aggressive tumor biology, and may predict a lower 5 year survival. Their study was performed on 56 women and the results have shown that leukocyte and neutrophil levels were adversely associated with survival. Of 15 patients with leukocytosis >10000/µL, 67% were dead at the end of follow up and of the 27 with neutrophils above 65%, 14 (52%) were dead at the end of follow up. Feng et al. (6) analysed 875 patients and repoted that both preoperative thrombocytosis and hyperfibrinogenemia were associated with an advanced FIGO stage, elevated CA125 level, more extensive ascites, more extensive residual disease and chemosensitivity. In the univariate analyses, hyperfibrinogenemia was associated with reduced disease free and overal survival. However, thrombocytosis was not found to be a potential predictor of disease free and overall survival. In the multivariate analyses, hyperfibrinogenemia was an independent predictor of overall but not disease free survival. Słabuszewska-Jóźwiak et al. (7) retrieved 349 patients with ovarian tumour and defined thrombocytopaenia when platelet count was below 150G/L and thrombocythaemia when platelets were at 350 G/L and higher. Thrombocytosis often coincides with ascites and the cytoreduction decreases platelet count. Thrombocytosis was more frequently found in high grade tumours and in stage III and IV cancers. Patients with co-occurring thrombocytosis were found to have shorter survival periods and shorter disease free period. Seckin et al. (8) found that patients who have an intraoperative frozen section diagnosis of borderline mucinous ovarian tumors, CA19-9, NLR and CA125 were significant predictors of malignancy. A total of 63 patients were included in the study, 41 patients had borderline, 11 patients had benign, and 11 patients had malignant mucinous ovarian tumors. Patient age, menopausal status, hemoglobin, platelet and lymphocyte counts were not different between the groups. However, white blood cell, neutrophil counts and neutrophil/lymphocyte ratio (NLR), CA125 and CA19-9 were significantly higher in malignant cases. Utsumi et al. (9) reviewed 77 patients charts of terminally ill patients with ovarian cancer and concluded that a poorer performance status, an elevated white blood cell count, and a higher C-reactive protein value significantly correlated with a shorter survival. Eo et al. (10) concluded on 154 patients with epithelial ovarian cancer that preoperative lymphocyte-monocyte ratio (LMR) is an independent predictor of suboptimal cytoreduction in advanced stage epithelial ovarian cancer. Furthermore, the best LMR cutoff point for suboptimal cytoreduction was 3.75. On multivariate logistic regression analysis, age, CA 125, white blood cell count, and LMR were found to be the strongest predictors for suboptimal cytoreduction. Paik et al. (11) retrospectively reviewed the records of 757 patients with EOC whose primary treatment consisted of surgical debulking and chemotherapy. In addition to stage and residual disease after PDS, which are known predictors, lymphocyte and monocyte count were found to be significant prognostic factors for platinum-sensitivity, platelet count for PFS, and neutrophil

count for OS on multivariate analysis. Huang et al. (12) retrieved data from 55 ovarian cancer patients in whom weekly pretreatment complete blood counts were collected during dose-dense chemotherapy. Lower PLR or NLR had better treatment response for dose-dense chemotherapy and are possible markers for representing treatment response in dose-dense chemotherapy. Miao et al. (13) analysed 344 patients with EOC who are receiving platinum-based chemotherapy. Patients with lower value of NLR (NLR < 3.02) or PLR (PLR < 207) had a longer progression-free survival and overall survival. In multivariate analysis, NLR and PLR showed a significant association with progression-free survival and overall survival. Njølstad et al. (14) reviewed 557 patients with endometrial carcinoma regarding complete blood count. Preoperative anemia was present in 15.8%, leukocytosis in 11.2% and thrombocytosis in 12.1%. Among patients with localized disease (FIGO stage I/II), 18.1% had anemia and/or thrombocytosis at diagnosis. Patients with advanced disease (high FIGO stage and lymph-node metastasis) had significantly lower hemoglobin count, higher leukocyte count and higher platelet count. Patients with anemia, leukocytosis and thrombocytosis had significantly shorter 5-year disease-specific survival of 61.3%, 66.0% and 61.0% respectively, compared to 87.7%, 86.3% and 87.3% for patients with normal counts. Preoperative anemia, leukocytosis or thrombocytosis in women with endometrial carcinoma is associated with advanced disease and poor disease-specific survival. Chen et al. (15) reported that preoperative anemia, leukocytosis or thrombocytosis in EOC patients is closely associated with more malignant disease phenotype and poorer prognosis. Significantly, thrombocytosis may independently predict the disease- specific survival for EOC patients and their results were based on 816 Chinese woman. So et al. (16) analysed 155 women, of which 23 (14.8%) had leukocytosis and 132 (85.2%) did not have leukocytosis. RFS and OS were significantly shorter for women with leukocytosis than for women without leukocytosis. The mortality rate was also higher among women with leukocytosis. Multivariate analysis revealed that preoperative leukocytosis, advanced stage and optimal cytoreduction were independent prognostic factors for RFS. It seems that preoperative leukocytosis might be an independent prognostic factor for RFS and OS in women with EOC. Cohen et al. (17) reviewed 107 women with invasive EOC and thrombocytosis was determined as a platelet count ≥ 350 × 10(9)/L and optimal resection at SCS as microscopic residual disease. The same authors (17) reported that elevated platelet count at time of SCS is associated with suboptimal resection and shortened overall survival. Ma et al. (18) also reported that thrombocytosis, accompanied by increasing of platelet aggregation rates, is associated with more aggressive tumor biology and a negative prognostic factor for overall survival in EOC patients.

CONCLUSION

Most of the studies published so far suggest that preoperative leukocytosis, thrombocytosis, neutropenia, aneamia, hyperfibrinogenemia, neutrophilia, higher serum albumin and CRP values, higher NLR and PLR together with higher CA125 and CA19-9 indicate shorter disease free and overall survival in patients with ovarian cancers.

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