# Evaluation of the Sensitivity of Preoperative Neutrophile/Lymphocyte Ratio to Differentiate between Complicated and Non-Complicated Appendicitis

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### Abstract

*Background:* Preoperative prediction of the degree of difficulty of acute appendicitis is a matter of challenge among surgeon. Several methods could determine the preoperative state of acute appendicitis including imaging ability of the hospital (ultrasonographic study and CT). However, there much easier biochemical parameters which includes CRP, WBC count, and NLR. Various study try to detect which of them is more easier, and give the most rapid accurate result about the degree of severity of acute appendicitis. This issue has importunacy in determining experience of the surgeon who will operate on, especially in rural area. NLR was found to be more sensitive, more accurate, and much easier than CRP and WBCs. It dose not need any extra cost.

*Aim of Study:* To evaluate the usefulness of NLR in the diagnostic work-up of preoperative differentiation between non-complicated acute appendicitis and complicated.

*Material and Methods:* A retrospective review of the database of 100 patients in Agouza Hospital between March 2017 and March 2020 who underwent surgery was evaluated. Based on intraoperative finding wither it was just acute appendicitis or complicated appendicitis, the patients were divided into two groups: Acute appendicitis and complicated appendicitis. Data extracted included patients' demography, preoperative WCC with differential count, CRP. Receiver-operating characteristic (ROC) curve is used to calculate Sensitivity, specificity, positive predictive value and negative predictive value (NPV) of WCC, CRP and NLR and establishing cut-off value for each biomarker.

*Results:* The study include 100 patient, male/female is 33/67, with 71 noncomplicated cases and 29 complicated. Main age of complicated cases 36.06±9.66, and that of noncompli-

cated is  $24.85\pm7.7$ . The ROC curve results found that when the cutoff value of NLR >4, the sensitivity was 100%, specificity 84.5% with area under the curve (AUC) 0.983 (*p*-value <0.001). as regard results of WBCs count, at cutoff value >12000, the sensitivity will be 68.97%, specificity was 94.37%, with AUC 0.835 (*p*-value <0.001). While ROC curve analysis of CRP results found that with cutoff value >22, the sensitivity was 40%, specificity was77%, AUC was 0.531 (*p*-value=0.645).

*Conclusion:* The NLR was the most sensitive and accurate test for differentiation between uncomplicated acute appendicitis and complicated acute appendicitis,

Key Words: Acute appendicitis – Neutrophil-to-lymphocyte ratio – Complicated appendicitis – ROC.

## Introduction

**ACUTE** appendicitis is one of the most common causes of acute abdomen. It has an incidence of lifetime occurrence of approximately 7%, with perforation rates of 17-20% [1]. Diagnosis of acute appendicitis is mainly based upon clinical symptoms which could assisted by radiological investigations in selected cases. Although patients with acute appendicitis often present with a characteristic symptoms and physical findings [2], diagnosis is not always straight forward and atypical presentations are common, as classical presentation is found in less than half of the patients [3]. Failure to diagnose acute appendicitis at an early stage may result in adverse outcomes, including perforation, and generalized peritonitis which can be associated with significant morbidity and even mortality [4].

Various scoring systems have been developed to aid the diagnosis of acute appendicitis, including the Alvarado score [5], RIPASA (Raja Isteri Pengiran Anak Saleha Appendicitis) score which developed in 2008 [6], and, more recently, the RIFT (Right Il-

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iac Fossa Pain Treatment) score [7]. These scoring systems have been criticized for their limited sensitivity and specificity and inability of predicting the severity of acute appendicitis [4].

However, several blood tests are being used to predict appendicitis and its severity. White blood cell (WBC) count is mostly elevated in patients with appendicitis, but an elevated WBC count has no predictive value in differentiating simple and complicated appendicitis. Elevated serum bilirubin has been shown to be a potential marker for perforation of the appendix, but it lacks adequate sensitivity and specificity [8]. C-reactive protein (CRP) was found to be superior to bilirubin for anticipation of perforation in acute appendicitis [9]. Identifying a tool or marker that can predict the diagnosis of acute appendicitis and can differentiate between uncomplicated and complicated appendicitis with good sensitivity and specificity is still a subject of interest among many researchers [4].

