Braz J Otorhinolaryngol. 2016;82(6):662–667

Brazilian Journal of
OTORHINOLARYNGOLOGY
www.bjorl.org

ORIGINAL ARTICLE

The role of the mean platelet volume and neutrophil-to-lymphocyte ratio in peritonsillar abscesses☆,☆☆

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Received 19 June 2015; accepted 28 November 2015
Available online 28 March 2016

KEYWORDS
Mean platelet volume;
Neutrophil-to-lymphcyte rate;
Peritonsillar abscess;
Treatment

Abstract
Introduction: Peritonsillar abscess is a serious infectious disease of the tonsillar tissue. Treatment generally requires both medical and surgical approaches to relieve the symptoms. Recently, in addition to clinical follow-up, some inflammatory markers, such as the mean platelet volume and neutrophil-to-lymphocyte ratio, have been considered to be additional inflammatory monitoring markers in inflammatory diseases.
Objective: The aim of this study was to describe the role of mean platelet volume and neutrophil-to-lymphocyte ratio in patients with peritonsillar abscess.
Methods: A retrospective study was conducted in 88 patients with peritonsillar abscess and 88 healthy individuals. We analyzed the white blood cell count, neutrophil count, lymphocyte count, platelet count, C-reactive protein, mean platelet volume and neutrophil-to-lymphocyte ratio values and compared them among the patient and control groups.
Results: The mean platelet volume levels were significantly higher in the peritonsillar abscess pretreatment group than in the peritonsillar abscess posttreatment group and the control group. A mean platelet volume value of 8.7 was the optimal cut-off value for evaluating the sensitivity, specificity, positive predictive value and negative predictive value of 75%, 65.9%, 68% and 72%, respectively. The neutrophil-to-lymphocyte ratio levels were significantly higher in the peritonsillar abscess pretreatment group than in the peritonsillar abscess post-treatment group and the control group. A neutrophil-to-lymphocyte ratio value of 3.08 was the optimal cut-off value for evaluating the sensitivity, specificity, positive predictive value and negative predictive value of 90.9%, 90.9%, 90.9% and 90.9%, respectively. While the white blood cell count, neutrophil count, lymphocyte count and C-reactive protein values were significantly different among the patient and control groups ($p < 0.05$), the platelet count was not significantly different among the patient and control groups ($p > 0.05$).

☆ Please cite this article as: Şentürk M, Azgın İ, Övet G, Alataş N, Ağırgöl B, Yılmaz E. The role of the mean platelet volume and neutrophil-to-lymphocyte ratio in peritonsillar abscesses. Braz J Otorhinolaryngol. 2016;82:662–7.

☆☆ The protocol of this study was approved by the institutional review board of the Selçuk University, Medical Faculty, Konya, Turkey (Decision n° 2015/123).

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http://dx.doi.org/10.1016/j.bjorl.2015.11.018

Conclusion: The mean platelet volume and neutrophil-to-lymphocyte ratio values made us think that these parameters were quick, inexpensive and reliable inflammatory follow-up parameters and could be easily integrated into daily practice for peritonsillar abscess treatment except platelet count.

PALAVRAS-CHAVE
Volume plaquetário médio;
Relação neutrófilos/linfócitos;
Abscesso periamigdaliano;
Tratamento

O papel do volume plaquetário médio e a relação neutrófilos/linfócitos em abscesso periamigdaliano

Resumo
Introdução: O abscesso periamigdaliano (APA) é uma doença infecciosa grave do tecido tonsilar. O seu tratamento geralmente requer uma abordagem medicamentosa e cirúrgica para o alívio dos sintomas. Recentemente, além do acompanhamento clínico, alguns marcadores inflamatórios, como o volume plaquetário médio (VPM) e a relação neutrófilos/linfócitos (RN/L), foram considerados marcadores de monitoramento adicionais em doenças inflamatórias.
Objetivo: O objetivo deste estudo foi descrever o papel os VPM e a RN/L em pacientes com APA.
Método: Estudo retrospectivo realizado com 88 pacientes com ATP e 88 indivíduos saudáveis. Analisamos a contagem de leucócitos, neutrófilos, linfócitos, plaquetas, proteína C-reativa (PCR), VPM e RN/L e a comparamos os valores entre o grupo de pacientes e grupo controle.
Resultados: Os níveis de VPM eram significativamente maiores no grupo APA pré-tratamento que no grupo APA pós-tratamento e no grupo controle. Um valor de corte de 8,7 para o VPM foi considerado ideal para avaliar sensibilidade, especificidade, valor preditivo positivo e valor preditivo negativo de 75, 65,9, 68 e 72%, respectivamente. Os níveis da RN/L eram significantemente maiores no grupo APA pré-tratamento que no grupo APA pós-tratamento e no grupo controle. Um valor de 3,08 para a RN/L foi o valor de corte ideal para avaliar sensibilidade, especificidade, valor preditivo positivo e valor preditivo negativo de 90,9, 90,9, 90,9 e 90,9%, respectivamente. Enquanto a contagem dos valores de leucócitos, neutrófilos, linfócitos e PCR foi significantemente diferente entre os grupos de pacientes e controle ($p<0,05$), a contagem de plaquetas não foi ($p>0,05$).
Conclusão: Os valores de VPM e RN/L sugerem que estes são parâmetros inflamatórios de acompanhamento rápido, barato e confiável, e que podem ser facilmente integrados à prática diária para o tratamento de APA, exceto pela contagem de plaquetas.

Introduction

Peritonsillar abscess is one of the most common deep neck infections and is characterized by the accumulation of pus between the palatine tonsils and the superior pharyngeal constrictor muscle.[1,2] Airway obstruction, abscess rupture, pus aspiration, asphyxia and septicemia may develop as a result of inadequate treatment or a progressed infection.[3]

This severe infection needs to be followed-up clinically as well as by performing a hematological parameter follow-up.[2] Although procalcitonin, pro-adrenomedullin,[4] serum amyloid A, fibrinogen and CD-14 binding protein[5] are among the sensitive follow-up parameters that are used for following up on inflammation, they may not be available in every inpatient service's laboratories and present an additional cost. However, simple hemogram values, such as the white blood cell (WBC) count, neutrophil count and lymphocyte count, which are among the most commonly used parameters, are often available in every clinical laboratory and bear no additional cost. A routine pus culture rarely changes the course of treatment; however, it is expensive and should not be sent to the laboratory unless there is a finding that requires a re-assessment of the clinical results.[2] Moreover, at least 48 h are necessary to receive results from abscess cultures. Delays in treatment selection may suppress the improvement in symptoms and can lead to an increase in the spread of infection and loss of patients' time.[6]

MPV is one of the platelet function indicators that reflects the platelet production rate and stimulation.[7] It was found that the MPV, which is available to be measured in routine hematological examinations, directly correlates with the course of the disease, such as sepsis in neonates with a very low birth weight,[8] pediatric acute pyelonephritis[9] and gastric cancer.[10]

The use of the neutrophil-to-lymphocyte ratio (NLR), which is obtained by dividing the neutrophil count by the