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Original Research Article

Predictivity of inflammatory cell counts in early diagnosis of hydatidiform mole

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ABSTRACT

Background: Hydatidiform mole (HM) is the most frequently encountered disease among gestational trophoblastic diseases. HM can invade myometrium and result in hysterectomy and because of the absence of any predictive method, the disease can be lately diagnosed in the periphery. Author aimed to evaluate predictive value of the inflammatory cell counts in molar pregnancies in this study.
Methods: Nineteen (19) cases with histopathologic HM diagnosis and 19 cases of control group with pregnancy termination or abortion material reached to a university hospital's pathology department on the same day were included in the study. The data on the same day or the day before the operation was used as the hemogram data.
Results: The mean age of the cases were 33.84±8.477. The mean of neutrophil, lymphocyte, monocyte, basophil and eosinophil numbers of the HM group and control group were compared in the 95% confidence interval with the independent t test. No statistical significance was observed in any of the inflammatory cell means ($p>0.05$). The ratio of lymphocyte means was statistically significant ($p=0.006$).
Conclusions: In this study, author assessed whether the inflammatory cell counts were a predictive in detecting HM. The statistically significant results that author founded in the means of lymphocyte, suggests that this finding may be predictive of early diagnosis. They concluded that this result can be routinely used after the confirmation of the results in larger series of cases.

Keywords: Hydatidiform mole, Inflammatory cell, Lymphocyte, Molar pregnancy, Neutrophil

INTRODUCTION

Hydatidiform Mole (HM) is the most common disease among gestational trophoblastic diseases. This disease, which is caused by abnormal proliferation of trophoblasts is divided into two as complete and partial.[1,2] In this discrimination of HM, although histopathological findings are guiding, definitive diagnosis is made by molecular tests. When the incidence of HM in worldwide is evaluated, it is found in Europe and North America in approximately 1:500-1215 pregnancy.[3-5]

New studies indicate that this rate increased in some European countries.[6,7] In Africa, Asia and Middle East countries, there are studies showing that the incidence of 1-12:1000 pregnancies and the incidence is decreasing.[3,4,8-10] The etiologic factors of HM include socioeconomic status, blood group, menarche age, maternal age, parity, molar pregnancy history, genetic factors, malnutrition, parasites and infections.[6,11-14] On the studies to conduct protective factors, it is reported that folic acid may be protective against HM.[15]

Although the etiologic factors are known, HM can invade myometrium and lead to hysterectomy, even sometimes threaten maternal life and the absence of any method that can be used in periphery without special skills for identifying this disease may cause late diagnoses.[16]

Therefore, in this study, author aimed to evaluate the value of inflammatory cell numbers in mole pregnancies and the predictivity of this value.

METHODS

This retrospective study was conducted with ethical approval of local ethics committee numbered as 145/27.09.2017. Between the years of 2014 to 2016 nineteen cases diagnosed as HM as histopathologically in a university hospital and nineteen control groups were included in the study.

Inclusion criteria includes histopathologically diagnosed HM cases as case group between the years 2014-2016 and abortus or healthy pregnancy termination materials reached pathology laboratory as control group between 2014-2016 on the same day for each HM case. Exclusion criteria includes cases with additional diseases and cases with no hemogram data.

Histopathological diagnoses were reevaluated and confirmed by the pathologist. Demographic data and hemogram data were obtained from the hospital automation system. For hemogram data, the data were used on the day of pregnancy termination/abortus day or the previous day. SPSS 18.0 package program was used for statistical analysis. T test for independent variables were used in the analysis when comparing two group's inflammatory cell counts. $p<0.05$ was considered as statistically significant.

RESULTS

The ages of the patients ranged from 19-47, with a mean of 33.84±8.47 (median 35). The mean age of the patients diagnosed with HM was 33.16±7.33 (median 35) and the mean age of the control group was 34.53±9.64 (median 36). Mean values of neutrophil, lymphocyte, monocyte, basophil and eosinophil counts of HM group and control group were compared with t-test for independent variables in 95% confidence interval.

Table 1: Means of inflammatory cell counts and p values in intergroup analysis of control group and HM group.

inflammatory cells	Control group mean	HM group mean	P value
Neutrophil	7.183±5.694	5.451±3.015	0.249
Lymphocyte	2.185±0.698	1.640±0.430	0.006
Monocyte	0.449±0.188	0.423±0.189	0.675
Basophil	0.013±0.020	0.017±0.026	0.612
Eosinophil	0.183±0.133	0.191±0.128	0.854

Neither the number of neutrophils, monocyte, basophil and eosinophil counts was statistically significant ($p>0.05$).

However, it was observed that the mean lymphocyte count of the control group was significantly higher than that of the HM group ($p=0.006$). Table 1 shows the means of inflammatory cell counts of the control group, HM group and p values of the statistical analysis.

DISCUSSION

HM, which is caused by abnormal proliferation of trophoblasts and may result in maternal mortality from time to time, should be considered as a social health problem.[17,18] It has been reported that HM, which affects the life of the patient after the pregnancy, also causes psychological problems, except that it can be transformed into gestational trophoblastic neoplasia.[19,20]

The incidence rate of HM was found to be between 0.3-16 in 1000 pregnancies in a hospital-based study covering 68years in this country and it was reported to be 1-24.5 in 1000 births. Moreover, a study from Turkey conducted in 28-center, reported that 456 gestational trophoblastic diseases were observed in 1,173,235 births (0.38 per 1000 births) and the mean age at diagnosis was 31years.[21,22]

Maternal age, previous abortion, previous HM diagnosis, ethnicity, oral contraceptive usage, intrauterine vehicle, blood group, radiation, socioeconomic status, nutrition, infertility and genetic factors have been reported in several publications. All of these factors mainly focus on maternal age and history of HM. In addition, a study published in 2017 suggested that the father's occupational profession may be a risk factor in the development of HM.[14,19,23-28]

The diagnosis of hydatidiform mole is made by evaluation of beta human chorionic gonadotropin (beta HCG), ultrasonography imaging (USG) and histopathological examination of the abortion or termination material. There is no predictive laboratory test for the early diagnosis of HM. Studies in the literature are generally aimed to detect invasive HM because of the higher mortality rate or predicting recurrent HM.[29-31]

In one of the few studies to assess the predictors for the early diagnosis of HM, Kohorn EI et al, compared colony stimulating factor (CSF) with serum HCG. In their study, they stated that they detected the correlation in some cases but they did not show statistical significance moreover they added that they also observed completely opposite results.[32] In a study published in 2003, serum tumor markers were evaluated and mean CA 19-9 was found to be lower in HM pregnancies compared to normal pregnancies.[33]

In a hematologic evaluation, low NK cell percentage was reported to be associated with gestational trophoblastic tumors in the study by Sutoto MT.[34] Considering the studies that focused on hemogram data, mean platelet

volume was showed additive effect to predict persistent HM 21.5%, while platelet/lymphocyte ratio was 18.3%, in a study including histologically confirmed 257 HM and 198 normal pregnant women.[35] In another study which is published in 2014, it has been suggested that neutrophil/lymphocyte ratio can be used as a biomarker for invasion in gestational trophoblastic diseases.[36]

The value of inflammatory cell counts obtained from hemogram are investigated in this study. According to this study it is suggested that the mean number of statistically significant lymphocyte counts between the control group and the HM group can be confirmed in a larger series of patients and that it may contribute to the routine management and diagnosis of the patient with the other markers mentioned in the literature.

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