Frequently performed laboratory tests such as the white cell count (WCC), pro-calcitonin and C-reactive protein (CRP) levels are not useful for an early diagnosis of acute appendicitis, before it has complicated [10]. Reliability of available laboratory tests for acute appendicitis is influenced by the initiating process, whether it was obstructive or inflammatory and the time which would have elapsed since the onset of the pathological process [11].

In patients who have an acute inflammatory process, a combination of demargination, delayed apoptosis and increased proliferative activity of stem cells in the bone marrow leads to neutrophilia. Concurrently, lymphocytopenia develops due to the enhanced margination and accelerated apoptosis of lymphocytes. The resulting neutrophilia and lymphocytopenia leads to an increase in the neutrophilto-lymphocyte ratio (NLR) *[12]*. The NLR has been proposed as a novel, cost-effective and easily available inflammatory marker for supporting the diagnosis of acute appendicitis *[13]*. It is reported to be highly sensitive and specific for the diagnosis of acute appendicitis as compared to WCC and CRP [14].

Neutrophil-to-lymphocyte ratio (NLR) is a simple inexpensive marker of inflammation, which is easily calculated from the differential WBC counts [15]. NLR provides information regarding two different immune and inflammatory pathways, which may make it a potential marker to predict appendicitis and its severity. A recent meta-analysis demonstrated that NLR predicts both diagnosis and severity of appendicitis [15]. This may have implications for prioritizing cases for surgery, for monitoring conservatively treated patients, and for patients who do not routinely undergo CT scans (pregnant or pediatric patients) [15]. Nevertheless, NLR increases diagnostic accuracy with respect to neutrophil and leukocyte counts because the immune response triggered by infectious, ischemic or inflammatory factors leads to an increase in neutrophil count mediated by growth factors on hematopoietic stem cells, and a decrease in lymphocyte count due to apoptosis mediated by tumor necrosis factor (TNF) [12].

In this context, the NLR is also an earlier marker of the acute phase response compared to CRP, as pooled neutrophils in bone marrow respond more rapidly to acute inflammation. C-reactive protein, in contrast, must be synthesized in the liver in response to interleukin and pro-cytokine pathway activation (IL-6), which results in a time lag. Furthermore, compared to CRP, the NLR requires only a simple test that does not add to the expense on the patient and can be easily calculated using parameters that are included in the complete blood count [16].

#### Aim of the work:

We aim to retrospectively evaluate the ability of NLR to differentiate between complicated and noncomplicated acute appendicitis. This study is to assess the use of NLR as a biochemical test to differentiate uncomplicated from complicated acute appendicitis comparing its sensitivity and specificity to that of WBCs and CRP.

### Material and Methods

In this study the data base of 100 patients who had undergone open appendectomy is retrospectively reviewed for a preoperative diagnosis of acute appendicitis and proved to be acute appendicitis (AA) during operations (complicated and noncomplicated). Normal cases which diagnosed as appendicitis and discovered to be normal during operations are excluded from the study. The clinical diagnosis of AA was established preoperatively by means of clinical history, physical examination, traditional laboratory tests, and ultrasonography when it is needed. Complete blood picture and CRP of all patients at admission time are reviewed and the leucocytic count is registered and the ratio between neutrophile and lymphocyte is calculated for each patient.

Totally, the data of all patients were analyzed. Patients were grouped into two groups according to the intraoperative findings, acute noncomplicated appendicitis group, and complicated appendicitis group. Complicated appendicitis was defined as gangrenous and/or perforated appendicitis with or without associated collection.

#### Data collection:

A comprehensive data collection proforma was used for data collection. The patients were divided into two groups: Uncomplicated appendicitis and complicated appendicitis. The data collection proforma included patients' demographic data, WBC and neutrophil count, lymphocyte and CRP level, how the diagnosis of appendicitis was made, length of hospital stays. For each patient, the data were extracted independently by two team members.

