·临床论著

粒细胞胞外陷阱在老年髋部骨折肺炎中的诊断意义△

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摘要：[目的]探讨外周血中性粒细胞胞外陷阱（neutrophil extracellular traps, NETs）含量对老年髋部骨折患者术后肺炎的诊断价值。[方法]前瞻性选取 2019 年 1 月—2022 年 2 月在本院进行手术治疗的 57 例老年髋部骨折患者，观察其术后是否发生肺炎。采用单项因素比较和 Logistic 回归分析探讨术后肺炎的危险因素；并评价危险因素预测术后肺炎的诊断价值。[结果] 57 例患者中，发生肺炎 19 例，占 33.3%；未发生肺炎 38 例，占 66.7%。单因素比较表明：肺炎组代表 NETs 的外周血浆髓过氧化物酶–脱氧核糖核酸（myeloperoxidase-deoxyribonucleic acid, MPO–DNA）[(6.5±2.0) ng/ml vs (3.6±0.7) ng/ml, $P<0.05$]、中性/淋巴细胞比（neutrophil to lymphocyte ratio, NLR）[(6.7±1.9) vs (5.8±0.9), $P<0.05$] 和中性/淋巴和血小板比（neutrophil to lymphocyte and platelet ratio, N/LPR）[(6.7±2.0) vs (5.4±0.8), $P<0.05$] 均显著高于非肺炎组；而两组间中性白细胞、淋巴细胞和血小板差异均无统计学意义（$P>0.05$）。Logistic 回归分析显示：外周血 NETs [OR=7.289, $95\%CI$ 1.980~26.836, $P<0.05$] 和 NLPR [OR=2.087, $95\%CI$ 1.005~4.333, $P<0.05$] 为术后肺炎发生的独立危险因素。受试者工作特征（ROC）分析显示，外周血 NETs 预判术后肺炎的曲线下面积（area under curve, AUC）为 0.892。最佳截断值为 4.20，灵敏度为 84.21%，特异度为 76.32%。亚组分析显示，外周血 MPO–DNA 含量≥4.20 组患者术后肺炎发生率显著高于 NETs 含量<4.20 组（64.00% vs 9.38%, $P<0.05$）。[结论] 术后外周血 NETs 含量升高是老年髋部骨折患者术后肺炎的危险因素，监测外周血 NETs 含量对老年髋部骨折患者术后肺炎的防治有意义。

关键词：老年患者，髋部骨折，中性粒细胞胞外陷阱，术后肺炎

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Abstract: [**Objective**] To investigate the diagnostic value of neutrophil extracellular traps (NETs) in peripheral blood for postoperativepneumonia in elderly patients with hip fracture. [**Methods**] A prospective study was conducted on 57 elderly patients who underwent surgi-cal treatments for hip fracture in our hospitals from January 2019 to February 2022. Based on whether pneumonia developed after surgery,the patients were divided into two groups, and univariate comparison and logistic regression analysis were performed to search the indepen-dent risk factor of pneumonia. Furthermore, significance of the risk factors used for predicting postoperative pneumonia was evaluated. [**Results**] Among the 57 patients, 19 patients (33.3%) were diagnosed with pneumonia, while the remaining 38 patients (66.7%) were of non-pneumonia. Regarding univariate comparison, the pneumonia group was significantly greater than the non-pneumonia group in terms ofblood plasma myeloperoxidase-deoxyribonucleic acid (MPO-DNA) that represented NETs [(6.5±2.0) ng/ml vs (3.6±0.7) ng/ml, $P<0.05$],neutrophil to lymphocyte ratio (NLR) [(6.7±1.9) vs (5.8±0.9), $P<0.05$] and neutrophil to lymphocyte and platelet ratio (N/LPR) [(6.7±2.0) vs(5.4±0.8), $P<0.05$], although there were no significant differences in neutrophils, lymphocytes and platelets between the two groups ($P>0.05$). As results of logistic regression analysis, the peripheral blood NETs (OR=7.289, $95\%CI$ 1.980~26.836, $P<0.05$) and N/LPR (OR=2.087, $95\%CI$ 1.005~4.333, $P<0.05$) were independent risk factors for postoperative pneumonia. Receiver operating characteristic (ROC)analysis showed that peripheral blood NETs predicted postoperative pneumonia with an area under curve (AUC) of 0.892, optimal cut-off of 4.2, sen-