Analyses of the data were performed using SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY). The characteristics of patients were expressed using descriptive statistics. Parameters compatible with normal distribution were described as mean  $\pm$  SD.

Using Med Calc version 23.0.5, A receiver operating characteristic (ROC) curve was utilized to characterize and compare the accuracy of the haematological ratios. The area under the curve (AUC) represented the accuracy of the marker in distinguishing between complicated and uncomplicated AA. The cutoff values of each biochemical parameter for discrimination of the groups were determined using the receiver operating characteristic (ROC) analysis. At each value, the sensitivity and specificity for each outcome under study were plotted, thus generating an ROC curve. A p-value less than 0.05 was considered statistically significant. As well as the sensitivity and specificity with 95% confidence intervals (95% CI). Positive predictive value (PPV) and negative predictive value (NPV) and the likelihood ratio were also calculated.

#### **Results**

These 100 patients include 67 females and 33 males. The number of patients diagnosed as acute appendicitis without complication detected in the operative field was 71 and that complicated cases was 29.

The age of all group of patients (100) range between 12 and 55 years old with an average age  $28.04\pm9.716$ . The average age of male is 29.93 while the average female age is 27.104. The following chart shows the distribution of age among the group of patients (Fig. 1).



Fig. (1): Age distribution among patients of the study.

As regard calculation of the mean age of complicated case, it was  $36.06\pm9.66$ . while the mean age of noncomplicated cases was  $24.85\pm7.7$ . This result shows that the incidence of complicated appendicitis is significantly increase with age (*p*-value =0.0001)

The incidence of complicated cases among men is 13/33 (39.39%), and noncomplicated cases are 20/33 (60.6%). While complicated female cases were 16/67 cases (23.88%), noncomplicated cases are 51/67 (76.12%). The incidence of complicated appendicitis in men is higher but it is not significant (*p*-value=0.0599) (Fig. 2).



Fig (2): Diagram illustrate number of acute and complicated cases in male and female groups.

As regard hospital stay for all patients, it ranges from 1 to 6 days with an average  $2.27\pm1.103$  days. it was found that acute cases hospital stay range from one to three days with an average of  $1.7\pm0.66$ . while complicated cases have a range of hospital stay from 3 to 6 days with an average of  $3.66\pm0.77$ days. The previous results indicate that hospital is significantly increase with complicated cases.

The following table (Table 1) summarize the demographic and laboratory results of the patients in both groups (complicated and noncomplicated).

Table (1): Comparison between complicated and noncomplicated groups.

	Noncomplicated Complicated cases (71) cases (29)	
Male/Female 33-67	20/51	13/16
Age	24.85±7.7	36.06±9.66
Hospital stays	1.7±0.66	3.66±0.77 days
$CRP \left(Mean \pm SD\right)$	21.79±16.92	29.79±22.03
NLR (Mean $\pm$ SD)	3.62±0.89	6.55±0.97
WBCs (Mean $\pm$ SD)	9.38±2.75	13±2.59

As regard the calculated NLR in acute complicated cases, it was ranged between 5 to 8 with mean value of  $6.55\pm0.97$ . While in noncomplicated acute cases it is ranged between 2 to 6 with an average of  $3.62\pm0.89$ . The NLR is increased significantly in complicated cases more than acute non complicated cases (*p*-value=0.001).

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When considering C reactive protein (CRP) as a preoperative discriminating parameter to differentiate between complicated and noncomplicated appendicitis it was found that the mean value of that parameter in acute non complicated cases is  $21.79\pm16.92$ , while in cases of complicated appendicitis it was  $29.79\pm22.03$ . This result indicate that CRP has insignificant increase in complicated cases more than noncomplicated cases (*p*-value = *p* = 0.0529) (Fig. 3).



Fig. (3): A diagram shows the level of CRP in complicated cases (red color) and noncomplicated cases (blue color).

When using WBCs as discriminative biomarker between complicated and noncomplicated acute appendicitis it was found that in cases of noncomplicated appendicitis the mean value of WBCs was  $9.38\pm2.75$  while in complicated cases was  $13.14\pm2.64$ . These results show that WBCs has significant power in discrimination between complicated and noncomplicated appendicitis (*p*<0.0001).

#### ROC curve results for NLR, CRP, and WBCs:

The cutoff values of parameters for discrimination of the groups were determined using the receiver operating characteristic (ROC) analysis. At each value, the sensitivity and specificity for each outcome under study were plotted, thus generating an ROC curve. A *p*-value less than 0.05 was considered statistically significant. The recommended cutoff value of the NLR that discriminate positive (complicated appendicitis) and negative (acute noncomplicated appendicitis) appendectomies was decided using ROC curve analyses. The recommended cutoff value of the NLR was based on the most prominent point on the ROC curve for sensitivity (100) at (95% confidence interval [CI between 88.1-100; and specificity (84.51) at (CI 74.0-92.0). Because these two parameters indicated a cutoff value of 4>. The area under the ROC curve was 0.983 (*p*-value <0.001). Positive predictive value 58.28% and negative predictive value of 42.25. Area under the ROC curve is 0.983 with 95% confidence interval in between 0.935 to 0.999.



Fig. (4): ROC curve analysis of using NLR as discriminating factor to differentiate between acute and complicated appendicitis. NLR shows sensitivity of 100% and specificity of 84.5 when NLR ->4 with area under the curve AUC=0.983 and *p*-value <0.001.

As regard total leukocytic count as a marker for discrimination between acute complicated and noncomplicated appendicitis, it was found that the best cutoff value 12000 with an area under the curve (AUC) 0.835 with sensitivity 68.97% and specificity 94.37%. Positive predictive value is 48% and negative predictive value is 97.6% (Table 2, Fig. 6)

When using CRP as a biomarker for discrimination acute noncomplicated from complicated appendicitis, it was found that cutoff value >22 is the best value for discrimination with sensitivity 40% and specificity 77% with AUC=0.531 and *p*-value =0.645 which means nonsignificant results for discrimination between complicated and noncomplicated appendicitis. With Positive predictive value of 38% and Negative predictive value 62.9% (Table 2, Fig. 5).



Fig. (5): ROC curve analysis for CRP test as discriminating factor between acute and complicated appendicitis. It shows sensitivity of 40 and specificity of 77.14 when the cut off value >22. AUC 0.531 and *p*-value=0.645.



Fig. (6): WBCs ROC curve show AUC equal to 0.853 with sensitivity 68.97 and specificity 94.37 at cutoff value of 12000.

 Table (2): Comparison of the sensitivity, specificity, AUC,
 p-value between NLR, CRP, WBCs.

	Cutoff Se value	nsitivity %	Specificity %	AUC area under the curve	<i>p</i> - value
NLR	>4	100	84.5	0.983	< 0.001
WBCs	>12000	68.97	94.37	0.835	< 0.001
CRP	>22	40	77	0.531	0.645

#### Discussion

Acute appendicitis is an everyday occurrence in emergency units. Especially in rural areas, surgeons may not have imaging facilities as presence of ultrasonography or computed tomography or their use cloud be limited as in cases of children and pregnant. Thus, surgeons are still in need of an accurate and easy test to obtain the diagnosis [17].

Early diagnosis of Acute appendicitis is not always easy. The decision to observe the patient until the diagnosis becomes obvious or to operate early to prevent unwanted complications like perforation and peritonitis represents a serious dilemma for surgeons. An early operation may result in the removal of a normal appendix with a small risk of morbidity [18].

In this study it was found that the complaining of acute appendicitis is more frequent in females (females are nearly double of males), but males have the burden of higher complication rate (males have an incidence of complication about 39.39% while that of females is 23.88%), which is statistically significant increase of complications in male group. This result is similar to that reported by Asafo-Adjei et al. [11], Nshuti et al. [3]; Kong et al. [19]; and Tucker et al. [20], also these findings were compatible with previous study by Khairol et al. [21].

In this study, complicated acute appendicitis represents 29%. This high incidence is much lower than other studies Asafo-Adjei et al. [11] have incidence more than 60% while in Kong et al. [19], it was 57%. Asafo-Adjei et al. [11] suggested that this high rate of complicated appendicitis is due to the late presentation of the patients after the onset of symptoms or the diagnosis of acute appendicitis was delayed until the clinical signs became classical. However, performing appendicectomy and getting normal appendix is much safer than performing appendicectomy when it becomes complicated.

The argument that NLR is a more sensitive parameter than the number of leukocytes was put forth 20 years earlier by Goodman et al. [22] which is followed by many studies trying to prove the efficacy of that parameter in diagnosis of inflammatory conditions. In the present study there is a comparison between the three biomarker that could be used easily to diagnose acute appendicitis and to differentiate between complicated and noncomplicated.

In spite of the three markers could be used to diagnose and differentiate between complicated and noncomplicated appendicitis but it was found that the most sensitive and accurate marker was neutrophile/lymphocytic ratio (NLR). In this study, NLR can differentiate between complicated and noncomplicated appendicitis at cutoff value which is demonstrated by ROC curve analysis at >4 with sensitivity 100% and specificity 84.51 with an area under the curve (AUC) 0.983 and *p*-value =0.001. Positive predictive value is 32.7% and negative predictive value 100%.

These results are consistent with the results of Prasetya et al. [13], which have a cutoff value 2.87 with sensitivity 84.6% also, Yazici, et al. [23] have a cutoff value 3.5. Sidharth R et al. [14], gave similar results of the present study as NLR on ROC curve has a cut-off value of 3.78 had a sensitivity of 65.9% and specificity of 93.1% in differentiating perforated and non-perforated appendicitis.

The positive predictive value (PPV) and negative predictive value (NPV) were reported as 85.7% and 81.2%, respectively. The area under the curve (AUC) was 0.887 and accuracy of 82.5%.

Yazıcı et al., [23] found that N/L ratio seems to be a more sensitive parameter than TLC when evaluated retrospectively. N/L ratio of 3.5 can be used in the prediction of appendicitis in children. Ishizuka et al. [25] concluded that NLR, rather than either CRP or albumin alone, showed a close relationship with gangrenous appendicitis. Also, Markar et al., [26] concluded that NLR appears to have greater diagnostic accuracy than either WBC or CRP alone.

Chuluun et al. [27] in their study on pediatric appendicitis, postulated a cutoff value 6.2 to differentiate between acute noncomplicated and complicated appendicitis with sensitivity 81.9% and specificity 85.24%, positive predictive value 91.5%, negative predictive value 70.74%, and AUC 0.899 in the same study Chuluun et al., [27] found that WBC will have much less sensitivity and specificity (62.8%, 75.4% respectively), with much less AUC (AUC 0.589) When cutoff value 13.4. Markar et al. [26] assessed 1117 pediatric patients who underwent appendectomy and determined that the NLR appeared to be of greater diagnostic accuracy than the total WBC count. Also, in a study conducted by Yazici et al. [23], showed that a NLR over 3.5 in pediatric patients was a more sensitive parameter than TLC in diagnosing acute appendicitis.

Other studies have been published regarding this issue. Shimizu et al. [28] suggest a NLR cut-off value of 5.0 for the diagnosis of acute appendicitis, with 44% sensitivity and 22% specificity. Ishizuka et al. [25] determined a cutoff value of 8.0 for NLR to differentiate gangrenous appendicitis from catarrhal appendicitis, with 73% sensitivity and 39% specificity. Kahramanca et al. [17] reported NLR cut-off values of 5.74 (71% sensitivity, 49% specificity) to distinguish acute complicated appendicitis from non-complicated appendicitis. Sevinc et al. [29]. NLR cut-off values were 3.0 (81% sensitivity, 53% specificity) and 5.5 (78.4% sensitivity, 41.7% specificity) for the diagnosis of acute appendicitis and perforated appendicitis, respectively. In the same study by Kahramanaca et al. [17] show that NLR with a cutoff value of >4.68 can significantly differentiate an acute appendicitis from normal appendix. The sensitivity of this cutoff value is 65.3%, which means that a total of 65% of patients with histologically confirmed AA have an elevated ratio. The specificity of 54.7% is also low (thus a high false-positive rate). These low sensitivity and specificity values may be explained by the fact that only operated patients were included in this study.

Khairol et al. [21] reported the cut-off point of NLR in this study showed a highly statistically significant difference in an intergroup comparison. It showed that NLR with a cut-off point of  $\geq$ 3.11 could significantly differentiate normal appendix and acute appendicitis patients with a sensitivity of 75.2% and specificity of 68.7%, in diagnosing acute appendicitis.

As regard other biomarkers sensitivity in discrimination between complicated and complicated appendicitis. In Prasetya et al. [13] study on acute appendicitis in children. Mean WBC and neutrophil count were  $14.33\pm6.56\times10^{-1}/\mu$ l and  $76.16\pm14.41\%$ , respectively. Neutrophil and NLR were significantly higher in the acute appendicitis group than control ( $76.17\pm14.41$  vs.  $62.43\pm15.9\%$ , p=<0.0001; and  $8.44\pm6.63$  vs.  $3.38\pm2.84$ , p=<0.0001, respectively), while WBC did not show difference between acute appendicitis and complicated group (p=0.057)

Asafo-Adjei et al. [11], found that The NLR was more sensitive but less specific compared to WCC for the diagnosis of acute appendicitis. On the other hand, when compared to CRP, the NLR was more specific but less sensitive for the diagnosis of acute appendicitis. And concluded That CRP would be more useful as compared NLR in the diagnostic investigation of patients who are suspected of having acute appendicitis. They postulated that findings of a superior diagnostic value of CRP over NLR, may be due to a high prevalence of complicated acute appendicitis in the cohort of patients studied. Unlike the neutrophilic response which is quick and stimulated almost immediately by cytokines, CRP is a protein and therefore has to await synthesis by the liver. For that reason, they concluded that CRP would be more reliable and is therefore likely to be raised in complicated acute appendicitis, which in most cases is a time-dependent phenomenon Yu et al., [10]. The mean CRP was also the highest in patients who had serosal appendicitis, which might have been because the underlying conditions were severe and longstanding.

Also, Kucuk et al. [30] concludeed that Neutrophil/lymphocyte ratio has lower diagnostic accuracy than leukocyte count, although it can be used as a supportive parameter in the diagnosis of acute appendicitis. Many other studies have results contrary to our results as that conducted by Kim et al. [31], Panagiotopoulou et al. [32], and Qi and Zhang [33]. Yu et al. [10] also found that CRP was more reliable in supporting the diagnosis of acute appendicitis, especially if the disease is complicated disease and concluded that CRP has superiority over other laboratory tests in the diagnosis work-up of acute appendicitis.

Ha et al., [34] study systematically assessed a range of blood markers for their potential to predict the severity of AA and differentiate between CA and UA in pediatric patients. While several markers showed promise, C reactive protein (CRP) emerged as the standout candidate, with the highest sensitivity, specificity, and predictive values for Complicated appendicitis prediction. This robust marker can significantly aid particularly in cases where clinical history and symptoms are less clear, as is often the case in younger patients.

#### Conclusion:

Early diagnosis of acute appendicitis and identification of its severity either it is complicated or not is a great task that should be done prior to surgery to prepare the best requirement for the patients. Many easy laboratory biochemical markers can diagnose acute appendicitis (WBC, CRP, NLR), which have great challenge for that purpose. This study proves that NLR has much sensitivity, and specificity in differentiation between complicated and noncomplicated appendicitis much more than CRP and WBCs.

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# تقييم حساسية نسبة الخلايا النيوتروفيل إلى الخلايا اللمفاويات قبل العملية لتحديد الفرق بين التهاب الزائدة الدودية المعقد وغير المعقد

الخلفية: يعد التنبؤ بدرجة صعوبة التهاب الزائدة الدودية الحاد قبل العملية تحدياً للجراحين. توجد عدة طرق لتحديد حالة الزائدة الدودية الحادة قبل العملية، بما فى ذلك القدرة التصويرية للمستشفى (مثل الموجات فوق الصوتية والتصوير المقطعى). مع ذلك، هناك وعدد كريات الدم البيضاء، CRP معايير بيوكيميائية أكثر سهولة، مثل حاولت عدة دراسات (NLR) ونسبة العدلات إلى اللمفاويات (WBC)، اكتشاف أى من هذه المعايير أسهل وأسرع فى إعطاء نتائج دقيقة حول شدة التهاب الزائدة الدودية الحادة. لهذا الموضوع أهمية فى تحديد خبرة الجراح الذى سيقوم بالعملية، خاصة فى المناطق الريفية. وجد أن وعدد كريات الدم البيضاء CRP أكثر حساسية ودقة وأسهل من NLR فى تشخيص الفرق بين التهاب الزائدة الدود الدم البيضاء

هدف الدراسة: تقييم فائدة الدودية الحادة غير المعقد والمعقد قبل العملية.

طريفة الدراسة: مراجعة بأثر رجعى لقاعدة بيانات لـ ١٠٠ مريض فى مستشفى العجوزة بين ٢٠٢٠/١/٣ و ٢٠١٧/١٢ ممن خضعوا لعملية جراحية وتم تقييمهم. بناءً على النتائج أثناء العملية، قسم المرضى إلى مجموعتين : التهاب زائدة دودية حاد غير معقد والتهاب زائدة دودية معقد.

النتائج: شملت الدراسة ١٠٠ مريض، الذكور / الإناث بنسبة ٣٧/٦٧، مع وجود ٧١ حالة معقدة و٢٩ حالة غير معقدة. كان متوسط العمر للحالات المعقدة 36,06±96.6 ، بينما الحالات غير المعقدة كان يعد الاختبار الأكثر حساسية NLR 24,85 NLR، أظهرت النتائج ودقة للتمييز بين التهاب الزائدة الدودية الحاد غير المعقد والمعقد.

المقدمة: يعد التهاب الزائدة الدودية أحد أكثر أسباب البطن الحاد شيوعاً، ويحدث بمعدل ٧٪ على مدى الحياة، مع معدل حدوث ثقوب يتراوح بين ١٧–٢٠٪. يعتمد التشخيص أساساً على الأعراض السريرية والتى قد تكون مدعومة بالفحوصات الإشعاعية في بعض الحالات.

تتعدد أنظمة التقييم التى تساعد في تشخيص التهاب الزائدة الدودية، مثل مقياس Alvarado وRIPASA، ولكنها قد تفتقر إلى الحساسية والدقة فى تحديد شدة الالتهاب. كما أن الفحوصات المخبرية المتوفرة مثل عدد كريات الدم البيضاء، وCRP، ونسبة NLR تعتبر أدوات تشخيصية لـم تُثْبت فعاليتها التامة.

هدف العمل: نهدف إلى تقييم قدرة NLR على التمييز بين التهاب الزائدة الدودية الحاد غير المعقد والمعقد بشكل بأثر رجعي.

طرق جمع البيانات: تم جمع بيانات ١٠٠ مريض خضعوا لعملية استئصال الزائدة واثبت التشخيص بكونه التهاب زائدة دودية حاد. قُسِمَ المرضى إلى مجموعتين: حالات غير معقدة وحالات معقدة. البيانات تضمنت العمر والجنس ومدة الإقامة بالمستشفى ونتائج الفحوص المخبرية مثل CRP وCRP ونسبة NLR.

تحليل البيانات: تم استخدام برنامج SPSS في التحليل، مع تقييم حساسية ودقة الفحوصات المختبرية باستخدام منحنى ROC.

النتائبج: شملت الدراسة ٦٧ أنثى و٣٣ ذكرًا، بمعدل عمر ٢٨ سنة. كانت حالات الالتهاب المعقدة تمثل نسبة ٢٩٪ من الحالات.